carriers (n=9) had a 30% increase in brain DHA uptake from plasma compared to non-carriers (n=13, p=0.04). These findings suggest a DHA deficit in brains of APOE4 carriers. We then examined whether the APOE4 allele affected CSF DHA levels after DHA supplementation. CSF DHA levels of 43 three participants receiving DHA (n=28) vs Placebo (n=15) over 18 months were measured in the ADCS-sponsored DHA trial. Carrying the APOE4 allele was associated with lower increase in CSF DHA levels (p=0.07, interaction between genotype and treatment) compared with non-carriers.

Conclusions Our cellular studies identify a novel role for APOE lipidation by ABCA-1 in DHA transport. Decreased ABCA-1 activity in APOE4 cells was associated with a decrease in DHA transport. These findings are clinically relevant as we observed deficits in brain DHA transport in younger cognitively normal APOE4 carriers using DHA PET scans and in APOE4 carriers with dementia after DHA supplementation. Enhancing APOE lipidation using ABCA-1 agonists is a promising strategy to enhance brain DHA metabolism.

Adolescent medicine and general paediatrics

III

Concurrent session

Saturday, January 27, 2018

8:00 AM – 10:00 AM

367 CINEMATIC PORTRAYAL OF IMMUNIZATIONS THROUGHOUT HISTORY

A Auwen*, M Emmons, W Dehority. University of New Mexico, Albuquerque, NM

Purpose of study Anti-vaccination messages are increasingly prevalent in the media. Movies are no exception, as the anti-vaccination film ‘Vaxxed’ was screened this year at the Cannes Film Festival. As a result, we assessed how films have portrayed immunisation throughout history.

Methods used We identified 16 search terms for vaccines on IMDB (Internet Movie Database). We conducted a search of IMDb with these terms on January 24th, 2017, producing 204 titles. TV shows and direct to video movies were eliminated, leaving 67 films. Synopses for the 67 films were reviewed using IMDb, the American Film Institute database and Wikipedia to determine if vaccines were featured in the film, leading to the elimination of 9 films. Ten films were unavailable for purchase, rent or interlibrary loan in the United States. The remaining 48 films were watched in their entirety. Three films did not feature a vaccine, leaving 45 for review. Films were assessed for their portrayal of both the scientific community and the vaccine, and were graded on a scale incorporating 10 variables to assess the realism of the vaccine portrayal. Tests of statistical significance used a Welch’s t-test.

Summary of results The movies were released between the years of 1925 and 2016. Vaccines were portrayed negatively in 16 movies, with 14 of these released after 1990 (p=0.0019). The scientific community was portrayed negatively in 15 movies, with 14 of these released after 1990 (p=0.0002). The mean realism score for films released prior to 1990 was 9.1 (0–10 scale) vs 7.3 for those released after 1990 (p=0.0013). Ten movies featured unrealistically severe adverse events after immunisation. All 10 were released after 1990 (p=0.0029). Ten movies featured conspiracy theories surrounding vaccines, with 8 of these films released after 1990 (p=0.0816).

Conclusions Cinematic portrayals of immunisation are increasingly unrealistic and negative. This trend appears to have begun in the 1990’s, which corresponds to the onset of the modern anti-vaccination movement triggered by Andrew Wakefield’s claim that the MMR vaccine caused autism. Whether the change in vaccine portrayal is reflective of societal beliefs or is influencing them should be the focus of future study.
Abstracts

Efficacy and utility of vancomycin trough values in hospitalised children

1E Dolan*, 2M London, 3W Derhority. 1University of New Mexico School of Medicine, Albuquerque, NM; 2University of New Mexico Hospital, Albuquerque, NM

Purpose of study
Despite standard dosing based upon accepted reference, concerns exist that initial vancomycin trough values in children may be sub-therapeutic, potentially impacting treatment of serious infections and methicillin-resistant S. aureus (MRSA). We conducted an observational study assessing initial vancomycin trough values in hospitalised children receiving conventional dosing.

Methods
We performed a retrospective chart review of children under 18 years old hospitalised between August 1, 2015 and February 28, 2016 who received vancomycin while admitted. We selected those with appropriately collected troughs (within 1 hour of the next scheduled dose and at steady state). Demographic and dosing data were collected, along with indication for use, initial trough levels, serum creatinine, urine output, number of troughs, and frequency of dosing changes. Data was entered into a RedCap database.

Summary of results
There were 31 subjects (45.2% female) who met inclusion criteria. The mean age was 1.9 years. A total of 25 subjects had medical co-morbidities (80.7%). Troughs were collected an average of 0.4 hours prior to next dose. The mean dose was 55.2 mg/kg/day, with 78.3% of doses verified as appropriate. The majority of patients (76.7%) received vancomycin every 6 hours, and the mean duration of therapy was 75.7 hours. Empiric use was the most common indication (67.7%). The mean initial trough level was 10.6 mcg/mL with sub-therapeutic initial trough values (mean=7.8 mg/mL) in 70.0% of patients (45.2% of those with appropriate dosing). No appropriately dosed subjects experienced supra-therapeutic trough values. Serum creatinine and urine output were not adversely affected in any subject. Fifteen patients underwent multiple trough collections, 73.3% of whom had sub-therapeutic initial trough values. Nineteen patients underwent dose changes, 84.2% of whom had sub-therapeutic initial trough values.

Conclusions
Nearly half of all hospitalised children receiving vancomycin demonstrated sub-therapeutic initial trough values despite appropriate dosing resulting in dosage changes and additional laboratory analyses. This suggests the need for further studies assessing the efficacy of loading doses in children.

Effectiveness of sodium hypochlorite (bleach) in paediatric patients with moderate to severe eczema: A literature review

1Luzzi*, 2N Sarsam, 3W Wang, 4T Pham, 2B Afghani. 1University of California, Los Angeles, Westwood, CA; 2University of California, Irvine, Irvine, CA; 3CHOC Hospital, Orange, CA

Purpose of study
Bacterial colonisation may contribute to severity of eczema or atopic dermatitis (AD). The most common treatment for superinfection in patients with eczema is antibiotics, but growing concern regarding antibiotic resistance has led to the exploration of other preventive intervention methods. The purpose of this study was to assess the efficacy of sodium hypochlorite to treat eczema in paediatric patients.

Methods
A systematic literature review was conducted through databases such as PubMed, Google Scholar, and review of reference lists for studies relevant to this topic. Only paediatric studies with a control group were included.

Summary of results
Six prospective studies were identified (see table 1). Adjunctive topical corticosteroid (TCS) therapy was used in most studies for both the control and the hypochlorite groups. Hypochlorite was used 2–3 times weekly. The

Abstract 370 Table 1

<table>
<thead>
<tr>
<th>Study</th>
<th>Hypochlorite group (N)</th>
<th>Non-hypochlorite group (N)</th>
<th>Response measured in hypochlorite group</th>
<th>Response measured in non-hypochlorite group</th>
<th>P-value</th>
<th>Follow-up duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Han T, 2015</td>
<td>20</td>
<td>20</td>
<td>Reduction in affected area of SCORAD* (0.6±12.4)</td>
<td>Reduction in affected area of SCORAD (~5.7±15.4)</td>
<td>p=0.03 in favour of water for reducing area p=0.044 in favour of hypochlorite for reducing antibiotic use and corticosteroid use</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Huang JT, 2009</td>
<td>16</td>
<td>15</td>
<td>%EASI (<del>−10.4±2.8) at 1 month and (</del>−15.3±3.8) at 3 months</td>
<td>%EASI (<del>−2.5±1.6) at 1 month and (</del>−3.2±1.6) at 3 months</td>
<td>p&lt;0.5 for S. aureus colonisation decreased in hypochlorite group but not significantly (sample size was too small)</td>
<td>3 months</td>
</tr>
<tr>
<td>Wong S, 2013</td>
<td>18</td>
<td>18</td>
<td>%EASI Score lowered 17 points</td>
<td>%EASI Score lowered 8 points</td>
<td>p&lt;0.002 for BSA in favour of hypochlorite</td>
<td>2 months</td>
</tr>
<tr>
<td>Ryan C, 2013</td>
<td>18</td>
<td>18</td>
<td>%S. aureus Density (~41.9% at 1 month and ~53.3% at 2 months)</td>
<td>%S. aureus Density (~38.5% at 1 month and ~18.0% at 2 months)</td>
<td>p&lt;0.05 for S. aureus colonisation</td>
<td>3 months</td>
</tr>
<tr>
<td>Gonzalez M, 2016</td>
<td>10</td>
<td>11</td>
<td>%S. aureus Density TCS+Hypochlorite: Log10 Ampliton copies reduced by 2.0, p=0.001 for lesional skin</td>
<td>%S. aureus Density TCS alone: Log10 Ampliton copies reduced by 1.3, p=0.002 for lesional skin</td>
<td>both the non-hypochlorite (topical steroids) and hypochlorite group decreased bacterial density from baseline but p&gt;0.05 when comparing the 2 groups</td>
<td>4 weeks</td>
</tr>
</tbody>
</table>

*SCORAD=Scoring Atopic Dermatitis Index %EASI=Eczema Area and Severity Score %BSA=Body surface area %IGA=Investigator Global Assessment
reported side effects included stinging, redness and itching. Studies used different means of measuring effectiveness, such as SCORAD (Scoring Atopic Dermatitis Index), EASI (Eczema Area and Severity Score), BSA (Body surface area) and IGA (Investigator Global Assessment). In general, studies with longer follow-up period (2–3 months) showed improvement in severity scores and the size of area affected.

**Conclusions** Diluted sodium hypochlorite baths twice or three times weekly used as an adjunctive treatment of moderate to severe AD may have a role in decreasing clinical severity by reducing the EASI scores and BSA affected. Larger prospective controlled studies with longer follow-ups are needed to confirm the beneficial effect of hypochlorite on dermatitis and evaluate the effect on bacterial colonisation.

**Purpose of study** Medical emergencies can happen anywhere including public places or healthcare practices. Common paediatric conditions such as congenital heart disease, prematurity, or asthma can increase the risk of medical emergencies in the outpatient setting. To manage these emergencies, medical staff and providers should be aware of how to prevent these situations and respond promptly and appropriately. A three-element approach: Prevention, Preparation, and Appropriate Action, is the key for improvement and to increase medical staff and paediatric providers confidence and comfort level during medical emergencies in the outpatient setting.

**Methods used** A 12-question cross-sectional survey of outpatient paediatric faculty and residents, nurse practitioners, nurses and medical health technicians at the Ambulatory Care Centre (ACC) was assessed using an anonymous survey (Qualtrics) prior to and after paediatric mock emergency training and education. Staff and providers completed separate surveys due to differences in level of training and roles. The surveys included assessing comfort level of recognising a patient in need of emergent medical attention and performing Basic Life Support (BLS), basic and advanced airway management, emergency equipment and medication knowledge and crew crisis management during emergency situations.

**Summary of results** The pre-mock code survey was completed by 47 staff members and 16 providers, while the post-mock code survey was completed by 27 staff members and five providers. Preliminary results show an improvement in the self-perception of preparedness in a paediatric emergency situation among both ACC staff and providers. The survey revealed improvement in the ACC staff’s confidence in activating the emergency response system as well as locating emergency medical supplies. ACC providers showed an increased self-perception of confidence in airway management and leading a paediatric code.

**Conclusions** This preliminary study reveals a need for both emergency preparedness training and education and improvement of emergency medical management in the outpatient setting. Given the variation of providers and staff on a daily basis, monthly paediatric mock codes and education may improve ACC’s emergency preparedness and ensure the best possible outcome in the event of a true paediatric emergency.
perceptions of paediatric residents who have completed procedural rotations.

**Methods used** All UCSF Fresno paediatrics residents in their 2nd and 3rd year of training were surveyed (24 residents in total). Each resident had completed 2 weeks of anesthesiology and 2 weeks of procedural hematology-oncology (HM) during their first year of training. Lumbar puncture (LP) and intubations were the procedures evaluated. Surveys were completed online or on paper, and data was des-identified for analysis.

Questions measured resident experience and self-reported confidence in performing and supervising the specified procedures as well as the impact of the procedural rotations.

**Summary of results** All 24 paediatric residents completed the survey. 67% of residents surveyed had not done LPs or intubations prior to residency, 92% of residents reported completing at least 10 LPs and 79% reported completing at least 10 intubations during their procedural rotations. All residents reported improved confidence in their ability to perform LPs, and 88% reported improved confidence in their ability to intubate after the procedural rotations. Similarly, 92% and 46% of residents reported improved confidence in supervising LPs and intubations, respectively. 92% of residents felt the procedural HM and 88% felt that the procedural anesthesiology rotations should be a mandatory part of paediatric residency training.

**Conclusions** Procedural rotations can improve paediatric resident confidence in performing and supervising lumbar punctures and intubations. These findings several months after the procedural rotation may suggest persistence of this effect beyond the immediate completion of the rotation. Procedural rotations were well received by paediatric residents who felt that they are an essential part of their paediatric residency training.

**Abstracts**

**COMMERCIAL SEXUAL EXPLOITATION OF CHILDREN: WHAT HEALTHCARE PROVIDERS DO (AND DON’T) KNOW**

MN Bauer*, J Magana. UC Davis Medical Centre, Sacramento, CA

10.1136/jim-2017-000663.374

**Purpose of study** Sex trafficking is a global phenomenon, with 300,000 American children estimated to be at risk for commercial sexual exploitation (CSEC) each year. These children interface with the healthcare system with some regularity. Distressingly, most healthcare providers lack the training and expertise to identify, treat, and advocate for this uniquely vulnerable population. Our study sought to determine whether a short workshop for health professionals and medical trainees could increase participants’ ability and confidence in identifying and treating victims of CSEC.

**Methods used** We organised a 1.5 hour workshop on the topic of CSEC, consisting of two short lectures and an interactive panel discussion. Attendees included physicians, nurses, medical students, and social workers. Participants were given pre- and post-workshop surveys with nine questions that tested their knowledge of sex trafficking and personal confidence in screening and treating victims. Data was analysed for differences in pre- and post-workshop survey answers to determine whether the workshop had affected participants’ levels of knowledge and comfort with the content. This study was approved by our university’s IRB.

**Summary of results** A total of 50 pre- and post-workshop surveys were returned and analysed. Pre- and post-workshop results for 8 of the 9 questions were statistically significant (p<0.01). Before the workshop the majority (98%) of providers reported low confidence in interacting with CSEC victims. After the workshop participants reported increased comfort identifying CSEC risk factors (92% post vs 40% pre), interviewing patients (75% post vs 26% pre), knowing who to call (82% post vs 39% pre), and outlining the steps to take when victims are identified (91% post vs 13%). Participants were able to identify more warning signs of CSEC after the workshop (average 5.2 correctly identified warning signs post-workshop vs 2.2 pre-workshop). Demographic data were also analysed, with participants tending toward females (84%) in Paediatrics (54%).

**Conclusions** CSEC is an important topic that healthcare providers feel uncomfortable identifying and treating. We show that a short intervention can increase healthcare provider knowledge base and comfort level in helping victims of this hidden crime.

**Behaviour and development II**

**Concurrent session**

Saturday, January 27, 2018
8:00 AM – 10:00 AM

**375 IN Utero exposure to maternal obesity programs offspring hyperphagia and obesity**

1&2CJ Dickerson*, 2&3Pr Allahverdian, 1&4A Eisaghanian, 1M Ferrini, 2M Desai, 2M Ross. 3Charles R. Drew University of Medicine and Science, Los Angeles, CA; 2LABioMed at Harbor-UCLA Med Ctr, Torrance, CA; 4University of California Los Angeles, Los Angeles, CA

10.1136/jim-2017-000663.375

**Purpose of study** A primary cause of the global obesity epidemic is attributable to programming effects of the in utero nutrient environment. Maternal obesity (MO) increases the risk of offspring obesity due in part to altered development of appetite regulatory neurons in hypothalamic arcuate nucleus (ARC). The ARC contains two populations of neurons with opposing actions on food intake: ARC orexigenic (appetite; NPY/AgRP) and ARC anorexigenic (satiety; POMC). We hypothesised that MO impacts fetal hypothalamic ARC development, resulting in an increase in appetite versus satiety neurons, and hence profoundly enhancing food intake and propensity for obesity.

**Methods used** Non-pregnant female mice were fed a 10% Kcal diet (control) or a high fat 45% Kcal diet to induce obesity (MO) prior to mating. Mice were mated, diets continued throughout pregnancy and lactation, and all mice weaned to 10% Kcal diet. Phenotype of the offspring was characterised, and brains were collected from 1-day-old newborn and 12 month old adult offspring, immunostained and quantified for ARC POMC/NPY neuronal expression. Differences between groups were analysed using repeated ANOVA and unpaired t-test.

**Summary of results** MO male offspring were heavier at birth (1.53±0.09 vs 1.31±0.01 g, p<0.05) and continued to exhibit increased adult body weight (12 months; 50.2±2.5 vs...
40.9±2.6 g, p<0.05, p<0.01) and body fat (24.3±1.8 vs 16.3%±1.9%, p<0.001). When specific neuronal counts were performed of the ARC of adult males, MO offspring demonstrated a significant reduction in the total ARC neuronal count. Most importantly, the ratio of satiety (POMC) to appetite (NPY) neurons was significantly reduced in the MO adult offspring (6.8±0.6 vs 10.2±0.8, p<0.05).

Conclusions MO and HF diet programs the structure and function of the hypothalamic ARC appetite/satiety regulatory centre, reducing the ARC neuronal population, and significantly decreasing the satiety/appetite neuronal ratio resulting in increased food intake and development of obesity.

Reducing teen pregnancy through access to contraceptives and information in Brewster, Washington

S Noorbakhsh*, University of Washington, Mill Creek, WA
10.1136/jim-2017-000663.376

Purpose of study Teen pregnancy is a widespread social issue that is associated with negative life outcomes for both the teen mother and her child. Okanogan County, a rural, agriculture-based region in North Central Washington, has the fifth-highest teen birth rate in the state, with 56 teen births per 1000 females age 15–19. This project aimed to reduce teen pregnancy by providing access to condoms and information cards in various anonymous locations in the towns of Brewster and Omak, within Okanogan County.

Methods used After examining the demographics of the region and speaking with members of the community, the idea of teen pregnancy reduction became a possible avenue for community improvement. Partnering with Room One (a nonprofit organisation providing social services to people in Okanogan County) and Okanogan Public Health, the idea of a condom distribution program was established. Literature on pregnancy prevention suggested that increasing access to contraceptives and information could help to improve sexual behaviours.

Summary of results Access to contraceptives and information was increased through a condom distribution program. Paper bags containing condoms and information cards were put in baskets, which were left mainly in bathrooms of clinics, as well as a gym and a market, to allow people to take them freely and anonymously. This project became possible with the partnership developed between Room One and Okanogan Public Health, as Room One took responsibility for providing information cards and coordinating the supply of bags while Okanogan Public Health provided condoms.

Conclusions The strength of this project is that people will be able to acquire contraceptives privately, which can be critical in the setting of a small town. The first round of distribution was successful, with distributors and the community partners being hopeful about the potential of the project to reduce teen pregnancy. The main challenge of this project was finding appropriate locations to place baskets, where teens would be effectively targeted. Room One and Okanogan Public Health will carry on the project in the future. More distribution sites can be found using a similar anonymous distribution model. Ideally, condom distribution would take place in schools where teens are most likely to be targeted and benefits would be greatest.

Abstract 377 Table 1

<table>
<thead>
<tr>
<th></th>
<th>PA</th>
<th>SRC</th>
<th>ANS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Predictors</strong></td>
<td>R²%</td>
<td>R²Δ</td>
<td>R²%</td>
</tr>
<tr>
<td>1. Age, Sex</td>
<td>12</td>
<td>0.06</td>
<td>25</td>
</tr>
<tr>
<td>2. SES</td>
<td>21</td>
<td>&lt;0.01</td>
<td>37</td>
</tr>
<tr>
<td>3. EF Composite</td>
<td>45</td>
<td>&lt;0.001</td>
<td>49</td>
</tr>
</tbody>
</table>

Contribution of executive function to early academic skills in preterm and full term preschoolers

NA Heller*, IM Loe. Stanford University School of Medicine, Palo Alto, CA
10.1136/jim-2017-000663.377

Purpose of study Executive function (EF), cognitive skills used to regulate and plan behaviour, has been linked to academic achievement in school age children. Less is known about the relationships between EF and early academic skills at preschool age. Preterm (PT) children are high risk for EF and academic difficulties. Aims: To evaluate 1) differences between PT and full term (FT) preschoolers on early academic and EF measures and 2) contributions of EF to early academic skills, including early literacy, overall school readiness, and early math.

Methods used PT (n=52) and FT (n=44) children age 4–5 year (mean 4.8) had no significant differences for age, sex, race, or ethnicity; PT had lower SES. Children completed an EF battery, measures of phonologic awareness (PA) from the Test of Preschool Early Literacy, school readiness (composite score, SRC) from the Bracken, and early math from an approximate number system task (total correct, ANS). The ANS is a cognitive system that allows estimation of the magnitude of a group; ANS precision has been linked to math achievement. Parents completed standardised ratings of EF (Behaviour Rating Inventory of EF-Preschool) and functional presacademics (Adaptive Behaviour Assessment System). ANCOVA evaluated group differences in EF and academic outcomes covarying for SES. Hierarchical linear regression models of the entire sample predicted to academic outcomes of PA, SRC, and ANS. Predictors included age, sex, race, ethnicity, SES and EF composite derived from factor analysis.

Summary of results PT group had significantly poorer EF and academic outcomes than FT. Linear regression models predicting to academic outcomes accounted for significant amounts of variance in PA, R²=45%; SRC, R²=49%; and ANS, R²=31%; all p<0.001. EF and SES were significant predictors of all 3 outcomes (table 1).

Conclusions EF may be a target for intervention in both FT and PT preschoolers, especially given the association between EF and early academic skills in multiple domains. Paediatricians should monitor EF and academic skills in preschoolers, especially those born PT.
Purpose of study
Children with ADHD are high risk for poor educational outcomes. Few studies examine school readiness in such children. We used a comprehensive framework with 5 domains as defined by the National Education Goals Panel to compare school readiness in preschoolers with and without ADHD.

Methods used
Participants
Children 4–5 years with ADHD diagnosis or high ADHD symptoms (T-score >60 on parent ratings; ADHD group, n=39) and without ADHD symptoms (Control, n=45). Groups did not differ in sex or race; age was higher and SES was lower in ADHD group. School readiness skills were assessed through direct testing and standardised parent questionnaires in 5 domains:

- Physical well–being and motor (ABAS, medical history),
- Social and emotional (CBCL, ABAS),
- Approaches to learning (BRIEF, executive function performance),
- Language development (ABAS, Test Of Preschool Early Literacy), and
- Cognition and general knowledge (IQ, Bracken).

Domain impairment was defined as score ≥1 SD from the mean on ≥1 measure within the domain. Overall school readiness was defined as impairment in ≤1 domain. Logistic regression predicting to overall readiness examined main effect of group and contributions of age, sex, SES, race, and ethnicity.

Summary of results
For 4 domains and overall school readiness, ADHD group proportions were significantly smaller than Control group (figure 1). In the regression model, ADHD group had significantly lower odds of overall readiness, OR:0.06, CI 0.02–0.22, p<0.001; demographic variables were not significant.

Conclusions
Preschoolers with/high-risk for ADHD are significantly less likely to demonstrate school readiness. These deficits are apparent as early as 4 years and extend beyond cognition and general knowledge (e.g., letters and numbers).

Purpose of study
The Wood River Valley is home to Sun Valley Ski Resort and other forms of world class outdoor recreation. Much of the community enjoys a highly active lifestyle. This includes children, who make up 30% of the population. Many community members are concerned that so few children wear helmets while riding their bicycles or using the skate parks. Research has shown increasing helmet use among children significantly decreases head injuries sustained within a community.

Methods used
After making observations in the clinic and throughout the community, it became clear that recreational safety was a significant concern. Meetings with a County Commissioner, and County and City Recreational Departments were then secured. The consensus from these meetings was to focus on increasing helmet use on bike paths and in skate parks. A review of literature on how to increase helmet use revealed that an educational campaign coupled with a helmet law would be the most effective intervention.

Summary of results
Educational materials were distributed to local recreational departments and posted along bike paths and in skate parks. Further meetings took place with local government to discuss how to implement a helmet law for children. Finally, educational presentations were planned in elementary schools for Spring 2018.

Conclusions
Strengths of the project include the implementation of an educational campaign, and the development of relationships with local government officials. Challenges still to be
addressed include implementing a helmet law. This will take time and more partnerships with law makers. The educational campaign has limitless potential. Many avenues exist to educate the public on proper helmet use. Ideally, the next steps is to start a longitudinal program that encourages children to wear proper safety equipment for a multitude of sports.

Case reports I

Concurrent session

Saturday, January 27, 2018
8:00 AM – 10:00 AM

380 RHEUMATIC FEVER AND GLOMERULONEPHRITIS: UNUSUAL CONCURRENT SEQUELAE OF GROUP A STREPTOCOCCAL INFECTION

R Natarajan*, A Galvi, K Dosani, C Luna, D Kas-Osoka. UNLV School of Medicine, Las Vegas, NV; Children’s Heart Centre of Nevada, Las Vegas, NV

Case Report

10 year old obese male, with history of sore throat 1 month ago, presented with bilateral thigh pain, right knee and ankle pain for 2 days. His vitals were normal except for systolic blood pressure was 115–125 mmHg. On exam he had tenderness, warmth, swelling of right knee and was limp. Healed pyoderma was seen over his chest and intergluteal cleft. Urinalysis had 3+blood and 50 RBC. Serum iron was 21 mg/dl. ESR and CRP were elevated to 129 mg/L and 216 mg/L respectively. Anti streptolysin O titer was elevated to 1422 IU/ml. Albumin was 3.3 g/dl. WBC count was 11,000/cu mm. Hemoglobin was 12.1 g/dl. BUN was 40 mg/dl. Creatinine was 1.5 mg/dl. C4 and C3 were normal. WBC count was elevated to 14.9 K/mm3 and haemoglobin was low at 8.6 g/dl with MCV 71.5 FL. Serum iron was 21 mg/dl. ESR and CRP were elevated to 129 mg/L and 216 mg/L respectively. Anti streptolysin O titer was elevated to 1422 IU/ml. Albumin was low at 2.7 g/dl. Hematuria and Hypertension were alluding to post streptococcal glomerulonephritis (PSGN).

A patient was treated with oral Penicillin for primary prophylaxis and IM benzathine penicillin 1,200,000 IU once every 10 days. He continued to have valvulitis, hematuria and elevated ASO titer and MCV 71.5 FL. Serum iron was 21 mg/dl. ESR and CRP were elevated to 129 mg/L and 216 mg/L respectively. Anti streptolysin O titer was elevated to 1422 IU/ml. Albumin was low at 2.7 g/dl. Hematuria and Hypertension were alluding to post streptococcal glomerulonephritis (PSGN).

EGK showed prolonged PR interval of 180 msec. Echocardiogram showed mild to moderate mitral regurgitation and trace aortic valve insufficiency. Our patient had 2 major (subclinical carditis, arthritis) and 2 minor (elevated ESR/CRP, proteinuria) criteria with evidence of preceding Group A Streptococcal infection. He meets revised 2015 Jones criteria for Acute Rheumatic Fever.

Patient was treated with oral Penicillin for primary prophylaxis and IM benzathine penicillin 1,200,000 IU once every month. He was treated with oral prednisone for 2 weeks, then switched to aspirin since renal ultrasound showed diffuse increased echogenicity. Two months after diagnosis, patient continued to have valvulitis, hematuria and elevated ASO titer of 1159 IU/ml. His skin lesions have resolved.

The concurrent presentation of two sequelae is rare as they have different pathophysiologic mechanisms. A literature review reported 9 patients in 4 decades with rheumatic fever and PSGN occurring after an intermittent period. But, there were only 2 case reports of both complications occurring simultaneously. This rare concurrence could be explained by a streptococcal strain with both nephritic and rheumatogenic potential. This case underlines the need for physicians to know the revised 2015 Jones criteria and to prescribe adequate prophylaxis.

381 A CASE OF MYCOBACTERIUM ABSCESSUS IN THE SETTING OF ADENOCARCINOMA OF THE LUNG

A Francis*, A Heidari, R Johnson. Kern Medical, David Geffen School of Medicine at UCLA, Bakersfield, CA

Purpose of study

Non-tuberculosis mycobacteria (NTM) are ubiquitous to the environment, but are usually found in water and soil sources. Mycobacterium abscessus, one of the most common NTM organisms, can cause a wide spectrum of disease processes, usually with an indolent course. Pulmonary pathology results in the formation of fibrocavitary lesions. This is a case of a patient with complex presentation of pulmonary M. abscessus infection in the context of mucinous adenocarcinoma resulting in mortality.

Methods used

Retrospective case study.

Summary of results

A 53-year-old Hispanic female presented with progressive dyspnea. Imaging revealed a right lower lobe infiltrate and bilateral intrapulmonary nodules. A single nodule in the right midlung zone measuring 3.5 × 2.1 cm also demonstrated cavitation. Work-up for possible infectious causes of the infiltrate showed a positive Interferon Release Gamma Assay (IGRA) with negative acid-fast bacilli (AFB) sputum smears; AFB culture later grew M. abscessus sensitive to amikacin and clarithromycin, and resistant to doxycycline and ciprofloxacin. Pathology of the biopsied nodule showed mucinous adenocarcinoma. Patient was started on chemotherapy, INH treatment for latent tuberculosis, and clarithromycin for M. abscessus. Six months after initial diagnosis, the patient presented again, this time appearing septic, with M. abscessus as the likely source, resulting in acute respiratory failure in the setting of worsening mucinous adenocarcinoma of the lung unresponsive to chemotherapy. The patient decompensated rapidly and continued to desaturate despite mechanical ventilation, eventually passing away.

Conclusions

This case illustrates the potential for pathogenicity of M. abscessus, which usually follows an indolent course of pulmonary disease. However, in the setting of an immunocompromised host with malignant disease process, NTM has the potential to become fulminant and can be a cause of mortality. Recognition of this unusual and complex patient presentation can guide future diagnostic and therapeutic strategies.

382 A CASE OF SALMONELLOSIS CAUSED BY SECONDARY TRASMISSION OF SALMONELLA ENTERICA SSP. ARIZONA

A Francis*, A Heidari, Kern Medical, David Geffen School of Medicine at UCLA, Bakersfield, CA

Purpose of study

Non-typhoidal salmonella infections (NTSi) commonly present as gastroenteritis. Salmonella enterica ssp. arizonae rarely causes NTSi in humans, but pathogenesis can occur in immunocompromised patients. It is commonly transmitted by contact with reptile vectors. This is a case of a patient with salmonella sepsis in the context of immunocompromise due to treatment of metastatic breast carcinoma.

Methods used

Retrospective case study.

Summary of results

This is a case of a 46-year-old Hispanic female with lobular carcinoma of the right breast oestrogen...
receptor/progesterone receptor (ER/PR) negative and human epidermal growth factor receptor 2 (Her 2) positive diagnosed a year prior. She was placed on neoadjuvant chemotherapy with Docetaxel/Carboplatin/Trastuzumab and underwent lumpectomy. She found to have brain metastasis so she underwent radiation therapy, and was started on dexamethasone and continued on Trastuzumab.

She presented to the emergency department with abdominal pain and diarrhoea. The patient was tachypneic and hypotensive. Preliminary lab work demonstrated left shift with 64% bands. Blood culture demonstrated growth of gram negative rods resembling enterics so the patient was admitted for sepsis secondary to salmonella bacteremia. Final blood and stool cultures identified Salmonella enterica ssp. arizonae, both with sensitivity to Ampicillin, Trimethoprim/Sulfamethoxazole, Ceftriaxone, and Levofloxacin.

Further questioning revealed her daughter was in school fair two weeks prior with exposure to turtles resulting in indirect transmission. After patient demonstrated negative blood cultures, she was discharged on Ciprofloxacin treatment for four weeks.

Conclusions This case illustrates the rare presentation of infection with S. arizonae via secondary transmission through interaction with a contact exposed to infected vector.

Discussion Herpesvirus infections can cause cerebral vascular remodelling, occlusion and ischemia leading to encephalopathy, seizures and stroke. Varicella infection-reactivation is associated with immunological status; particularly in neonates. This is the first paediatric case reported with CID and non-exposure varicella virus encephalitis associated with ischaemic strokes secondary to CNS fibromuscular dysplasia.

Conclusion In lymphopenic patients with mental status changes, it is important to put varicella on the differential diagnosis despite a lack of known exposure, or usual skin manifestations.

Purpose of study A persistent left superior vena cava (PLSVC) is the most common congenital anomaly of systemic venous drainage resulting from failure of involution of left anterior cardinal vein. It’s prevalence is 0.3% of the general population and 3%-10% in population with congenital heart disease (CHD). Co-existent right superior vena cava is found in 80%-90% of population with PLSVC. In this particular clinical vignette, PLSVC was found as an incidental finding on cardiac imaging during evaluation for heart failure.

Methods used Retrospective case report.

Summary 41-year-old African-American male with history of heart failure presented with anasarca. Initial presentation was consistent with heart failure exacerbation and cardiorenal syndrome. Transthoracic Echocardiography (TTE) was consistent with ejection fraction of 15%-20%, left ventricle trabeculae non compaction, prominent and dilated coronary sinus raising concerns for persistent LSVC which was confirmed on transesophageal echocardiography. Right heart catheterisation demonstrated cardiogenic shock with elevated pulmonary capillary wedge pressures (PCWP) at 65 mm Hg. Patient was subsequently treated with dobutamine and intravenous diuretics with improvement in PCWP to 31 mmHg. Patient was subsequently discharged on medical therapy with follow up for consideration for ICD placement versus cardiac transplant.

Conclusion Haemodynamic effects of PSLVC depends if the it drains into into right atrium via coronary sinus as in this patient or into left atrium leading to right to left shunt usually associated with cyanosis, paradoxical embolism. Important considerations include congenital heart defects, changes in electrophysiological properties of heart predisposing to arrhythmias, challenges posed during placement of central venous catheter device, cardiopulmonary bypass, Implantable cardioverter defibrillator (ICD) and cardiac transplant as in this patient.
A LARGE SIGNIFICANT AMOUNT OF FERRITIN

M Abdelmisseh*, H Chahine, B Shoua. Kern Medical, Bakersfield, CA

Purpose of study Diagnosis of Hemophagocytic lymphohistiocytosis.

Summary of results A 40-year-old Male without any past medical history was admitted to the hospital for evaluation of possible Non-Hodgkin Lymphoma since the patient has been having fever, chills, night sweats, weight loss and palpable unilat-eral supraclavicular lymph nodes on physical exam for a 3 months duration. Upon admission, the patient’s initial vital signs were significant for fever of 102.1 F, tachycardia of 146 beats per minute. Initial blood workup was significant for Haemoglobin of 10.2, Hematocrit of 30 and MCV of 79.3 and acute kidney injury with BUN of 51 and Creatinine of 3.130, LDH of 1360 and Hyponatremia of 127 without any neurological symptoms. Further workup of the microcytic anaemia included ferritin, iron levels, and TIBC. Iron levels and TIBC were normal, however, Ferritin levels were significantly elevated to 105,911.7, which was greater than any acute phase reactant levels. Researching the literature suggested possible diagnosis of Hemophagocytic lymphohistiocytosis (HLH), in the setting of hematologic malignancy.

HLH is a syndrome of excessive inflammation and tissue destruction due to abnormal immune activation and excessive inflammation, and it is usually triggered by underlying hematologic malignancy, as an Acquired HLH.

We were able to diagnose Acquired HLH based on fulfilling 5 of the 8 diagnostic criteria: fever $\geq 38.5^\circ$C, Hypertriglyceridemia of 311 (which is greater than 265), anaemia of Hb/Hct 8.5/24.6 and thrombocytopenia of 32,000, Ferritin of 105,911.7 (which is greater than 3000) and hepatosplenomegaly.

The patient was then treated by high dose IV Dexametha-sone, supportive measure and R-CHOP for the underlying malignancy.

Conclusions Diagnosis of Acquired Hemophagocytic lympho-histiocytosis secondary to the underlying T-cell Non-Hodgkin Lymphoma.

HLH can mimic infection, which necessitate treatment.

Diagnosis of HLH is accomplished by meeting 5 of the 8 diagnostic criteria: fever $\geq 38.5^\circ$C, hypertriglyceridemia greater than 265, pancytopenia, Ferritin greater than 3000, hepatosplenomegaly, hemophagocytosis in bone marrow, spleen, lymph node, or liver, Low or absent NK cell activity, and elevated soluble CD25.

Treatment depends on the clinical presentation of the patient.

ANCHORING ANCHORING...AND GONE…

A Parekh*, A Prunes, S Ragland, A Heidari, E Cobos, R Johnson. Kern Medical, Bakersfield, CA

Background Anchoring bias is sticking with initial impressions or diagnosis even as new information becomes available. The purpose of this case report is to highlight anchoring bias with its implications in leading to delayed patient care and importance of physical exam.

Case 28-year-old Hispanic male with past medical history significant for uncontrolled Diabetes Mellitus type, multiple MRSA skin abscess infections, MRSA infective endocarditis (IE) with aortic valve vegetation, drug use with complaint of right foot pain of 2 weeks. Physical exam was noted for right foot ulcer with purulent discharge. Imaging revealed osteomyelitis and CXR positive for multiple bilateral pulmonary nodules of varying sizes. Since patient had history of IE with aortic valve vegetation and drug use, the lung findings were attributed to septic emboli. Patient had repeat TEE which did not show a change on his aortic valve mass (0.46 cm x 0.55 cm). Treatment for presumed IE was initiated. A week after admission, a physician performed a complete physical exam which was positive for left scrotal mass. Workup of scrotal mass led to left radical orchietomy and diagnosis of stage IIIb non-seminomatous germ cell cancer of the testis.

Discussion When diagnosed with IE one year prior he had completed 6 weeks antibiotic therapy ad followed closely with Infectious Disease and with Cardiology. Given patient’s history of drug use and IE, he was given the diagnosis of septic emboli with infective endocarditis without having fevers or bacteremia.
A complete physical exam was not performed one week into his hospitalisation. Given the recent hospitalizations, his testicular cancer could have been diagnosed earlier if a thorough physical exam would have been performed. This could have possibly led to the diagnosis prior to metastasis. **Conclusion** Anchoring bias can lead to delayed diagnosis and improper/delayed treatment for patient. Each emergency visit, it is important to use all information at hand and not anchor on a diagnosis. A working diagnosis should be formed with all available information and not just on the past medical history. A physical exam is just as important as history and laboratory values. Without anchoring bias and a complete physical exam, we as physicians can provide better patient care and prevent delaying in diagnosis.

**Conclusions** Establishment of Project HOPE sites in Haines, AK will hopefully result in a decrease in opioid related overdoses and deaths, as well as further lead to a positive change in attitudes and interactions between healthcare/emergency providers and those with opioid addictions. Given that the program was funded through the state, longevity and continuation through the next few years was not a concern, although communication and navigation through state bureaucracy provided to be very time consuming and tedious. Next steps include continued use of Project HOPE sites and establishment of needle-exchanges and Suboxone programs.

**Community health II**

**Concurrent session**

**Saturday, January 27, 2018**

8:00 AM – 10:00 AM

| 388 | HARM REDUCTION: PRIMARY AND SECONDARY PREVENTION THROUGH COMMUNITY OPIOID EDUCATION AND DISTRIBUTION OF NARCAN RESCUE KITS IN HAINES, ALASKA |
| M Holmberg* | University of Washington School of Medicine, Anchorage, AK, University of Washington School of Medicine, Seattle, WA |

10.1136/jim-2017-000663.388

**Purpose of study** This harm reduction project set out to implement primary and secondary prevention techniques through the distribution of Narcan Rescue Kits (NRK) via enrollment in the state-funded program, Project HOPE (Harm reduction, Opioid Prevention, and Education). Haines, AK is a predominantly white rural city with a population of 2,508, and recently has seen increased uses of Narcan via emergency medical services, fueling concern of growing opioid and heroin abuse. The opioid epidemic is one of the major national public health crises today, and rural America is not insulated from its damaging social and medical implications.

**Methods used** Community partner interviews were conducted with the Haines public health nurse and local newspaper editor to identify concern for opioid abuse. Literature review showed use of rescue medications and other community interventions resulting in decreased opioid related mortality rates. Project HOPE is an Overtake Response Program created by the Alaska Department of Health and Social Services in 2016 to enable distribution of NRKs and proactively address the opioid epidemic. Enrollment process through the state was identified and implemented.

**Summary of results** Partnerships were established with the Haines SEARHC Clinic, Haines Volunteer Fire Department, and Haines Police Department for NRK distribution sites through Project HOPE to unify efforts toward combating opioid abuse. NRKs include 2 units Intranasal Narcan 4 mg, drug facts, administration instructions, signs/symptoms of overdose, CPR face mask, gloves.

**Conclusions** Logistical and financial considerations due in part to the small population in Haines, AK. Despite these challenges, the project served to create a new campaign by synthesising available literature and resources into a reference source for the 3CCORP. The Clallam County public health officer used the literature review and resources to help inform discussions with a marketing agency working on a statewide public information campaign.

**389 STIGMA AS A BARRIER TO RECOVERY: LAYING THE GROUNDWORK FOR CHANGING PUBLIC ATTITUDES TOWARDS OPIOID ADDICTION IN SEQUIM, WA**

R Plant* | University of Washington School of Medicine, Seattle, WA |

10.1136/jim-2017-000663.389

**Purpose of study** Sequim, WA has an opioid-related death rate over 50% higher than the state. The 2017 Clallam County Community Health Assessment identified substance abuse as its highest health concern. There is no methadone therapy in the county and local chemical dependency counsellors favour abstinence-based detox. Public stigma and misconceptions towards opioid replacement therapy creates a psychosocial barrier for patients, interfering with treatment. Anti-stigma education aims to reduce this barrier and improve public attitudes to harm reduction strategies.

**Methods used** Clinic observations and community interviews showed prevalence of stigma towards opioid use disorder treatments. A literature search identified studies that explore this stigma and offered interventions and resources to enhance public anti-stigma campaigns. The use of stories and pictures that positively depict successfully treated addiction led to decreases in measured stigma. Partnering with the Jefferson and Clallam County health officers led to joining a meeting for the Three County Coordinated Opioid Response Project (3CCORP), a collaboration to improve opioid prescribing and treatment.

**Summary of results** The significance of stigma and the success of studies using positive depictions to reduce stigma were presented at the 3CCORP meeting, leading to interest in pursuing a public education campaign. A condensed summary of intervention evidence along with campaign planning resources was provided to the 3CCORP. The Clallam County public health officer used the literature review and resources to help inform discussions with a marketing agency working on a statewide public information campaign.

**Conclusions** Changing public stigma towards substance use disorder is an arduous but necessary task for improving psychosocial barriers to treatment. There is no full, evidence based anti-stigma campaign in the literature to follow step by step. Instead, this project sought to create a new campaign by synthesising available literature and resources into a reference source for the 3CCORP. Review of the resources provided can encourage more ‘buy in’ from members of the 3CCORP to fund an anti-stigma campaign. These resources may assist further collaboration between local public health and a statewide public information campaign.
UTILITY OF VIDEO EDUCATION FOR EXPANSION OF UPDATED ASIAN AMERICAN DIABETES SCREENING GUIDELINES

1BJ Nguyen*, 1N Mac, 1A Faigl, 1M Araneta, 2UCSD, San Diego, CA; 3University of Notre Dame Sydney, Australia; 4UCSD, La Jolla, CA

10.1136/jim-2017-000663.390

Purpose of study The purpose of this study was to report the efficacy and utility of video education of updated screening guidelines by the American Diabetes Association (ADA) for Asian Americans (AA).

Methods used A comprehensive video was created in collaboration with an online science illustrator that contained the updated diabetic screening guidelines of the ADA for AA and the background and reasoning behind the BMI threshold shift from 25 to 23 for AA. A Likert rating survey assessed viewers' demographics and knowledge before and after video intervention, and a paired t-test assessed statistical significance.

Summary of results This study included 136 participants (64 M, 72 F) mean age 27.8 years. Race and ethnicity of respondents included Asian (72.1%), Caucasian (11.8%), Hispanic/Latino (12.5%), Black/African American (2.9%), and Native American (1%). Average height (1.67 m), weight (66.8 kg), and BMI (23.9) were assessed. 80.8% of respondents were non-diabetic, 6.6% pre-diabetic, and 12.5% unsure. Highest education included high school (5.9%), some college (26.5%), college (29.4%), masters (14.0%), and doctorates (24.3%).

Mean pre-video knowledge of general (3.73/5) and AA specific (2.35/5) diabetes screening guidelines were compared to post-video knowledge of general (4.07/5) and AA specific (4.07/5) guidelines. Paired t-test for both variables indicated statistically significant improvement in knowledge (p<0.0001 for both).

Respondents rated educational quality (4.65/5), information accessibility (4.57/5), and overall enjoyment (4.69/5). Furthermore, respondents were asked if they were likely to receive screening themselves (3.72/5) or recommend loved ones to receive screening (4.04/5) upon viewing the video.

Conclusions Video approach to updated ADA screening guidelines for the AA population is a viable method of improving knowledge of viewers, and at this time has garnered over 10,000 views. Given the increasing incidence of diabetes along with the low rates of diagnoses of AA, knowledge of early screening protocols by physicians serving AA populations as well as health literacy of AA to pursue an active role in screening is critical in preventing the chronic end stage manifestations of diabetes.

FEVER EDUCATION AND FREE THERMOMETERS FOR LOW-INCOME FAMILIES IN PULLMAN, WASHINGTON

N Rasmussen*, University of Washington, Seattle, WA

10.1136/jim-2017-000663.391

Purpose of study Located on The Palouse in Whitman County, Pullman, Washington is an agricultural community of 33,000, burdened with a 20% poverty level and high child mortality rate. Few people have or use thermometers when their children are sick. Providing fever education and free thermometers to low-income families will increase health literacy, encourage use of thermometers, and prompt timely treatment of serious illness in children.

Methods used Through community conversations and clinic observations it became evident that there is confusion as to what a fever is and most households don’t have or use a thermometer when their children are sick. After meeting with the Director of Whitman County Public Health, the CEO of Pullman Regional Hospital and the Executive Director of the Community Action Centre (CAC), a proposal was reached to give away free digital thermometers and fever education cards to low-income families through WIC, county food pantries, and the Palouse Free Clinic. Additionally, fever education cards will be given to new mothers at the hospital. A literature review showed 40% of parents do not use a thermometer when their children are sick and 2/3s of parents use visualisation or touch to determine if fever is present, usually inaccurately. Offering thermometers and educating parents leads to improved management of febrile children and reduces fever fears and misconceptions.

Summary of results This program was instituted by preparing a Fever Facts card with a fever log and procuring 900 donated thermometers from community groups. Coordination of the distribution was obtained by presentations to numerous county agencies, who accepted and supported the project enthusiastically. Countywide distribution began September, 2017.

Conclusions This program was successful in that the community was very receptive and Whitman County Public Health, the CAC and other community partners remain enthusiastic about its impact and have agreed to carry this forward year-to-year. Looking ahead, multiple local grant applications have been submitted for further procurement of thermometers. A pre-and post-test should be developed and given with the thermometers and fever education to determine further impact of the project.
volunteered for pictures. Peer educators subsequently branded themselves as ‘TeenWarriors4Change,’ and posted the pictures on social media sites popular with adolescents and adults.

Summary of results 10% of high school students surveyed self-identified as LGBT or ‘other’ non-traditional gender. 23% reported experiencing gender stereotypes ‘daily’ while 43% reported experienced gender stereotypes ‘sometimes.’ 71% felt pressured to conform to their gender stereotype. 48% of students felt that social media perpetuates gender stereotypes, and 33% of students felt that social media might perpetuate gender stereotypes. However, student-generated pictures revealed a much wider range of perceived stereotypes.

Conclusions Student peer educators can successfully pair with paediatric residents to design and implement a community health participatory action research project to raise local and global awareness of the effects of stereotypes on adolescents. At the same time, disadvantaged minority youth were exposed to health leadership opportunities in a field in which they are often underrepresented.

393 IMPACT OF URBAN OR RURAL LOCATION ON ACCESS TO THE COPPER INTRAUTERINE DEVICE FOR EMERGENCY CONTRACEPTION

S Infante*, K Lilja, E Micks. University of Washington, Seattle, WA

10.1136/jim-2017-000663.393

Purpose of study Nearly half of all U.S. pregnancies are unintended and remain a burden to many women. Post-coital (emergency) contraception (PCC) provides an opportunity to reduce the risk of pregnancy after intercourse. The copper intrauterine device (IUD), when placed within 5 days of unprotected intercourse, has been shown to be the most effective form of PCC. Despite this, a recent study sampling urban clinics found that only 23% of clinics offered the copper IUD and could place it within 5 days as PCC. Women in rural areas are less likely to have access to specialty clinics, and there are minimal data regarding access to PCC in rural areas. The aim of this study is to compare access to the copper IUD and other forms of PCC in rural and urban areas via a mystery shopper study.

Methods used A single caller surveyed rural and urban clinics in Washington. Clinics were identified using the HRSA 340B database and defined as urban or rural based on the Office of Management and Budget definition of metropolitan and micropolitan areas. The primary outcome was the proportion of urban versus rural clinics able to schedule copper IUD placement within 5 days. Proportions were compared using the chi square test. Ninety-seven urban and 97 rural clinics were needed to detect a 30% difference using a two-tailed alpha error of 0.05% and 80% power.

Summary of results We identified 1156 urban and 232 rural clinics. Both rural and urban clinics were randomised. Clinics with unrelated specialty services or those that served specific populations were excluded. Of the 194 clinics included there were 116 primary care, 28 family planning, 26 OB/GYN, and 24 multispecialty clinics. One hundred twenty-five clinics out of 194 provided the copper IUD. We found that 10/97 (10.3%) rural clinics and 19/97 (19.6%) of urban clinics were able to place the copper IUD within 5 days (p=0.07).

Conclusions A smaller proportion of rural clinics were able to place the copper IUD for PCC; however, this result was not statistically significant. Only 10.3% of rural and 19.6% of urban clinics were able to place the copper IUD as PCC suggesting an overall lack of access to the copper IUD as PCC. These findings support the need for further evaluation and education on access to the copper IUD as PCC.

394 IMPROVING ACCESS TO CONTRACEPTIVE SERVICES FOR INCARCERATED WOMEN IN KALISPELL, MONTANA

K Strandberg*. University of Washington School of Medicine, Spokane, WA

10.1136/jim-2017-000663.394

Purpose of study Kalispell is a city of approximately 23,000 and is located in the Flathead Valley in northwestern Montana. Behavioural health, including substance use and mental illness, is a major concern in the community. The county jail reports that over 90% of inmates have charges related to substance use, and the majority have underlying mental health issues. Unintended pregnancy is an ongoing public health issue, and appears to be connected with substance abuse. Incarcerated women represent an underserved population, the majority of which is uninsured or underinsured, lives in poverty, and has chronic health problems, all of which are barriers to accessing medical care.

Methods used Through clinical observations at Flathead Community Health Centre (CHC) and Flathead Family Planning (FFP) as well as through conversations with Flathead County Jail, it became evident that unintended pregnancy was a public health concern in Kalispell. A literature review was conducted in order to assess methods that had formerly been used to address contraception in female prison populations. This review found a general lack of access to reproductive health services for incarcerated women, and that long-acting reversible contraceptives (LARCs), including intrauterine devices (IUDs) and implants, are safe and feasible methods for preventing unintended pregnancy in a vulnerable population.

Summary of results A meeting was facilitated between the jail commander and several individuals from the CHC in order to discuss reproductive health education and services, and the demographic analysis and literature review were shared with the jail and CHC leadership. A brochure with information about contraceptive methods, especially LARCs, was created and will be placed in female housing areas, once approved by the state of Montana.

Conclusions The CHC and jail have already begun to collaborate to provide care to inmates for other medical problems, so it is feasible that this relationship can expand to include reproductive health services. Once these women return to the community, they can maintain continuity with familiar providers at the CHC as they continue to access these services. In the future, FFP could arrange a workshop on LARCs to improve contraceptive education for jail staff, and potentially one day provide reproductive counselling and services on-site.

395 WE FIT TOGETHER: A COMMUNITY CENTRED APPROACH TO REDUCING CHILDHOOD OBESITY IN EVANSTON, WYOMING

JL Mikelsen*. University of Washington School of Medicine, Seattle, WA

10.1136/jim-2017-000663.395

Purpose of study To the copper IUD as PCC.
Purpose of study We FIT Together (WFT) is a multi-faceted community approach to reduce childhood obesity in Evanston, Wyoming. Evanston is home to 12,090 residents, 30% of which are under 18 years of age. Evanston has little access to exercise opportunities and experiences long winters contributing to the high rate of physical inactivity. Uinta county, where Evanston resides, ranked 21st out of 23 in health outcomes. There are high rates of diabetes, heart disease, and adult and childhood obesity. Evanston has a need for a childhood obesity intervention.

Methods used Many childhood obesity interventions exist but are focused on a single group. Childhood obesity is complex and should be targeted by integrating interventions among children, parents, schools, and physicians. Two programs were designed to supplement the already existing health program provided by the school district. ‘Healthy Tip or Challenge of the Day’ is a method to provide more health education and ‘Classroom Based Exercise’ utilizes 5 min of class for short exercises that can decrease obesity and improve test scores and retention. A parent education program was developed to provide caregivers with the knowledge and resources needed to make educated choices regarding their child’s health. Lastly, physicians were urged to speak to their patients about healthy lifestyle choices, such as diet and exercise.

Summary of results WFT was successfully handed over to the community and will be presented in a community health town hall. The superintendent was provided with a literature review of childhood obesity programs, classroom exercises, and a calendar of healthy tips and challenges. Practitioners responded positively to the request to talk to their patients about exercise and diet, one stating he would make it a part of every visit. Parents said WFT could improve the choices they make in regards to their child’s habits. Ultimately, the next step is the community working together to improve the health of children in Evanston, Wyoming.

Conclusions We FIT together provides health education to parents and children and adds more exercise into the student’s day in a way that could improve their health, mood, and retention of material. WFT forged a team of parents, educators, and physicians to work toward decreasing childhood obesity and making a difference in the health of these children.

Endocrinology and metabolism III

Concurrent session

Saturday, January 27, 2018

8:00 AM – 10:00 AM

396 THE STATSTRIP® GLUCOSE MONITOR PERFORMS ACCURATELY IN HYPERGLYCEMIC RANGES

1M Hatch*, 2M Green, 3S Gross, 2Y García-Ruiz, 2L Pyle, 4KJ Nadeau. 1Arizona College of Osteopathic Medicine – Midwestern University, Glendale, AZ; 2Children’s Hospital Colorado, Denver, CO; 3University of Colorado, Aurora, CO

10.1136/jim-2017-000663.396

Purpose of study Increased type 2 diabetes prevalence has increased the need for measuring blood sugar at high concentrations, like the hyperglycemic clamp, gold standard test of β-cell function. This test requires rapid, accurate and frequent measurement of blood glucose concentration to maintain glucose levels in a certain range. Currently, these measurements are made by the Yellow Springs Instrument (YSI), which, despite its accuracy, has several drawbacks.

Statstrip (SS), a handheld glucose monitor, requires less blood, is cheaper, faster, and lower maintenance compared to the YSI. Previously validated in euglycemic ranges, we aimed to verify the SS performance at higher glycemic concentrations.

Methods used IV blood samples were drawn every 5 min during two hyperglycemic clamp stages in youth and adults with prediabetes or early diabetes: stage 1, ~200 mg/dl (n=414) and stage 2, >450 mg/dl (n=332). Samples tested at the bedside in duplicate on the YSI2300 using serum, and in triplicate on the SS using whole blood. A subset of the samples (stage 1 n=71, stage 2 n=34) were also tested with the gold-standard UV Hexokinase method.

Summary of results SS performed with similar accuracy to YSI with a bias of ~2.0 mg/dl to stage 1 and ~11.6 mg/dl during stage 2. Both SS and YSI had negative biases compared to the UV Hexokinase method during stage 1 (-8.4, -3.4 mg/dl respectively) and stage 2 (-47.7, -25.7 mg/dl respectively). SS and YSI values had very tight correlation over both stages (r=0.95, r=0.92). Both methods had precise measurements, with paired readings having a mean difference of 0.8 ± 10.1 mg/dl (SS) and 0.7 ± 1.5 mg/dl (YSI) during stage 1 and 0.2 ± 21.7 mg/dl (SS) and 1.5 ± 18.2 mg/dl (YSI) during stage 2. Coefficient of individual agreement was above acceptable (1.1 at stage 1, 0.9 at stage 2).

Conclusions SS performed similarly to YSI during hyperglycemia. SS and YSI had similar variance compared to UV Hexokinase. The variance in duplicate SS readings can be improved by using the average of 2 readings and a 3rd reading when necessary, and it is still faster, cheaper, and requires less blood than a single YSI reading. SS is an acceptable alternative to the YSI in hyperglycemic ranges.
encounters and streamlining the processes for providers and staff. A systematic chart review of individual encounters was performed and analysed at three intervals: baseline, Cycle 1 and Cycle 2.

Summary of results 45% of the baseline cohort lacked depression screening documentation. Following Cycle 1 implementation, 28% were not screened. Cycle 1 deficits were identified to determine root causes and possible solutions implemented. Analysis following Cycle 2 validated the improvements as only ~10% of encounters were missing depression screenings. Depression was common, with 34% of subjects screening for clinically significant depressive symptoms in Cycle 1% and 29% in Cycle 2, underscoring the importance of screening in this patient population.

Conclusions A systematic approach combining EMR tools, education, and team coordination over multiple quality improvement cycles led to continuous improvement in depression screening documentation and could be implemented at other centres. Future studies examining follow-up care of positive screens, including rates of mental health referrals, are warranted.

Conclusions Older adults often come to their clinical visits with complicated personal and medical histories and thus, providing health care to this population can be challenging. Having a better understanding of the life experience of older adults may help with focusing on dimensions of their life that provide challenges and distress.

Abstracts

398 THE LIVED EXPERIENCE OF OLDER ADULTS WITH TYPE 2 DIABETES AND DIABETES DISTRESS

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Purpose of study An older, more diverse population and longer lifespans are major contributors to the anticipated tripling of diabetes prevalence by 2050. Diabetes distress affects up to 40% of people diagnosed with diabetes and may be a greater risk for older adults due to greater prevalence of comorbidities. The purpose of this phenomenological study was to describe how diabetes distress might affect older adults (age 65 years and older) with type 2 diabetes.

Methods used Interpretive phenomenology guided the research design and analysis. Interpretive interviews were designed to investigate the everyday health and general life experiences of living with type 2 diabetes and elevated diabetes distress.

Summary of results Most of the participants in this study experienced unsatisfactory relationships with their health care providers, anger about the lack of pre-diabetes education, fear, guilt, and loss and loneliness. The men in this study who are veterans were depressed, while the men and women participants from the community were not depressed.

Abstract 400 Table 1 Study results by racial and ethnic group

<table>
<thead>
<tr>
<th>Race</th>
<th>Hispanic (n=65)</th>
<th>Caucasian (n=31)</th>
<th>Native American (n=12)</th>
<th>Black (n=10)</th>
<th>Asian (n=5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>43.6±18.2</td>
<td>48.5±18.7</td>
<td>34.1±17.5</td>
<td>50.2±16.0</td>
<td>54.1±16.1</td>
</tr>
<tr>
<td>Female Sex</td>
<td>68%</td>
<td>68%</td>
<td>75%</td>
<td>50%</td>
<td>60%</td>
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<tr>
<td>BMI (kg/m²)</td>
<td>29.6±7.5</td>
<td>27.0±7.1</td>
<td>27.4±5.3</td>
<td>32.3±8.9</td>
<td>23.7±3.2</td>
</tr>
<tr>
<td>Pre-ATD ANC (×10³ per mm³)</td>
<td>5.2±3.1</td>
<td>5.0±2.6</td>
<td>5.1±3.6</td>
<td>5.5±3.1</td>
<td>6.0±5.5</td>
</tr>
<tr>
<td>Post-ATD ANC Nadir (×10³ per mm³)</td>
<td>3.8±1.8</td>
<td>4.4±2.3</td>
<td>8.4±7.0*</td>
<td>4.6±2.4</td>
<td>2.1±1.7</td>
</tr>
<tr>
<td>Δ ANC (×10³ per mm³)</td>
<td>−1.4±3.3</td>
<td>−0.6±3.3</td>
<td>3.6±5.1*</td>
<td>−0.9±4.1</td>
<td>−3.8±4.8</td>
</tr>
<tr>
<td>Pre- to Post-ATD Interval (days)</td>
<td>203±88</td>
<td>186±73</td>
<td>187±96</td>
<td>159±48</td>
<td>203±98</td>
</tr>
</tbody>
</table>

* p<0.001

400 THE ROLE OF RACE AND ETHNICITY IN THIONAMIDE-ASSOCIATED NEUTROPENIA

I Guthrie*, MD Ehrhart, J Bucheli, MR Burge. University of New Mexico Health Sciences Centre, Albuquerque, NM

Purpose of study Thionamide anti-thyroid drugs (ATD) are commonly used to treat autonomous thyrotoxicosis. Although the risk of agranulocytosis associated with these medications is small, a noticeable decline in absolute neutrophil count (ANC) is typically observed in most patients. Known risk factors for thionamide-associated neutropenia include BMI and dose, but the role of race and ethnicity in the pathogenesis of this potentially life-threatening side effect is not known. We hypothesise that there will be no effect of race or ethnicity on the change in ANC following initiation of thionamide therapy among adult patients with thyrotoxicosis.

Methods used Data from the Electronic Medical Record at UNM HSC were obtained using a query for the years 2000–2016. Inclusion criteria were the prescription of an ATD, an ANC recorded within 30 days of initiating ATD therapy (Pre-ATD), and an ANC recorded between 75 and 365 days after starting an ANC (Post-ATD). Patients taking other agents known to cause neutropenia were excluded. Patients were assigned to racial and ethnic groups as follows: Hispanic, Non-Hispanic Caucasian (NHC), Native American, Black, and Asian. The Post-ATD ANC was defined as the nadir ANC observed after the ATD was started. ‘Delta ANC’ was defined as [(Post-ATD ANC) – (Pre-ATD ANC)]. ANOVA analysis with Bonferroni-adjusted post hoc testing was employed.

Summary of results 123 adult patients met inclusion and exclusion criteria and were included in the analysis. No significant difference was found between any of the racial groups with regard to age, sex, BMI, Pre-ATD ANC, or the Pre- to Post-ATD ANC interval. The Native American group showed a significantly greater delta-ANC and a higher Post-ATD ANC as compared to the other groups (p<0.001, see table 1).
Conclusions In this cohort of New Mexicans with thyrotoxicosis, Native American race was protective against thionamide-induced neutropenia.

401 THYROID HORMONE RESISTANCE SYNDROME IN A WOMAN WITH WEIGHT GAIN AND FATIGUE
W Liu*, C Vanek. Oregon Health and Science University, Portland, OR
10.1136/jim-2017-000663.401

Background Thyroid hormone resistance syndrome (THRS) is characterised by reduced responsiveness of target organs to thyroid hormone (TH) due to mutations in TH. This germline mutation involves the THRB gene and occurs in 1:40 000 live births. Phenotype varies due to the density of TH receptor isoforms in different tissues. The most common presentations are goitre, tachycardia and abnormal bone age. Clinical Case A 41 year-old woman with depression and asthma presented with 30-pound weight gain in 2 months and was found to have abnormal thyroid function tests. Her symptoms were constipation, anxiety and irregular menses. Her medications included sertraline and albuterol inhaler with no biotin supplements. Patient has no family history of thyroid disease and physical examination was significant for regular heart rate and rhythm, a goitre and diminished bicep deep tendon reflexes symmetrically. Laboratory studies revealed a TSH of 3.60 (0.4–5.0) uIU/mL, free T4 of 4.2 (0.8–1.5) ng/dL, total T4 of 18.51 (5.1–14.1) ug/dL, total T3 of 241 (60–187) ng/dL, prolactin of 18 (3–20) ng/mL, alpha-subunit of 0.20 ng/mL, SHBG of 87 (30–135) nmol/L and negative heterophile antibody. Patient’s pituitary MRI was normal rendering TSH-secreting pituitary adenoma unlikely. Genetic testing was done and confirmed a mutation in codon 998 A>G of exon 9 of the THRB gene. Patient was diagnosed with THR syndrome and started on high dose levothyroxine. She had a slight improvement of her symptoms.

Discussion The patient presented with hypothyroid symptoms and elevated TSH and T4 levels. Differential diagnoses for elevated TSH and T4 levels include TSH-secretion pituitary adenoma, familial dysalbuminemia, laboratory interference with high dose oral biotin ingestion and heterophile antibodies, and THR syndrome. Thus, it is important to consider THR syndrome in a patient a concurrently elevated TSH and T4 levels in the setting of hypothyroid symptoms.

Conclusion Since the first case of THR syndrome was described in a 6 year old deaf-mute girl in 1967 by Dr Samuel Refetoff, more than 122 difference mutations in the THRB gene have been identified. Still, THR syndrome remains difficult to diagnose and treat.

402 A RARE CASE OF AKI RELATED TO UNDIAGNOSED SEVERE HYPOTHYROIDISM
M Talai-Shahir*, A Sandhu, G Petersen, A Targownik, ZH Chun. Kern Medical Hospital, Bakersfield, CA
10.1136/jim-2017-000663.402

Introduction Hypothyroidism is a common diagnosis in patients admitted to hospitals; however, kidney function is often overlooked in these patients (5). Thyroid hormones, T4 (thyroxine), and T3 (triiodothyroxine) not only affect almost every organ in the human body, but a hypothyroid state is specifically associated with significant disturbances in renal function (3). Severe hypothyroidism causes morphological changes in the glomeruli of the kidney (6). It has been noted that treatment of a hypothyroid state with appropriate thyroid hormone replacement has lead to resolution of acute kidney injury (AKI) (2). Here we report a case of severe undiagnosed hypothyroidism in a patient who presented with symptoms similar to decompensated congestive heart failure (CHF) and AKI.

Brief case presentation A 61 year-old Caucasian female with a past medical history of Hypertension who presents with a 3 day history of progressively worsening chest pain during exertion and at rest. Applying slight pressure to her chest and leaning forward alleviates her pain. Additionally, reports worsening generalised oedema over the past few months that has limited her mobility and caused her to quit her job as a janitor. She states that over the past few days the oedema around her eyes and lower extremities has worsened and she is no longer able to ambulate due to the pain and pressure. On physical exam patient was noted to have a hoarse voice, 3 + pitting oedema of bilateral upper and lower extremities, periorbital oedema, and thymomegaly as well as dyspnea on exertion. EKG showed prolonged QTc of 603, BNP of 14, BUN/Cr of 21/1.21 and GFR to 45 initially. She was started on Lasix with minimal improvement as well as an increase in her BUN/Cr to 25/1.53 and GFR to 35. Once TSH was found to be greater than 150 patient was diagnosed with hypothyroidism and started on Levothyroxine with significant improvement of symptoms. Resolution of chest pain, dyspnea, and difficulty ambulating.

403 PREOPERATIVE VITAMIN D DEFICIENCY PREDICTS POOR OUTCOMES AFTER THYROIDECTOMY
MD Ehrhart*, F Qadeer, E Alkhali, MR Burge. University of New Mexico Health Sciences Centre, Albuquerque, NM
10.1136/jim-2017-000663.403

Purpose of study Postoperative hypocalcemia is common after total thyroidectomy. A prior study from our institution suggests that preoperative Vitamin D deficiency (VDD) is associated with an increased risk of post-op hypocalcemia and a prolonged length of stay (LOS) after total thyroidectomy. We here expand that study by employing a large, multi-institutional, deidentified database of Electronic Health Records (EHR). We hypothesise that patients with pre-operative VDD are more likely to suffer from postoperative hypocalcemia and prolonged hospitalisation.

Methods used Using Cerner HealthFacts (a consolidated, relational database of EHR with >60 M patients), we identified 923 patients who underwent total or subtotal thyroidectomy and had Vitamin D data between 2010–2016 using ICD9 codes. Patients were excluded if they did not have a vitamin D level obtained within 12 months of surgery, or if they underwent parathyroidectomy or partial thyroidectomy. 421 patients who met criteria were analysed. Vitamin D deficiency was defined as a 25-hydroxyvitamin D level of less than 20 ng/mL and more likely to be Non-Hispanic Caucasian patients (p=0.03) as compared to Non-VDD patients (n=189). As
shown in the Table, total and corrected post-op calcium levels were lower in the VDD group. VDD patients had a longer LOS (p<0.05) and were more likely to require post-op intubation or tracheostomy (p<0.01).

Conclusions Pre-operative vitamin D deficiency is associated with an increased risk of postoperative hypocalcemia, airway instability, and prolonged LOS in patients receiving total thyroidectomy. Vitamin D replacement before thyroidectomy may improve postsurgical outcomes in VDD patients.

<table>
<thead>
<tr>
<th>Abstract 403 Table 1</th>
<th>Study results according to preoperative vitamin D status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non-VDD (n=232)</td>
</tr>
<tr>
<td>Age (years, n=421)</td>
<td>53.8±14.2</td>
</tr>
<tr>
<td>Female sex (n=421)</td>
<td>198</td>
</tr>
<tr>
<td>BMI (kg/m2, n=384)</td>
<td>31.9±7.4</td>
</tr>
<tr>
<td>Benign/Malignant</td>
<td>45/98</td>
</tr>
<tr>
<td>Total Calcium (mg/dl, n=40)</td>
<td>9.2±0.1</td>
</tr>
<tr>
<td>Corrected Calcium (mg/dl, n=63)</td>
<td>9.1±0.5</td>
</tr>
<tr>
<td>Ionised Calcium (mmol/l, n=131)</td>
<td>1.0±0.11</td>
</tr>
<tr>
<td>Phosphorus (mg/dl, n=138)</td>
<td>3.5±1.0</td>
</tr>
<tr>
<td>Parathyroid Hormone (pg/ml, n=180)</td>
<td>27±20</td>
</tr>
<tr>
<td>LOS (hours)</td>
<td>47.8 (42.2–54.6)</td>
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</tbody>
</table>

General internal medicine and ageing

Concurrent session

Saturday, January 27, 2018
8:00 AM – 10:00 AM

404 RECURRENT BACTERIAL MENINGITIS DUE TO RETAINED 54-YEAR-OLD URETERODURAL ANASTOMOSIS


10.1136/jim-2017-000663.404

Purpose of study Venticuloperitoneal (VP) shunts are the current treatment of choice for congenital hydrocephalus. Lumbo-rectal shunts were popular 1940–1960. Three shunt types were used to decompress via the genitourinary system; polyethylene, silicone rubber, and ureterodural anastomosis. Routine imaging cannot detect ureterodural anastomosis. Immediate complications were dehydration, electrolyte imbalances, infection, and the sacrifice of a functional kidney. Long term complication includes retrograde meningitis due to UTI. This is a functional ureterodural anastomosis in a patient with recurrent meningitis.

Methods used Retrospective case review.

Summary of results A 54 year-old male presented with urinary retention episodes, 54 years after placement. If suspected, CT myelogram can confirm its presence.

Conclusions This is a case of ureterodural anastomosis causing recurrent retrograde bacterial meningitis following urinary retention episodes, 54 years after placement. If suspected, CT myelogram can confirm its presence.

405 AN UNUSUAL PRESENTATION OF PLASMA CELL NEOPLASM

S Kaur*, A Heidari, E Cobos. Kern Medical, Bakersfield, CA

10.1136/jim-2017-000663.405

Purpose of study Multiple myeloma is characterised by proliferation of single clone of plasma cells. This proliferation can further invade the adjacent bone and can result in fractures and bone pain. Combinations of bortezomib or lenalidomide with dexamethasone have improved response rates and prolonged response duration compared to previous approaches. We are describing a case with extreme bone metastasis with neurological deficit.

Methods used Retrospective case study.

Summary of results A 52-year-old male presented to our hospital with 50 Lbs. weight loss over one year and 2 months of progressive weakness, worsening of back pain and sensory loss of his lower extremities. Two years prior to this he had twisted his back while lifting a heavy block of granite at work and started to have back pain. Over course of 7 months his pain progressively increased and he decided to seek medical attention. However due to lack of insurance no work up was completed.

Upon admission MRI showed multiple bone involvement with compression fractures of thoracic and lumbar spine with a paraspinal mass T6 to T7 with T5 cord indentation. Bone survey showed diffuse skeletal metastatic disease. Labs were significant for normocytic anaemia, leucopenia, with severe renal and noramal calcium levels. Subsequently IR guided biopsy of the paraspinal mass showed CD-138 positive, lambda monoclonal plasma cell neoplasm. He was started on Velcade/Dexamethasone/Revelimib therapy with improvement of his lower extremity weakness. He will be referred for potential stem cell transplant in the future.

Conclusions Clinician should be aware of diagnosis of multiple myeloma with neurological deficit as presenting symptoms.
Case report Erythema Multiforme (EM) is an immune-mediated condition hallmarked by classic target lesions caused by a variety of factors including medications, infections, malignancy, immunisation, and autoimmune conditions. Drugs often associated with EM include NSAIDs, sulfonamides and several antibiotics. We introduce a case of bupropion-induced Erythema Multiforme which has only been reported in 3 cases upon literature review.

Case presentation A 27 year old Caucasian female with a significant past medical history of depression, anxiety, alcohol abuse and multiple suicidal attempts presented to the emergency department for altered mental status and tremors after a suicidal attempt by overdosing on 30 tablets of 150 mg Bupropion and 30 tablets of 0.5 mg Alprazolam which were ingested with four 24-ounce beers two hours prior to arrival. Upon physical exam, she was noted to be agitated, tachycardic, tachypneic, and tremulous. She had a 7 cm by 5 cm well-demarcated target lesion on her right knee as well as numerous sharply demarcated red and pink macules on bilateral lower extremities. After the diagnosis of Erythema Multiforme was made, each possible aetiology was reviewed and finally concluded that this was connected to a very rare cause; bupropion induced EM. Laboratory findings revealed a white blood cell count of 21.4 × 10^3/μL and 88% segmented neutrophils. Electrocardiogram showed QT prolongation that was corrected with administration of 2 grams of Magnesium Sulfate. After fluid resuscitation and removing inciting factor, patient’s rash dramatically improved within 24 hours.

Discussion Bupropion is an antidepressant that inhibits dopamine and less substantially noradrenaline reuptake in neurons. In general, the antidepressant is well tolerated and started on patients at a dose of 150 mg every day with titration after 2–3 weeks.

Though Erythema Multiforme is a common skin manifestation associated with infections, malignancy, certain antibiotics and autoimmune conditions, only 0.1% of cases are linked with psychiatric medications and amongst those, bupropion has been linked to 3 total reported cases that are usually dose-dependent over weeks. We report a case of Erythema Multiforme with onset within hours of bupropion overdose.
Conclusions Residents need more education on pain management and end of life care discussions to make them feel adequate and better prepared.

Purpose of study Previous studies have identified subdomains of the 22-item Sinonasal Outcomes Test (SNOT-22), reflecting distinct and largely independent categories of CRS symptoms. However, no study has validated the subdomain structure of the SNOT-22. This study aims to validate the existence of underlying symptom subdomains of the SNOT-22 using confirmatory factor analysis (CFA) and to develop a subdomain model that practitioners and researchers can use to describe CRS symptomatology.

Methods used A total of 800 patients with CRS were included into this cross-sectional study (400 CRS patients from Boston, USA and 400 CRS patients from Reno, USA). Their SNOT-22 responses were analysed using exploratory factor analysis (EFA) to determine the number of symptom subdomains. A CFA was performed to develop a validated measurement model for the underlying SNOT-22 subdomains along with various tests of validity and goodness of fit.

Summary of results EFA demonstrated four distinct factors reflecting: sleep, nasal, otologic/facial pain, and emotional symptoms (Cronbach’s alpha, >0.7; Bartlett’s Test of Sphericity, p<0.001; Kaiser-Meyer-Olkin, >0.90), independent of geographic locale. The corresponding CFA measurement model demonstrated excellent measures of fit (Root Mean Square Error of Approximation, <0.06; Standardised Root Mean Square Residual, <0.08; Comparative Fit Index, >0.95; Tucker-Lewis Index, >0.95) and measures of convergent validity (Heterotrait-Monotrait Ratio, <0.85; Composite Reliability, >0.7), again independent of geographic locale.

Conclusions The use of four-subdomain structure for SNOT-22 (reflecting sleep, nasal, otologic/facial pain, and emotional symptoms of CRS) was validated as the most appropriate to calculate SNOT-22 subdomain scores for patients from different geographic regions using CFA.

Purpose of study Exposure to UV radiation leads to acute inflammatory responses and apoptosis in the skin but also long-term damages. These reactions can result in sunburn to the skin as well as an increased risk of skin cancer. A herbal plant, RZ, has been traditionally used to treat various inflammatory conditions such as canker sores and cervical ectropion, but is also used for its anti-inflammatory and antioxidant properties. We hypothesise that an acetone extract of RZ can be utilised to combat damages caused by UV radiation on JB6 p+ mouse epidermal cells.

Methods used Stock solution was prepared by extracting powder RZ with 100% acetone. An MTS (3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium) assay was used to measure cytotoxicity of JB6 p+cells after UV radiation and RZ treatment. Five thousand JB6 p+ cells were seeded in two 96-well plates (n=96) and incubated for 24 hours at 37°C. Half were subjected to UV exposure (25 mJ/cm2). The cells were then treated with various concentrations of RZ extract: 0.0125 mg/ml, 0.025 mg/ml, 0.05 mg/ml, 0.1 mg/ml, and 0.2 mg/ml. Positive and negative controls did not receive drug treatment. After 120 hours of UV exposure, cell viability was measured by MTS assay.

Summary of results The use of RZ extract in combination with UV radiation demonstrated a significant decrease in cell viability compared to control groups. The greatest decrease in cell viability was observed at 0.1 mg/ml of RZ extract.

Conclusions The herbal extract RZ prevented UV light-induced epidermal cell death.
incubation, the cell viability was determined. The results were analysed with a two-way ANOVA to evaluate the statistical significance of RZ treated cells compared to negative and positive control cells.

**Summary of results** Treatment using the acetone extract of RZ at the concentration of 0.0125 mg/ml, 0.025 mg/ml, 0.05 mg/ml, 0.1 mg/ml, and 0.2 mg/ml significantly increased cell proliferation (p<0.05). The increase in cell viability was dose-dependent and ranged from 8.31% to 91.99%. Additionally, UV radiation caused significant cytotoxicity to cells with a 21.96% decrease in cell proliferation in the positive control (p<0.05). However, RZ treated cells that were exposed to UV radiation displayed dose-dependent decrease in cytotoxicity (p<0.05), suggesting protective effects of RZ against UV radiation.

**Conclusions** The acetone extract of RZ promoted epidermal cell proliferation. In addition, it showed strong and significant protection against UV radiation-induced cell death. We hope to further test these effects in wound healing and in vivo mice models.

**411 PATHOLOGISTS’ TREATMENT RECOMMENDATIONS FOR MELANOCYTIC LESIONS**

M Jafry*, J Emore, L Reisch. University of Washington School of Medicine, Bellevue, WA

10.1136/jim-2017-000663.411

**Purpose of study** Recent studies have indicated that a majority of pathologists provide treatment suggestions during their evaluation of melanocytic skin lesions. This national study was designed to examine any variation present in treatment recommendations provided by pathologists in their interpretation of these melanocytic skin lesions.

**Methods used** 240 melanocytic skin biopsies were acquired and grouped into 5 sets of 48 cases each. A reference diagnosis and associated treatment recommendation was developed for each biopsy by consensus conference between three expert dermatopathologists. 187 pathologists from ten U.S. states were then randomised to independently interpret one of the five sets of cases. Pathologists reported their diagnoses and treatment recommendations into an online histology form, in addition to completing a baseline survey containing demographic questions and perceptions of their own treatment suggestion patterns.

**Summary of results** Pathologists had the highest accuracy in treatment recommendations for wholly benign nevi and invasive melanoma, with 81.6% and 86.1% of recommendations respectively matching the expert consensus recommendation. Their accuracy was significantly less for severely dysplastic nevi, with 50.9% of recommendations matching expert consensus. When examined, pathologists’ perceptions of their own treatment suggestion patterns and the actual treatment recommendation they provided were most concordant for invasive melanoma (85% concordance), and least concordant for atypical Spitz lesions (42% concordance). Finally, a multivariate analysis of pathologists’ demographics found those with a lower monthly caseload of melanocytic skin lesions or a greater number of years in practice were significantly less accurate in their treatment recommendations (p<0.01). Age, gender, and academic affiliation were found to have no significant impact on accuracy of treatment recommendations.

**Conclusions** There is significant variability present in treatment recommendations provided by pathologists for melanocytic skin lesions. The least variability was noted in lesions with available American Joint Committee on Cancer guidelines (benign lesions and invasive melanomas), potentially indicating benefits of further standardisation of diagnoses and treatment criteria, as well as those of more robust continuing medical education (CME) programs.

**Neonatology general V**

**Concurrent session**

**Saturday, January 27, 2018**

8:00 AM – 10:00 AM

**412 PATTERNS OF INJURY AND NEURODEVELOPMENTAL OUTCOMES IN A PROSPECTIVE COHORT OF NEONATAL ENCEPHALOPATHY**

AY Fang*, EE Rogers, D Xu, HC Glass, A Barkovich, DM Ferriero, D Gano. University of California, San Francisco, CA

10.1136/jim-2017-000663.412

**Purpose of study** To evaluate the relationship between therapeutic hypothermia (TH), pattern of injury on MRI, and neurodevelopmental outcome at 1–2 years in a prospective cohort of term infants with neonatal encephalopathy (NE).

**Methods used** Cohort study of infants >36 weeks with NE, prospectively imaged with MRI at a median of 4d (1993–2016), and treated with TH as standard of care since 2007. A blinded paediatric neuroradiologist classified scans as normal (N), watershed (WS) or basal ganglia/thalamus (BG/T) using our published scoring system. Outcome at 1–2 years was assessed with Bayley II or III, and a blinded neurologic exam. Bayley motor and cognitive scores <85 (>1 SD below the mean) were classified as abnormal. Motor outcome was also classified as abnormal in children with a functional motor deficit in whom Bayley testing was not performed. Propensity score nearest neighbour matching accounting for covariates that comprise eligibility for TH was used to estimate the average treatment effect of TH stratified by pattern of injury.

**Summary of results** Among 382 infants with NE, 180 (47%) received TH. TH was associated with decreased rates of MRI-detected brain injury (N: 61% vs 27%, WS: 28% vs 47%, BG/T: 12% vs 27%; p<0.001), and decreased severity of WS and BG/T injury (both p<0.001). Among 264 children evaluated at 1–2 years, 94 (37%) had an abnormal motor outcome, and 73 (28%) had an abnormal cognitive outcome. Stratified by pattern of injury, TH was independently associated with decreased probability of an abnormal motor outcome (N: −47%, 95% CI: −73 to −22%, p<0.001; WS: −41%, 95% CI: −60 to −22%, p<0.001; BG/T: −46%, 95% CI: −74 to −18%, p<0.001), and abnormal cognitive outcome (N: −22%, 95% CI: −38 to −5%, p=0.012; WS: −43%, 95% CI: −56 to −29%, p<0.001; BG/T: −49%, 95% CI: −69 to −29%, p<0.001).

**Conclusions** TH is associated with improved motor and cognitive outcomes in term infants with NE stratified by pattern of injury, suggesting that TH mediates improved outcomes by reducing the severity of injury and potentially reducing injury beyond the resolution of conventional MRI.
HYPOTHERMIA IMPAIRS HUMAN NEURAL STEM CELL PROLIFERATION AND MIGRATION IN VITRO

1J Law1, 2C Pernia, 3E Snyder. 1University of California, San Diego, Ch, 2Sanford Burnham Prebys Medical Discovery Institute, La Jolla, CA

Purpose of study Perinatal hypoxic ischaemic injury (HII) remains a devastating and common (~2-4/1000 live births) problem with serious life-long neurologic sequelae. Whole-body hypothermia (HT) has become standard-of-care in the treatment of HII although it is only marginally effective in moderate HII and totally ineffective in severe HII. We have compelling data supporting the efficacy and safety of an human neural stem cell (hNSC)-based intervention that salvages injured brain parenchyma leading to improved histologic and behavioural outcomes. Prior studies demonstrate that hNSCs used in a rodent model of HII can alter their fate to help reconstitute all damaged brain components as well as recruit host neural and non-neural repair elements. However, none of these studies evaluated hNSCs under hypothermic conditions, so it remains uncertain whether HT antagonises or complements hNSC function.

Methods used hNSCs were studied in vitro under normothermic (37°C) and hypothermic (33.3°C) conditions. Proliferation and scratch assay migration patterns were documented with direct microscopy and quantified using Image J analysis. Protein production was evaluated by Silver Stain, BCA analysis, immunofluorescence (IF), and Western Blot.

Summary of results There was a gross reduction in the number of surviving hypothermic vs normothermic hNSCs. Both proliferation and migration were significantly impaired by hypothermia (p=0.0006 and p<0.0001, respectively). The doubling time for normothermic cells was 5.2 days whereas that for hypothermic cells was extrapolated to be 21.1 days. High sensitivity Silver Staining revealed a decrease in the hypothermic proteomic profile, and decreased protein abundance was quantitatively confirmed by BCA analysis (p=0.0004). IF and Western blot data for hypothermic cells demonstrated a significant decrease in proliferating cell nuclear antigen (PCNA) which is a marker of cell division.

Conclusions Proliferation, migration, and protein production are all significantly impaired in hNSCs subjected to hypothermia. This may adversely affect their ultimate function of neuronal differentiation and support of host repair mechanisms, but whether this has a negative impact on outcomes remains to be tested in both in vitro and in vivo animal models of hypoxic brain injury.

SPLENCHNIC AND CEREBRAL TISSUE OXYGENATION IN PREMATUR INFANTS WITH DUCTAL-DEPENDENT CONGENITAL HEART DISEASE

1KL Braski*, 1B Reich, 1E maxon, 1K Weaver Lewis, 1M Baserga. 1University of Utah, Salt Lake City, UT, 2Intermountain Medical Centre, Salt Lake City, UT, 3Primary Children’s Hospital, Salt Lake City, UT

Purpose of study Premature infants with prostaglandin (PGE)-dependent congenital heart disease (CHD) are at significant risk for developing feeding intolerance and/or necrotizing enterocolitis (NEC). CDH can lower diastolic gut perfusion pressures and limit systemic oxygenated blood flow directly contributing to gastrointestinal hypoperfusion and ischemia, ultimately increasing the risk for NEC. Near Infrared Spectroscopy (NIRS) can be utilised to non-invasively assess regional oxygen saturations (rSO2) in the splanchnic and cerebral vascular beds of neonates. The objective of this study is to determine whether premature infants with PGE-dependent CHD receiving enteral feedings have impaired intestinal oxygenation compared to control infants.

Methods used Cerebral and splanchnic rSO2 were monitored using NIRS for 48 hours in 5 premature infants<37 weeks gestational age (GA) with PGE-dependent CHD receiving bolus enteral feedings. Five control infants (<37 weeks GA, no CHD or PDA) also on bolus enteral feedings were monitored for comparison. Average values were calculated for the periods immediately preceding, during, and after each feeding. Data was analysed using ANOVA and Tukey’s multiple comparisons test.

Summary of results The CHD group had a median GA of 34 (28-36) weeks with a mean birthweight of 1779±865 g. The Control group had a median GA of 28 (28-31) weeks and mean birth weight of 1474±239 g. The average baseline splanchnic rSO2 was significantly lower in the CHD group vs control infants (44±14 vs 52±8; p<0.01). There was also a significant difference in baseline cerebral rSO2 between the two groups (61.0±10 vs 69.3±5; p<0.001). The lower cerebral and splanchnic rSO2 in CHD infants persisted during both the feeding and post feeding time periods.

Conclusions These preliminary results demonstrate an overall significantly lower cerebral and splanchnic rSO2 in premature infants with PGE-dependent CHD compared to control infants. This data raises concerns regarding impaired oxygenation not only in the splanchnic vascular bed with the predisposition to develop NEC, but also for prolonged lower cerebral oxygenation in this population.

FACTORS CONTRIBUTING TO INCREASED LENGTH OF STAY IN CHILDREN’S HOSPITALS VS NON-CHILDREN’S HOSPITALS FOR NEONATAL HYPOXIC-ISCHAEMIC ENCEPHALOPATHY IN THE UNITED STATES IN 2012

1,N Doanvo*, 1,A Song, 1,2A Lakshmanan, 1,E Ho, 1,P Friedrich, 1,T Wu. 1Children’s Hospital Los Angeles, Los Angeles, CA, 2University of Southern California, Los Angeles, CA

Purpose of study To investigate the difference in length of stay (LOS) among children’s hospitals and non-children’s hospitals when caring for neonates with hypoxic-ischaemic encephalopathy (HIE). Since the establishment of therapeutic hypothermia (TH) as standard care for neonatal HIE, the LOS necessary for management of neonatal HIE has not been thoroughly investigated.

Methods used Neonates diagnosed with HIE was extracted from the 2012 national Healthcare Cost and Utilisation Project (HCUP) Kids’ Inpatient Database (KID) using ICD-9-CM codes. Patients that were transferred out from their care facility were excluded. Neonates with HIE from children’s and non-children’s hospitals were matched 1:3 using propensity scores matched for hypotension, persistent pulmonary hypertension of the newborn (PPHN), sepsis, and seizure and then LOS was modelled using linear regression.

Summary of results There were 8560 identified cases of neonatal HIE in 2012. After matching for severity of disease, 3440
cases were identified, of which, 26.97% were treated in a children’s hospital. The median length of stay (IQR) at a children’s hospital is 14 (8–27) days while the median LOS (IQR) at a non-children’s hospital is 6 (3–16) days. After adjusting for race, payment method, hospital region, hospital bedsize, hospital location, hypothermia therapy, mechanical ventilation, and intubation, we found that neonates with HIE cared for in a children’s hospital had a 7 day longer LOS than those in a non-children’s hospital (p<0.0001, 95% CI: 5 to 10). Intubation and mechanical ventilation (>96 hours) were associated with an increase in LOS of 6 days (p<0.0001, 95% CI: 4 to 8) and 14 days (p<0.0001, 95% CI: 12 to 17), respectively.

Conclusions After adjusting for various demographics, procedures, and illness severity, neonates with HIE had a significantly longer length of stay at a children’s hospital compared to a non-children’s hospital. More investigation is needed in order to understand the cause for the difference in length of stay at the two different types of facilities.


S Wang*, A Song, A Lakshmanan, P Friedlich, TA Stavroudis. Children’s Hospital Los Angeles, Pasadena, CA
10.1136/jim-2017-000663.416

Purpose of study To evaluate the outcomes (including length of stay and total charges), year-trends, and demographic characteristic differences among newborns (less than 24 hours of age) who received cardiopulmonary resuscitation (survivors vs non-survivors).

Methods used A retrospective study was conducted using the Kids’ Inpatient Database from 1997 to 2009. All cases of resuscitation were identified and extracted using ICD-9-CM codes 99.60 (cardiopulmonary resuscitation). Weighted variables were provided and applied in the analysis for national estimates. Bivariate tests were conducted to compare characteristics between survived and died (independent t-test and Chi-square test).

Summary of results 9151 newborns received cardiopulmonary resuscitation within 24 hours of age. (across years 1997–2009). 3516 (38.42%) were non-survivor. Mean number of survivors vs non-survivors significantly differed across different races (p<0.0001); Caucasian newborns constituted the majority of non-survivors, (45.54%). Hospital characteristics (Hospital region, Hospital bed size and Hospital location/teaching status) also differed between survivors and non-survivors (p<0.0001): cases managed in the West accounted for the majority part of the non-survivor population (35.79%). The median length of stay for survivors was 3 days and 1 day for non-survivors; median total charges was $6476 (IQR 60,487) for survivors; $12 013 (IQR 45,487), for non-survivors. The number of newborns who received CPR increased each year between 1997 to 2009, with a slightly decrease in 2003.

Conclusions Significant differences in demographic characteristics were found in survivors vs non-survivors of newborns who received CPR in the first 24 hours of age. Further evaluation of these trends are needed to improve target interventions and optimise the outcomes of these populations.

417 OXYGEN SATURATION INDEX CORRELATES WITH OXYGENATION INDEX IN NEONATES WITH RESPIRATORY DISTRESS

RN Kibe*, K Fletcher, H Muniraman, C Nicholas, R Ramanathan, M Biniwale. LAC+USC, Los Angeles, CA
10.1136/jim-2017-000663.417

Purpose of study To evaluate the correlation between oxygen saturation index (OSI) and oxygenation index (OI) in neonates with respiratory distress.

Methods used Retrospective data collected from arterial blood gases and noninvasive saturation monitoring over the first three days of NICU admission in neonates with respiratory distress. OSI and OI were calculated and correlation between OSI and OI was analysed using Pearson’s correlation.
Abstracts

Summary of results In 2016, 346 paired measurements were collected from 46 neonates, median of 6 samples per patient. Samples were correlated, and also stratified by gestational age, and source of PaO2 and SpO2 measurements (see table 1) In both term and preterm infants, the PaO2 correlated more strongly with post-ductal saturation. An OI of less than 15 (n=297, r=0.79) correlated with OSI more strongly than OI values greater than 15 (n=50, r=0.61) (see figure 1).

Conclusions In neonates with respiratory distress, OSI strongly correlated with FiO2 requirement, intensity of resuscitation, chest compressions, invasive ventilation at 24 hours of age between the two groups.

Abstract 417 Table 1

<table>
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<tr>
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<th>Patient population</th>
<th>PaO2 source</th>
<th>SpO2 source</th>
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<th>p value</th>
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<tr>
<td>348</td>
<td>Overall</td>
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418 EFFECT OF MATERNAL GENERAL ANAESTHESIA ON THE NEED FOR RESUSCITATION OF LARGER PRETERM INFANTS

1ER Wang, 1RN Kibe*, 2FB Wertheimer, 2R Ramanathan, 2M Biniwale. 1Keck School of Medicine of USC, Los Angeles, CA; 2Keck School of Medicine of USC, IAC+USC Medical Centre, and Children’s Hospital of Los Angeles, Los Angeles, CA

Purpose of study We assessed the influence of obstetric anesthetic technique using general (GA) vs regional (RA) on the need for neonatal resuscitation and short-term outcomes in larger preterm infants who required resuscitation in the delivery room (DR) at our institution.

Methods used Data on all infants with birth weight (BW) of ≥1500 g and with gestational age <37 weeks requiring positive pressure ventilation (PPV) and/or CPAP in the DR was prospectively collected in our neonatal intensive care unit database from January 2009 to December 2016. Data from infants who were delivered after maternal GA was compared with data from infants who were delivered after RA. Outcomes included FiO2 requirement, intensity of resuscitation (CPAP, PPV, intubation), chest compressions, invasive ventilation at 24 hours, and duration of ventilation.

Summary of results Out of 436 large preterm infants who received DR respiratory support, 348 were delivered after RA while 88 were delivered after GA. Maternal characteristics were similar between the two groups; however, infants in the GA group were more likely to be delivered for fetal indications compared to the RA group (54% vs 39%, p=0.013). Both groups had similar gestational ages (34 weeks) but the GA group had lower mean BW (2283 g vs 2484 g, p=0.012).

GA group infants were less likely to respond to CPAP alone (26.1% vs 52.7%, p<0.0001) and had increased FiO2 requirements (45.9% vs 33.5%, p<0.001). Appgar scores at 1 and 5 min were lower for the GA group vs RA group (p<0.001). There was a significant increase in chest compression rates in the GA group vs RA group (6.8% vs 1.1%, p<0.002). There was no significant difference in duration of non-invasive or invasive ventilation at 24 hours of age between the two groups.

Conclusions Preterm infants delivered following maternal GA require more intensive resuscitation in the DR compared to infants who are delivered after maternal RA, including higher FiO2, PPV beyond CPAP, and chest compressions. However, overall duration of non-invasive and invasive ventilation at 24 hours of age remains similar between the maternal GA and RA groups.

419 SIGNAL VARIATION IN TAG-BASED CSF FLOW IMAGING METHODS

1J Kwak*, 1M Barzage, 1T Wu, 2S Ponrathana, 1B Tamrazi, 1W Gibbs, 1M Nelson, 2J McComb, 2S Bluml. 1Children’s Hospital Los Angeles, Department of Paediatrics, Keck School of Medicine, University of Southern California, Los Angeles, CA; 2Children’s Hospital Los Angeles, Los Angeles, CA; 3Children’s Hospital of Los Angeles, Los Angeles, CA; 4Keck School of Medicine, University of Southern California, Los Angeles, CA

Purpose of study MRI has been utilised to study CSF flow in adults with and without CSF abnormalities. A limited amount of CSF flow research has been conducted in neonates, and no studies have used the most current MR technology. Time-Spatial Labelling Inversion Pulse (TimeSLIP) imaging uses arterial spin labelling to tag CSF and depict CSF flow. However, image interpretation is complicated. We propose a variation of TimeSLIP called Time Static Tagging And Mono-contrast Preservation (TimeSTAMP), which minimises the changing contrasts that render the images difficult to interpret. We acquired TimeSTAMP images in neurosurgical patients, and both TimeSLIP and TimeSTAMP in healthy subjects to evaluate their performance in the clinical setting and establish their contrast to noise ratios (CNR).

Methods used We performed our studies on clinical 3T MR scanners. Twenty cardiac-gated images were acquired using TimeSLIP using multiple delay times. For TimeSTAMP, twenty images were acquired at random time points at a nearly constant delay time. The images were then analysed by selecting four regions of interest (ROI) for comparison of image contrast. Voxels were drawn over the brainstem (parenchyma), fourth ventricle (tagged static CSF), and lateral ventricle (untagged static CSF). The measurements in these ROIs were used to compare voxel intensities.

Summary of results Comparison demonstrated TimeSTAMP had better CNR than TimeSLIP, suggesting TimeSTAMP may be easier to interpret. Quantification of voxel intensities of the ROIs showed untagged CSF has greater fluctuations in TimeSLIP data. The combination of T1 relaxation of CSF and the use of varying delay times leads to this trend in TimeSLIP data. Untagged CSF in TimeSTAMP has nearly constant delay time with less variable voxel intensities.

Conclusions TimeSTAMP provides better CNR compared to TimeSLIP and may be a superior imaging modality to observe CSF flow.
THE EFFECT OF INSULIN INFUSION ON MYOBLAST PROLIFERATION IN IUGR FETAL SHEEP

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10.1136/jim-2017-000663.421

Purpose of study The mechanisms that lead to reduced muscle mass in the IUGR fetus may include lower concentrations of insulin, a myogenic growth factor. In normally growing fetal sheep in vivo and in cultured myoblasts harvested from IUGR fetal sheep in vitro, exposure to increased insulin concentrations stimulates myoblast proliferation. We hypothesised that raising insulin concentrations by direct fetal infusion would increase myoblast proliferation in IUGR fetal sheep.

Methods used Jugular venous and femoral arterial catheters were placed into IUGR fetal sheep at 106 days gestation (75% of term). Baseline blood samples were obtained and fetuses received Humulin (INS, n=7) to reach an insulin infusion rate of 0.01 units/kg/hr or saline (SAL, n=4) for 14 days. Dextrose was infused to maintain euglycemia in the INS group. Mixed models ANOVA determined the effect of group (INS, SAL) and infusion day on fetal plasma insulin, glucose, and lactate concentrations and blood gas measurements. Tibialis anterior muscle was collected at the end of the study to compare the percent of myoblasts (Pax7+) undergoing proliferation (Ki-67+).

Summary of results Fetal plasma insulin concentrations were ~35% higher on days 3–11 compared to baseline in the INS group and 110% higher than SAL on day 11 (p<0.05). Glucose concentrations were ~13% lower on days 2–14 in the INS group compared to baseline (p<0.05), reflecting an imperfect glucose clamp. Plasma lactate and blood pH, PCO2, PO2, SO2, and O2 content were similar between INS and SAL, though fetal hematocrit was higher on day 14 compared to baseline in the INS group (p<0.05). There were no differences in the percent of Pax7+ myoblasts per total nuclei or Pax7+ myoblasts that were Ki-67+.

Conclusions Insulin infusion did not stimulate myoblast proliferation in the IUGR fetus. There was not a decline in oxygen or pH in the INS group; therefore, other factors in the IUGR fetus, such as decreased glucose, increased catecholamines and lower branched chain amino acid (BCAA) uptake and protein accretion rates compared to control (CON), without increased protein breakdown rates. IUGR muscle also has net release of alanine, suggesting an active glucose-alanine cycle where alanine is produced from carbons derived from pyruvate via glucose and nitrogen from BCAA. We aimed to identify mechanisms that cause alanine release by IUGR skeletal muscle.

Methods used Biceps femoris muscle from late gestation IUGR (n=10) and CON (n=8) fetal sheep was collected for mass spectrometry-based metabolomics analysis. RNA was isolated from muscle to measure expression of genes in BCAA catabolism, glycolysis, and the tricarboxylic acid (TCA) cycle using real-time PCR.

Summary of results Expression of the glycolytic enzymes PFK and PK was similar between groups, supporting normal rates of pyruvate production from glucose. Expression of LDH, which converts pyruvate to lactate, was 42% lower in IUGR (p<0.05). PDH, which decarboxylates pyruvate to acetyl CoA, was 39% lower in IUGR (p<0.05), and PDK, an inhibitor of PDH, was 2-fold higher (p<0.01). Pyruvate was 44% higher in IUGR (p<0.01). Expression of BCAT1, which transaminates BCAAs to their keto-acids, was 60% lower in IUGR (p<0.05), which parallels lower BCAA uptake. However, expression of BCKD, the enzyme that decarboxylates keto-acids, was maintained. TCA cycle intermediates oxaloacetate and α-ketoglutarate (α-KG) were 7% and 100% higher, respectively (p<0.05), and α-hydroxyglutarate, a breakdown product of α-KG, was 6-fold higher (p<0.05).

Conclusions Decreased expression of LDH and PDH, with associated increased pyruvate, indicate that pyruvate may be spared from oxidation and shunted into alanine production in IUGR muscle. BCAAs that enter the myofiber likely undergo transamination to support alanine production, as opposed to protein accretion. Keto-acids appear to undergo normal catabolism, leading to accumulation of TCA cycle intermediates and their breakdown products. The glucose-alanine cycle may be a survival mechanism to transport carbon and nitrogen from muscle to liver for gluconeogenesis and nitrogen disposal.

EVIDENCE FOR GLUCOSE-ALANINE CYCLE ACTIVATION IN IUGR FETAL SKELETAL MUSCLE


10.1136/jim-2017-000663.421

Purpose of study IUGR infants are born with reduced skeletal muscle mass, in part due to smaller myofiber area. In our sheep model of placent al insufficiency, IUGR fetal muscle has lower branched chain amino acid (BCAA) uptake and protein accretion rates compared to control (CON), without increased protein breakdown rates. IUGR muscle also has net release of alanine, suggesting an active glucose-alanine cycle where alanine is produced from carbons derived from pyruvate via glucose and nitrogen from BCAA. We aimed to identify mechanisms that cause alanine release by IUGR skeletal muscle.

Methods used Biceps femoris muscle from late gestation IUGR (n=10) and CON (n=8) fetal sheep was collected for mass spectrometry-based metabolomics analysis. RNA was isolated from muscle to measure expression of genes in BCAA catabolism, glycolysis, and the tricarboxylic acid (TCA) cycle using real-time PCR.

Summary of results Expression of the glycolytic enzymes PFK and PK was similar between groups, supporting normal rates of pyruvate production from glucose. Expression of LDH, which converts pyruvate to lactate, was 42% lower in IUGR (p<0.05). PDH, which decarboxylates pyruvate to acetyl CoA, was 39% lower in IUGR (p<0.05), and PDK, an inhibitor of PDH, was 2-fold higher (p<0.01). Pyruvate was 44% higher in IUGR (p<0.01). Expression of BCAT1, which transaminates BCAAs to their keto-acids, was 60% lower in IUGR (p<0.05), which parallels lower BCAA uptake. However, expression of BCKD, the enzyme that decarboxylates keto-acids, was maintained. TCA cycle intermediates oxaloacetate and α-ketoglutarate (α-KG) were 7% and 100% higher, respectively (p<0.05), and α-hydroxyglutarate, a breakdown product of α-KG, was 6-fold higher (p<0.05).

Conclusions Decreased expression of LDH and PDH, with associated increased pyruvate, indicate that pyruvate may be spared from oxidation and shunted into alanine production in IUGR muscle. BCAAs that enter the myofiber likely undergo transamination to support alanine production, as opposed to protein accretion. Keto-acids appear to undergo normal catabolism, leading to accumulation of TCA cycle intermediates and their breakdown products. The glucose-alanine cycle may be a survival mechanism to transport carbon and nitrogen from muscle to liver for gluconeogenesis and nitrogen disposal.

TREATMENT WITH PRAVASTATIN IMPROVES PREGNANCY OUTCOME AND PLACENTAL DEVELOPMENT IN HEME OXYGENASE-1-DEFICIENT MICE

A Tsai*, F Kalish, J Burgess, H Zhao, KM Casey, ML Druzin, RJ Wong, DK Stevenson. Stanford University School of Medicine, Stanford, CA

10.1136/jim-2017-000663.422

Purpose of study Pravastatin is currently being studied clinically for prevention of preeclampsia. Low expression of heme oxygenase-1 (HO-1) due to polymorphisms in the human HO-1 promoter region may cause impaired placental development resulting in intrauterine growth restriction (IUGR), preeclampsia, and recurrent miscarriages. We have shown that pregnant HO-1 heterozygous (HO-1±, Het) mice have abnormal placental development, with thinner spongiotrophoblast layers and reduced amino acids might impair myoblast proliferation during hyperinsulinemia. We speculate that addition of amino acid supply and/or correction of hypoxia and increased catecholamines will be needed to stimulate myoblast proliferation in the IUGR fetus as an approach to promoting growth.
Increased placental fatty acid transport protein expression following maternal nutrient restriction in the baboon

1S Chassen*, 1,3C Li, 1T Jansson, 1,3Ph Nathanial, 1TL Powell. 1University of Colorado, Aurora, CO; 2University of Wyoming, Laramie, WY; 3SW National Primate Research Centre, San Antonio, TX

Purpose of study Human intrauterine growth restriction (IUGR) is associated with changes in placental nutrient transport, including down-regulation of amino acid transport, believed to directly contribute to restricted fetal growth and its short- and long-term morbidity. Fatty acids (FA) are critical for normal fetal development and essential FA must be transferred from the mother; however, little is known about placental FA transport in IUGR. Unexpectedly, we recently demonstrated upregulation of placental FA transport proteins (FATP) in human IUGR and upregulation of placental FA binding proteins (FABP) in a baboon model of maternal nutrient restriction (MNR) resulting in IUGR. We hypothesised that placental FATP expression is increased in MNR pregnancies compared to control.

Methods used Pregnant baboons were fed control ad libitum or MNR diet (70% of control calories) from gestation day (GD) 30 (term is ~GD184). Placentas were collected at GD120 (control n=8; MNR n=9), GD140 (control n=6; MNR n=7) and GD167 (control n=5, MNR n=6), homogenised, and microvillous plasma membranes (MVM) isolated. Protein expression of FATP2, 4, and 6 was determined in MVM using Western blot. Statistical differences were assessed using student’s t-test.

Summary of results Placental and fetal weights at GD120 and GD140 were similar between groups. Placental (~10%, p=0.2) and fetal (~8%, p=0.1) weights trended lower at GD167 in MNR vs control. We found no significant difference between groups in FATP expression at GD120, FATP2 (+150%, p=0.006) and FATP6 (+236%, p=0.003) expression was increased in MNR MVM at GD140 vs control, and the significant FATP2 upregulation was sustained at GD167 in MNR (+110%, p=0.03).

Conclusions Maternal nutrient restriction in the baboon results in upregulation of placental FATP in late pregnancy. This aligns with our previous finding of increased MVM FATP expression in human IUGR, despite markedly different degrees of adiposity between human (15%) and baboon (5%) fetuses. These findings suggest an adaptive response to maintain delivery of fatty acids for brain growth during the final third of gestation when maximal fat accretion normally takes place.
Purpose of study | Idiopathic Pulmonary Fibrosis (IPF) is a progressive, incurable fibrotic disease that is restricted to the lung. We have identified a gain-of-function variant in the promoter of the lung gel-forming mucin gene MUC5B that is the strongest risk factor for developing IPF. Since MUC5B is a large glycoprotein that requires substantial post-translational modification and markers of Endoplasmic Reticulum (ER) stress have previously been associated with IPF, we hypothesised that the MUC5B gain-of-function variant is associated with ER stress in the IPF lung.

Methods used | Human lung tissue was obtained from formalin fixed, paraffin embedded samples by the NHLBI Lung Tissue Research Consortium (LTRC). The samples were selected based on disease (n=19) vs normal (n=24), and presence of the MUC5B promoter variant rs35705950. Samples were balanced by age and gender. Quantitative polymerase chain reactions (qPCR) were run from whole tissue extracted mRNA for ER stress genes (DDIT3, ATF6, XBP1, ERN1, EIF2AK3, and HSPA5).

Summary of results | qPCR of lung tissue demonstrated that IPF in comparison to controls is associated with enhanced ER stress gene expression for XBP1, ERN1, EIF2AK3, and HSPA5. Further analysis showed that the expression of XBP1, ERN1, and EIF2AK3 were correlated with expression of MUC5B. However, the MUC5B promoter variant rs35705950 was not significantly associated with expression of ER stress genes in IPF cases or controls. Immunohistochemical validation of these results is currently being conducted.

Conclusions | Our results confirm the previous studies that have demonstrated that IPF is associated with increased expression of ER stress genes. Moreover, among patients with IPF, we have found that expression of ER stress genes is associated with expression of MUC5B, suggesting that MUC5B may be driving cell stress in IPF. However, the gain-of-function MUC5B promoter variant was not associated with markers of ER stress in either IPF cases or controls. In aggregate, our findings indicate a potentially important relationship between expression of MUC5B and markers of ER stress in IPF.
between hospital discharge and transition to home monitoring (generally six weeks). Time to AKI was compared using multivariate Cox Proportional Hazards Models.

Summary of results Among the 82 subjects in the LC-MS group and 102 in the immunoassay group, there were no differences in gender, age, baseline renal function, or race. LC-MS based monitoring was associated with a 75% greater risk of AKI in unadjusted analysis (HR 1.78, 95% CI: 1.10 to 2.87) and after adjusting for age, sex, baseline renal function, and race (HR 1.65, 95% CI: 1.02 to 2.67).

Conclusions When using existing cut-points to monitor and titrate tacrolimus dosing, monitoring with LC-MS is associated with higher risk of AKI compared to immunoassay. While LC-MS reflects a more accurate measure of tacrolimus blood levels, established cut-points for tacrolimus dosing may need to be lowered to account for the increased risk of AKI.

**Abstract 429 CLOSTRIDIUM PERFRINGENS EMPYEMA IN A PATIENT WITH MANTLE CELL LYMPHOMA**

B Shoua*, K Galang, A Aboeed, A Heidari, A Munoz. Kern Medical, Bakersfield, CA

**Introduction** Clostridium species are anaerobic, gram-positive rods capable of forming endospores. Pleuropulmonary diseases caused by Clostridial infections are rare, but have a mortality rate of up to 30%. Older people are at greater risk of developing invasive infections, and the majority of reported cases of clostridial empyema have been attributed to iatrogenic trauma, invasive procedures or aspiration, although spontaneous Pleuropulmonary disease related to Clostridial species have been described in the medical literature.

**Case report** 59-year-old male recently diagnosed with GI mantle B-cell lymphoma complicated with bowel perforation requiring exploratory laparotomy and small bowel resection with incidental finding of bilateral pleural effusions on imaging. Subsequent right thoracenteresis yield pleural fluid with no organism on gram stain or culture and negative cytology, and grew Clostridium perfringens. He was started on Piperacillin/Tazobactam and later switched to Metronidazole and Amoxicillin. He was not a thoracic surgical candidate due to neutropenia and poor performance status. A right pigtail catheter was placed and the pleural fluid had no organisms, however he had been on antibiotics for 7 days. A week later, saline and t-PA were instilled into the chest tubes to improve the drainage. Repeated imaging showed improvement of the bilateral effusions and the patient was discharged home after the chest tubes were discontinued successfully.

**Conclusions** It would appear likely that our patient’s infection arose from his compromised GI tract. Whether this was from direct spread across the diaphragm or from hematogenous dissemination is not clear.

In an immunocompromised patient, the infection may have had more to do with intestinal damage than from any immunosuppressive effect. Also, we emphasise on the recommendations that patients with spontaneous clostridial infections be screened for cancer as supported by other reviews.

**Abstract 428 Figure 1** Time to first Kidney injury. Dashed line represents monitoring of tacrolimus with LC-MS and solid line represents monitoring of tacrolimus with immunoassay. Kidney injury is defined as doubling of baseline creatinine per RIFLE Criteria. Baseline creatinine is defined as median creatinine over the first six weeks after hospital discharge.

**Abstracts**

**Abstract 430 NF-KB MEDIATED RESPONSE TO HEPATOTOXICITY AND SUBSEQUENT PULMONARY INFLAMMATION**

J Sandoval*, S McKenna, N Guerrieri, O Castro, C Wright. University of Colorado Anschutz Medical Campus, Denver, CO

**Purpose of study** The use of acetaminophen (APAP) to ease low grade pain is ubiquitous, and drug induced liver injury due to APAP toxicity is common in the United States and is often fatal. The primary mechanism of injury is hepatocyte necrosis, secondary to formation of the toxic metabolite NAPQI. Interestingly, acute respiratory failure has been observed in the setting of APAP toxicity. However, the mechanisms underlying APAP induced pulmonary toxicity are unknown. The aim of this study is to use a murine model of APAP induced hepatotoxicity to study the underlying mechanisms that link hepatic failure to pulmonary inflammation.

**Methods used** Adult mice were exposed to APAP (280 mg/kg, IP; n=18). Liver injury was assessed with serum ALT and HMGB1 levels. Lung injury was determined by measuring total cell count differentials and protein content in BALF. Pulmonary expression of pro-inflammatory cytokines was assessed.
using RT-qPCR. Pulmonary NF-κB signalling was assessed by western blot for phosphorylated p65.

**Summary of results** As expected, APAP induced severe hepatotoxicity, indicated by significantly elevated ALT and HMGB1 levels at 8 and 24 hours of exposure. Consistent with injuries occurring first in the liver, pulmonary toxicity was noted at later time points. Specifically, at 24 hours of exposure, total cell counts in the BALF increased by 98% (p<0.05), and protein concentrations in the BALF were significantly elevated (p<0.05). Additionally, a significant increase in pulmonary expression of pro-inflammatory cytokines (IL1b, IL10, IL6, IP10, MCP1, p<0.05) was observed. As many of these markers are NF-κB regulated, we interrogated APAP induced pulmonary NF-κB activity. We noted degradation of NF-κB inhibitory proteins IkB-beta and IkB-alpha, as well as increased phosphorylated p65, indicating pulmonary NF-κB activation.

**Conclusions** Exposure to APAP induced hepatic necrosis and subsequent pulmonary inflammation. At later time points, the presence of phosphorylated p65 and elevated levels of inflammatory cytokines in pulmonary tissue may indicate that NF-κB activation is an underlying cause of pulmonary inflammation due to APAP induced hepatotoxicity. Future studies of the NF-κB signalling pathway may reveal potential therapeutic targets to prevent pulmonary injury associated with hepatic failure.

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**A CASE OF SARCOIDOSIS WITH SYMPTOMATIC PLEURAL EFFUSSION**

A Ammar, J Coleman*, R Garcia-Pacheco. Kern Medical, Bakersfield, CA

10.1136/jim-2017-000663.431

**Case report** Sarcoidosis is a disease of unknown origin that is most commonly associated with non-caseating granulomas. While these granulomas can be found in a wide variety of organ systems, there is a strong tendency for these granulomas to occur within the lungs. Sarcoidosis my initially present with cough, shortness of breath, wheezing, dyspnea on exertion as well as chest pain. Moreover these patients may also manifest extra-pulmonary symptoms including skin, and ocular involvement. However, the prevalence of pleural effusion in sarcoidosis is an uncommon finding. We present a case of a 40-year-old African American male with a 10-year history of sarcoidosis, which was consistent with the diagnosis of sarcoidosis, who presented to his primary care physician’s office with recent onset of fatigue, dyspnea on exertion and cough. A chest x-ray was performed and showed a new large right-sided pleural effusion, never seen on previous radiological studies. The patient subsequently underwent diagnostic and therapeutic thoracentesis which drained 1.5 litres of straw-coloured serous pleural fluid. He reported immediate symptomatic improvement of the pleural effusion. Chest x-ray and serology studies suggested an exudative effusion with a lymphocyte predominant cell count. Gram stain was negative, and cultures showed no growth. Furthermore, the patient recently tested negative for HIV and had a negative PPD skin test within the last 3 months. He returned to his primary care physician 2 months post thoracentesis stating that his symptoms have gradually returned. At that time a repeat chest x-ray confirmed the right sided pleural effusion had gradually re-accumulated. After repeating cultures on the initial specimen and reviewing the results, the decision was made to begin prednisone 60 mg daily for 3 months, with a taper. Over the next 7-10 days there was dramatic improvement in the patient’s symptoms. Three months later, after completion of his steroid course, he was symptom free and was back to his previous state of health. A repeat chest x-ray confirmed that no pleural effusion was present at that time. He has remained symptom-free for more than 6 months after completion of the prednisone therapy.

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**Adolescent medicine and general paediatrics IV**

**Concurrent session**

Saturday, January 27, 2018

10:15 AM – 12:00 PM

**432 OUTCOME OF CHILDREN WITH NEPHROTIC SYNDROME WHO RELAPSE EARLY**

M Catapang*, R Humphreys, C Mammen, D Matsuell. BC Children’s Hospital, Vancouver, BC, Canada

10.1136/jim-2017-000663.432

**Purpose of study** Nephrotic syndrome (NS) is a common paediatric kidney disorder. All children with new-onset NS are treated with a standardised induction course of prednisone as per our local NS clinic pathway (CP). Despite our CP, some children relapse during induction therapy. We hypothesised that these children (early relapsers) have a worse subsequent clinical course than those who do not relapse during induction.

**Methods used** This was a retrospective cohort study of children diagnosed with NS in BC, Canada from January 2013 to June 2016 (n=39). All were initiated on our CP and followed for up to 2 years (median 707 days). After excluding cases with non-minimal change disease pathologies and steroid resistance, children were stratified based on whether they relapsed during induction (R; n=13) or completed induction relapse-free (NoR; n=18). Outcomes included time to first relapse after the start of induction, use of steroid sparing agents (SSA), and clinical course as reflected by number of relapses.

**Summary of results** Median days to first relapse from the start of induction was 102 in the R group and 241 in the NoR group (p=0.001). Cumulative induction prednisone dose was less in the R group (3677 mg/m²) vs the NoR group (4111 mg/m²) (p=0.04) that the R group relapsed during induction. The R group was significantly younger (3.9 vs 4.5 years, p=0.04), more likely to develop a frequently relapsing course (2 relapses within 6 mos after induction or 4 relapses in any 12-mos period) (92% vs 33%, p=0.001), and more likely to start an SSA (92% vs 22%, p<0.001) than the NoR group. The R group had significantly more relapses in the first year of follow-up (median 4 vs 1, p=0.005) and over 2 years of follow-up (median 8 vs 1, p=0.003) than the NoR group.

**Conclusions** NS children that relapse during induction are younger, have more frequent relapses, and are more likely to require a SSA than their relapse-free counterparts. Relapse during induction may serve as an indicator for unfavourable longer-term relapsing outcomes. In our cohort, these
Abstracts

associations occurred despite a standardised induction pathway which controls for early relapses due to underdosing. Results will help guide alternative treatment recommendations for early relapsers in future CP iterations.

433 LEARNING BY PHONE: USING A SMART PHONE APP TO INCREASE KNOWLEDGE OF SEXUAL HEALTH
A Spurlock1. University of Washington School of Medicine, Seattle, WA
10.1136/jim-2017-000663.433

Purpose of study Okanogan County is the a large, rural county in Washington. In Okanogan, the rate of teenage pregnancy is more than twice the rest of Washington, with 56 births per 1000 adolescent girls. To address the difference in teenage pregnancy, Learning by Phone (LBP) is a program utilise a series of web-based quizzes to create an interactive learning environment based on subjects of contraceptive use, accessing the healthcare system, and sexually transmitted infections.

Methods used Using County Health Rankings, an online data organisation, statistics of Okanogan County were analysed. Interviews with county agencies were held to find a community partner, as well as further information about Okanogan.

A literature review was performed to find effective measures of reaching and educating adolescents. The findings were shared with the community partner, who showed interest in a texting program.

Following this review, short quizzes were written into an internet platform. Questions were written with subjects such as obtaining independent insurance, confidentiality for adolescents, types of contraceptive use, and sexually transmitted infections. Information was gathered from websites from the State of Washington and UpToDate.

Summary of results The community partner evaluated the literature review and selected LBP as the best option. The group will present LBP to a local Youth Leadership Council, who will hopefully integrate it into the Council’s peer education program. The module is planned and written into 8 short quizzes and integrated into a web platform.

Conclusions The research behind educational texting shows a moderate efficacy in increasing contraceptive use and decreasing teenage pregnancy. When LBP is implemented, we hope to see a similar effect and decrease in the rate of pregnancy in Okanogan County. It is a promising program due to feasibility, easy access, and affordability.

In the future, LBP could be improved by finding a better platform, so that it can rely on texting, rather than the internet. This could increase access for adolescents, as well as increase the number of participants.

LBP has great potential in its ability to reach out to teenagers give them the information they need to be safe. When LBP is implemented, we hope to see a decrease in participant’s pregnancy rates, and then we can begin growing into a larger audience.

434 MYOCARDIAL INFARCT (MI) CAUSED BY LOW DOSE OF CAFFEINE IN PATIENT WITH UNSUSPECTED CORONARY ARTERY ANOMALY
K Sheak1, A Richards, A Greene. University of New Mexico, Albuquerque, NM
10.1136/jim-2017-000663.434

Case report A 12 yo healthy athletic male presented to the emergency room after 4 hours of acute onset sharp retrosternal chest pain radiating to the neck. The pain started within 15 min of sprinting in a basketball game. There were no associated symptoms of syncope, shortness of breath, diaphoresis, or palpitations. Patient reported poor hydration and drank 1/2 of an energy drink (~46 mg of caffeine) prior to playing. He had no recent history of fever, rash, respiratory, or gastrointestinal symptoms. His past medical history was negative for previous episodes of chest pain. He denied use of medications, tobacco, alcohol, or illicit drug use.

His initially electrocardiogram showed ST segment elevation in the inferior leads. His troponin was elevated at 0.6 ng/ml (normal <0.5). Sublingual nitroglycerin and aspirin were given with resolution of pain. Patient had a normal complete blood count, chemistry panel, lipid panel, coagulation panel, hypercoagulability panel, toxicology screen, and viral panel. Treaded cardiac enzymes measured a troponin peak of 23.4 ng/ml and CK-MB peak of 53.5 ng/ml. Initial echocardiogram showed normal function, repeat echo raised concern for possible coronary artery variant. A cardiac MRI showed delayed enhancement in the left ventricular inferior basal wall, extending to the septum, with focal dyskinesia and mild global hypokinesis with an area of microvascular occlusion with no reflow in region of MRI delayed enhancement. Subsequent CT coronary showed a likely right-dominant system with distal right coronary and majority of circumflex being very small.

Patient was discharged on a calcium channel blocker and aspirin. Posthospitalization there was no recurrence of chest pain, repeat MRI at 5 weeks showed persistent sequelae of infarction in unchanged distribution.

Cases have shown caffeine induced vasoconstriction of coronary arteries. The patient’s coronary artery anatomy in the setting of low dose caffeine, dehydration, and sprint type exercise appears to have led to a coronary vasospasm that facilitated MI of the vulnerable myocardium. This case suggests that in the setting of low dose of caffeine in a otherwise healthy adolescent with chest pain to consider evaluation for cardiac abnormalities.

435 FACIAL MORPHOLOGY AND SLEEP RELATED BREATHING DISORDERS IN CHILDREN
1,2A Liu1,1,2J Pauwels,1,2B Pilska,1,2F Kozak,1,2NK Chadha. 1University of British Columbia, Vancouver, BC, Canada; 2BC Children’s Hospital, Vancouver, BC, Canada
10.1136/jim-2017-000663.435

Purpose of study Sleep related breathing disorders (SRBD), such as obstructive sleep apnea, are commonly found in the paediatric population. Facial shape has been associated with these disorders in both children and adults. Historically, craniofacial measurements were done with metric tape or lateral and frontal two-dimensional imaging. However, limitations exist for accurately recording three-dimensional (3D) geometry using these methods. Stereophotogrammetry, a recent advancement in imaging, has made obtaining 3D images much more practical and removes the need for post-capture photo alteration.

The objective of this study was to use stereophotogrammetry to explore whether a correlation exists between the 3D facial morphometric parameters of children aged 2–17 years, and their reported sleep disturbances as measured by the
validated Paediatric Sleep Questionnaire (PSQ). We hypothesised children with a more convex profile and longer, narrower facial shape will be at higher risk.

Methods used This was a cross-sectional observational study. Patients were recruited from the Paediatric Otolaryngology Clinic at BC Children’s Hospital. Stereophotogrammetric images were acquired using the 3dMD face system. After images were taken, participants completed the PSQ to assess sleep.

Patient images were analysed and 3D coordinates were derived from the identified soft tissue landmarks. Linear and angular measurements between landmarks were calculated; this included computing a mid-face projection and width to height ratio. A stepwise multiple logistic regression analysis was performed to look for any significant association between the facial measurements and PSQ. Age, sex, and ethnicity of participants were also analysed.

Summary of results Out of 111 patients recruited, 31.7% scored at high risk for SRBD. The median age of participants was 7, with 40.6% being females and 59.4% being males. Further analysis is still occurring for the 3D images.

Conclusions Data analysis is currently ongoing and findings will be presented. By exploring craniofacial shape as a potential marker of sleep disturbances at a young age, this study could influence clinical approach to this patient population. Future studies will include assessment longitudinally on how facial shape changes after treatment for sleep disorders and vice versa.

Abstract 436 Table 1 Studies comparing the effects of high flow oxygen vs. control on hospital stay, PICU admission, and intubation

<table>
<thead>
<tr>
<th>1st author, year, location</th>
<th>Type of study</th>
<th>Age range of patients</th>
<th>Were the 2 groups comparable in severity?</th>
<th>PICU admission or intubation in control</th>
<th>PICU admission or intubation in HFNC</th>
<th>p-value for PICU/Intubation</th>
<th>LOS in control</th>
<th>LOS in HFNC</th>
<th>p-value LOS</th>
<th>Limitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keprotees, E. 2017. Newcastle, Australia</td>
<td>Randomised Controlled</td>
<td>Yes</td>
<td>12/101 (12%)*</td>
<td>14/101 (14%)</td>
<td>0.41*</td>
<td>2 d</td>
<td>2 d</td>
<td>0.99</td>
<td>Excluded patients with baseline oxygen saturation of&lt;90%</td>
<td></td>
</tr>
<tr>
<td>Mayfield, S. 2014. Brisbane, Australia</td>
<td>Prospective with retrospective controls</td>
<td>Yes</td>
<td>10/33 (31%)*</td>
<td>8/61 (13%)</td>
<td>0.043*</td>
<td>92 hours</td>
<td>92 hours</td>
<td>0.6</td>
<td>Used retrospective controls for patients in control with O2 saturation of&lt;90%</td>
<td></td>
</tr>
<tr>
<td>Reise, J. 2017. Providence, Rhode Island</td>
<td>Retrospective Study</td>
<td>No</td>
<td>12/936 (13%)*</td>
<td>15/1001 (1.5%)</td>
<td>0.70*</td>
<td>2 d</td>
<td>1 d</td>
<td>0.001</td>
<td>Used retrospective controls for patients with O2 saturation of&lt;90%</td>
<td></td>
</tr>
<tr>
<td>Milani, G. 2016. Milan, Italy</td>
<td>Prospective</td>
<td>Yes</td>
<td>2/10 (10%)*</td>
<td>2/20 (10%)</td>
<td>NS</td>
<td>9 d</td>
<td>6 d</td>
<td>&lt;0.005</td>
<td>More severe disease in HFNC group based on billing codes</td>
<td></td>
</tr>
</tbody>
</table>

*PICU admission †Intubation only

Purpose of study High flow oxygen (HFO) has been used more commonly as supportive treatment of paediatric patients with bronchiolitis. The objective of this study is to determine if HFO use on the patients admitted to the inpatient wards leads to reduction in paediatric intensive care unit (PICU) admission and/or intubation rates, as well as hospital length of stay (LOS).

Methods used We performed a literature based review through PubMed and Google Scholar databases using key terms such as: Bronchiolitis, High-Flow Oxygen, Paediatric, High-Flow Nasal Cannula (HFNC). Only studies with infants<24 months of age with bronchiolitis that included a control group with conventional oxygen were included. Studies that included patients who were directly admitted into the PICU, used heiox, or continuous positive airway pressure (CPAP) were excluded.

Summary of results Out of the 23 articles found, 4 satisfied our inclusion criteria (see table 1 below). Many articles were excluded because they lacked controls or patients were admitted directly to the PICU. Patients hospitalised on the wards who were on HFNC had lower PICU admission and/or intubation rates in 1 of the 4 studies. Hospital LOS was lower in the HFNC group in 2 of the 4 studies. The studies were limited in controlling for severity of disease or using retrospective controls. Also, the protocols for using HFNC were variable among different studies.

Conclusions Our review revealed conflicting results in regards to usefulness of HFNC in decreasing hospital stay, intubation and PICU admission rates in children less than 2 years of age with bronchiolitis who are admitted to the paediatric ward. Larger prospective controlled studies with standardised HFO protocols are needed to confirm efficacy of HFNC in treatment of paediatric patients with bronchiolitis.
Case report

A 16-month-old previously healthy male presented to the emergency department (ED) with a 1 day history of non-bloody, non-bilious emesis and progressive feeding intolerance to both solids and liquids without the presence of diarrhoea. Initially, he was diagnosed with a viral syndrome and if so, could this bridge between obesity and rickets actually exist, known to be a result of that depleted state. Our case asks if this bridge between obesity and rickets could actually exist, and if so, could this open the door to a greater conversation.

Case report

We share the case of an obese 12 year-old boy who presented as a toddler with bilateral leg-bowing, and was later diagnosed with vitamin D deficiency rickets. In a metabolic state characterised by being overweight, it is peculiar to develop a condition defined by a nutritional deficit, as seen in rickets. A lack of vitamin D could potentially be the common factor, as the presence of excess adipose tissue in obesity has been proposed to contribute to vitamin D deficiency, while the poor mineralization of bones in nutritional rickets is known to be a result of that depleted state. Our case asks if this bridge between obesity and rickets could actually exist, and if so, could this open the door to a greater conversation.

A PARAESOPHAGEAL HERNIA WITH GASTRIC VOLVULUS IN A 16-MONTH-OLD BOY

M MacDavid*, A Shedlock. Department of Paediatrics University of Nevada Las Vegas School of Medicine, Las Vegas, NV

Case report

A 16-month-old previously healthy male presented to the emergency department (ED) with a 1 day history of non-bloody, non-bilious emesis and progressive feeding intolerance to both solids and liquids without the presence of diarrhoea. Initially, he was diagnosed with a viral syndrome and discharged home. Several hours later, the patient developed projectile emesis and returned to the ED. An abdominal radiograph showed findings suspicious for a diaphragmatic hernia. CT scan revealed gastric outlet obstruction from a portion of stomach located intrathoracically through a left diaphragmatic hernia. He was taken emergently to the operating room where he was discovered to have a left paraesophageal congenital diaphragmatic hernia with gastric volvulus. The patient underwent a laparoscopic reduction with primary closure and Nissen fundoplication. He experienced complete resolution of symptoms and tolerated a soft mechanical diet while receiving care in the paediatric intensive care unit. The patient was discharged home on post-operative day four and was found to be clinically improved at his first outpatient follow-up visit with no further emesis or feeding intolerance.

Most cases of congenital diaphragmatic hernias (CDH) are diagnosed in the antenatal or neonatal period, however an estimated 5–30 percent of CDH cases are considered late-onset (presenting after 30 days of age) and are discovered incidentally on chest x-ray. However, it can occasionally present acutely as a surgical emergency if there is a concurrent gastric volvulus or perforation. This patient had no medical problems through infancy but never re-established paediatric care after moving from another state at age 11 months. Aside from several brief episodes of emesis, he was reportedly asymptomatic until one day prior to his presentation when he presented with symptoms of an acute gastric volvulus. Although rare, this case emphasises the importance of considering atypical presentations of congenital diaphragmatic hernias on the differential diagnosis in patients of any age who present with irritability, tachycardia, tachypnea, chest pain, abdominal pain, or projectile emesis.
confirmed the lesions at L2 and left medial iliac bone. CT chest was significant for multiple pulmonary nodules of varying sizes and multiple lytic lesions in the thoracic vertebrae.

He underwent biopsy by Urology and Interventional Radiology, and both results were positive for ESS.

CD99=Positive with strong membrane expression, FLI-1=Positive.

Conclusion This is the first case of ESS manifesting at scrotal mass based on the literature review. As compared to ES, ESS is aggressive with common site of metastasis being the lumbar vertebra and lungs, which was seen in this patient with 5 year survival ranging from 33% to 48%. It is important to keep ESS in differential diagnosis in a young patient with soft tissue mass regardless of the location, a biopsy is warranted.

ACUTE BILATERAL CENTRAL RETINAL ARTERY OCCLUSION IN AN AFRICAN AMERICAN FEMALE WITH SICKLE CELL DISEASE AND A POSITIVE LUPUS ANTICOAGULANT

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10.1136/jim-2017-000663.440

Case report A 24 year old African American female with history of sickle cell disease, on Hydroxyura, multiple admissions for sickle cell crises, paraplegia presented to the ER with complaint of shortness of breath for 4 days and generalised pain with mild tachycardia with HR 115. Her physical exam was positive for paraplegia, and she was admitted for sickle cell crisis with initial Hgb of 10.1, Hct 29.1, MCV 110.2 when pneumonia and pulmonary emboli were ruled out with chest xray and CT angiogram.

On the afternoon of day # 2 of admission, patient reported worsening of shortness of breath, generalised weakness and blurred vision.

She slept for 1 hour and woke up with significant loss of vision in both eyes only seeing some patches. CT angiogram of head and neck showed tortuous right carotid artery and multiple tortuous vessels in the periphery of the left temporal lobe.

At this time, patient’s anaemia had worsened with Hgb of 6.9, Hct 19.6. Hgb S was 67%. STAT Ophthalmology consult revealed decreased visual acuity about 20/200 and funduscopic exam revealed cherry red spots in bilateral central macula with bilateral central retinal artery occlusion OS >OD (the left eye greater than the right eye).

A diagnosis of bilateral CRAO secondary to acute vaso-occlusive crisis was made and patient received immediate blood exchange: Removal of 500 cc of blood followed by infusion of 500 cc of normal saline followed by removal of another 500 cc of blood and transfusion of 2 units of PRBCs.

During the hospital course pertinent labs included: HbSS 67%, positive Lupus anticoagulant (PTT-La screen high at 42, positive Hexagonal phase confirmation, DRVVT screen high at 47, negative DRVVT confirmation). CRP 1.1, otherwise negative cardiolipin Ab, protein C, protein S.

The patient was evaluated by ophthalmology one month later and she reported subjective improvement of her R vision. She continued to have cherry red spots centrally OS >OD with partial resolution of the infarcts seen along the macula retinal layer OS >OD with Visual Acuity 20/400 on the Right and 20/200 on the Left with Pinhole.

A CASE OF MULTIPLE MYELOMA PRESENTING AS EVANS SYNDROME

C Spates*, G Petersen, A Karapetians, A Heidari, E Cobos. Kern Medical, Bakersfield, CA

10.1136/jim-2017-000663.441

Purpose of study Multiple myeloma is defined as the neoplastic proliferation of plasma cells resulting in a monocolonal gammopathy. It usually presents with bone pain and associated osteolytic lesions, osteopenia, or fractures in addition to a monoclonal protein found in the serum or urine. Here we present a case of multiple myeloma that presented as Evans Syndrome: autoimmune hemolytic anaemia with autoimmune thrombocytopenia.

Methods used Retrospective case report.

Summary of results 44-year-old female who visited her primary care physician for a routine checkup. Bloodwork drawn after the visit revealed a haemoglobin of 5 g/dL and the patient was subsequently called and advised to go to the emergency department for further evaluation. Patient endorsed a two-month history of fatigue and unintentional weight loss of 60 pounds. Labs showed elevated reticulocyte count (6.3%), elevated RDW-CV (19.3%), positive coombs test, thrombocytopenia (89 × 103/μL), proteinuria (70 mg/dL) which was suggestive of Evans Syndrome. Patient was given high dose methylprednisolone 500 mg IV for 2 days, followed by prednisone and CT chest/abdomen/pelvis was obtained for new band-like pain wrapping around the chest which revealed a compression fracture of the L1 vertebral body. Additional workup revealed elevated gammaglobulin gap that was also suspicious for underlying malignancy. Serum and urine electrophoresis were ordered and a bone marrow biopsy later confirmed IgG dominant multiple myeloma. Throughout the hospital course, her reticulocyte count normalised following multiple blood transfusions, and her pain gradually resolved. She initiated bortezomib proteasome inhibitor treatment prior to discharge with close outpatient haematology/oncology follow up.

Conclusions Multiple myeloma is a hematologic malignancy that can be seen with various presentations. Survival rates continue to improve due to earlier detection, thorough workup, and advancing pharmacologic therapies. Our case of multiple myeloma was presented as Evans Syndrome, a rare demonstration given there are less than 5 reported cases.

HODGKIN’S AND THE HEART

J Patel*, T Le, E Cobos. Kern Medical, Bakersfield, CA

10.1136/jim-2017-000663.442

Introduction Although Hodgkin’s lymphoma treatment has dramatically improved since the presence of chemotherapy, the long-term negative side effects of treatment have exposed themselves over decades. Toxicity of radiation goes beyond coronary artery disease as highlighted in the incidence of structural and conductive cardiac pathology leading to invasive surgery. Survivors of Hodgkin’s lymphoma may face a successful remission, however suffer poor overall survival due to various cardiac pathology. We highlight a case of a lymphoma survivor that was subjected to aortic valve replacement as a consequence of radiation therapy.
Abstracts

Case presentation This is a 64-year-old Hispanic female with a history of Hodgkin’s Lymphoma Stage III who was successfully treated with ABVD to remission in 2005. She received mantle field radiation to the right neck, axilla and mediastinum in addition to chemotherapy. In 2013, she was hospitalised for worsening dyspnea and syncope, however with normal echocardiographic findings. She was medically optimised with pharmacotherapy until 2016 when she was admitted for decompensated heart failure and cardiogenic shock. Pre-and post-radiation echocardiography revealed newly diagnosed severe aortic stenosis and mild aortic regurgitation; all of which correlated to the post-radiation time frame. Left and right heart catheterization showed clean coronaries and her calculated Aortic Valve Area (AVA) was 0.7 sq cm consistent with severe aortic stenosis. She eventually underwent elective total aortic valve replacement and is currently asymptomatic.

Discussion There are many undesirable cardiac consequences following radiation treatment that are well documented including but not limited to pericarditis, myocardium fibrosis, coronary artery disease and valvular dysfunction. However, the aetiology of radiation induced left sided valvular dysfunction remains unclear and continues to be a salient sequelae with an incidence rate of 81% in patients with history of radiation induced valvular heart disease (Yusuf, 2011). Increased Aortic valve regurgitation was seen in females following high dose mediastinal radiation for Hodgkin disease (Lund, 1996). More recently, a study found dose-response relationships showing increased risk of left sided valvular defects with higher radiation dosage (Cutter, 2015).

Case report A 76 year old woman with history of rheumatoid arthritis with interstitial lung disease, hypothyroidism and prostatic joint infections on suppressive amoxicillin clavulinate was admitted for hypoxic respiratory distress. Initial presentation was concerning for pneumonia, for which she was started on empiric Vancomycin and Levofloxacin, or flare of her interstitial lung disease for which she was treated with stress-dose hydrocortisone. On day 3 of hospitalisation, respiratory cultures grew Stenotrophomonas, antibiotics were changed to trimethaprim/sulfamethoxazole (TMP/SMX) 160/800 mg, 3 tabs every 8 hours. Hydrocortisone was changed to Prednisone 40 mg daily. The patient also received diuretics for concerns of hypervolemia and pulmonary oedema. On hospital days 11–12, the patient’s blood glucose was in the low 60’s mg/dl and on hospital day 13, she had an asymptomatic blood glucose of 35 despite no use of anti-hyperglycemic agents. She received 12.5 g of 50% dextrose and drank juice, but over the following 2 days, she experienced episodes of hypoglycemia requiring initiation of a continuous infusion of dextrose-containing fluids. Initial differential for these episodes included sepsis, liver failure, adrenal insufficiency or myxedema. However, further infectious workup was unrevealing, liver function tests and serum cortisol were normal and patient was continuing her levothyroxine. Serum insulin was upper limit of normal. Hypoglycemia as adverse effect of TMP/SMX was considered and her dose was decreased from 3 tabs of 160/800 every 8 hours to a single tab of 80/400 daily. Hypoglycemia resolved with no further episodes.

TMP/SMX-associated hypoglycemia is an uncommon adverse effect, most frequently seen in patients with renal impairment on high dose TMP/SMX. The effect occurs 5–11 days after initiation and the mechanism is believed to be accumulation of sulfamethoxazole, which structurally similar to sulfonylureas–binds to pancreas beta cells and stimulates insulin release. While this patient did not have chronic kidney disease, an acute kidney injury incurred during active diuresis earlier in her hospitalisation likely impaired renal excretion of sulfamethoxazole. This case highlights the need to monitor blood sugars in patients receiving high doses of TMP/SMX and to reduce dose should evidence of renal dysfunction occur.

Symptomatic pericardial effusion upon initial diagnosis of Hashimoto thyroiditis and its resolution without pericardiocentesis

Case report A 76 year old woman with history of rheumatoid arthritis with interstitial lung disease, hypothyroidism and prostatic joint infections on suppressive amoxicillin clavulinate was admitted for hypoxic respiratory distress. Initial presentation was concerning for pneumonia, for which she was started on empiric Vancomycin and Levofloxacin, or flare of her interstitial lung disease for which she was treated with stress-dose hydrocortisone. On day 3 of hospitalisation, respiratory cultures grew Stenotrophomonas, antibiotics were changed to trimethaprim/sulfamethoxazole (TMP/SMX) 160/800 mg, 3 tabs every 8 hours. Hydrocortisone was changed to Prednisone 40 mg daily. The patient also received diuretics for concerns of hypervolemia and pulmonary oedema. On hospital days 11–12, the patient’s blood glucose was in the low 60’s mg/dl and on hospital day 13, she had an asymptomatic blood glucose of 35 despite no use of anti-hyperglycemic agents. She received 12.5 g of 50% dextrose and drank juice, but over the following 2 days, she experienced episodes of hypoglycemia requiring initiation of a continuous infusion of dextrose-containing fluids. Initial differential for these episodes included sepsis, liver failure, adrenal insufficiency or myxedema. However, further infectious workup was unrevealing, liver function tests and serum cortisol were normal and patient was continuing her levothyroxine. Serum insulin was upper limit of normal. Hypoglycemia as adverse effect of TMP/SMX was considered and her dose was decreased from 3 tabs of 160/800 every 8 hours to a single tab of 80/400 daily. Hypoglycemia resolved with no further episodes.

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Rhabdomyolysis, acute heart failure and acute hepatitis

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TRIMETHAPRIM/SULFAMETHOXAZOLE-INDUCED HYPOGLYCEMIA

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444 445
hypothyroidism can be commonly seen but the uniqueness lies behind the clinical resolution of pericardial effusion with treatment of levothyroxine in Hashimoto thyroiditis.

Case We present a case of a 61-year-old female with past medical history notable for hypertension, dyslipidemia, chronic kidney disease stage 3B, and tobacco dependence presented with progressive dyspnea on exertion, bilateral lower extremity swelling, and constant ongoing chest pressure of 8 months duration. For 2 years, she had hoarseness of voice, cold intolerance, weight gain, and coarse skin with blanching erythema. Family history was significant for patient’s two sisters having thyroid disease. On physical exam, BMI 41.7, rales bilaterally, JVD at 8 cm, and primarily non-pitting bilateral lower extremity oedema (left >right). Her laboratory workup on presentation was ANA antibody positive with titer 1:40 with speckled pattern, thyroid peroxidase antibody 308, TSH >150, and free T4 0.10. Two-dimensional transthoracic echocardiogram revealed LV mass index of 119 gm/m², RWT 0.39 cm, LVEF 50%–55%, RA pressure 15 mm Hg, dilated interior vena cava, unable to estimate RVSP due to inadequate tricuspid regurgitation jets, moderate size pericardial effusion in the posterior/inferior aspect (maximum size 2.4 cm measured at the inferior aspect of LV), and sonographic evidence of early diastolic right ventricle collapse. Thyroid ultrasound revealed a diffusely heterogeneous thyroid gland (Right thyroid lobe measures 4.2 × 1.4 × 2 cm and left thyroid lobe measures 3.1 × 1.4 × 1.5 cm) Patient was diuresis with lasix and generalised anasarca.

Conclusion When an elderly female presents with exertional dyspnea, it is important to assess for hypothyroidism. If pericardial effusion is present, treatment of hypothyroidism can lead to resolution of symptoms without pericardiocentesis.

Health care research III
Concurrent session
Saturday, January 27, 2018
10:15 AM – 12:00 PM

446 PERSPECTIVES OF WOMEN SEEKING ABORTION ON FETAL TISSUE DONATION AND CORRELATION WITH ABORTION STIGMA

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10.1136/jim-2017-000663.446

Purpose of study Fetal tissue obtained from elective abortion has advanced the basic sciences as well as the development of vaccines and medical therapies. Despite its contributions, ethical debates regarding its use continue. Previous international studies have found that women, especially those seeking abortion, support using fetal tissue for research. This study aims to understand the perspectives of women presenting for abortion in the U.S. regarding fetal tissue donation and abortion stigma.

Methods used Women presenting for an elective abortion procedure at an outpatient clinic network in Seattle, WA, completed a survey about their views on abortion and donating pregnancy tissue. The study included women who had been asked to donate fetal tissue and those who had not been asked to donate. Two subsets of the Individual Level Abortion Stigma (ILAS) scale were used to evaluate abortion stigma. Stata 14.2 was used to analyse the data. The primary outcome of interest was the proportion of women who chose/would choose to donate pregnancy tissue and its association with abortion stigma.

Summary of results Fifty-eight women completed the survey. Exactly half (50.0%) said they chose to donate pregnancy tissue or would choose to donate had they been asked. Nearly all (94.2%) said women should have the option to donate tissue when having an abortion. Women who chose or would choose to donate tissue scored lower on the Worries about Judgment and Self-Judgment ILAS subscales, indicating lower abortion stigma, though the differences were not statistically significant. There was no association between age, education, religiosity, if this was her first pregnancy or first abortion, and the decision to donate tissue. Three-fourths of women did not know previously that tissue could be donated at the time of an abortion. Media coverage of fetal tissue was familiar to only 10.9% of participants.

Conclusions Women seeking abortion support the option to donate pregnancy tissue at the time of abortion. Most women would want to donate if given the opportunity. Abortion stigma does not appear to affect a woman’s choice to donate tissue at the time of abortion. Media attention to fetal tissue donation was unfamiliar and did not influence respondents’ choice to donate. Larger sample sizes will be obtained for this study.
SUMMARY OF RESULTS
Excessive bias (p-value 0.0001) was found in DBS results of HbA1c measurements for clients C1, C2 and C3 (Table 1). Over half of normal WPP were upclassified to prediabetes or diabetes. Bias was negligible (−0.004) in head-to-head comparison of 120 DBS vs VB specimens by a commercial laboratory.

CONCLUSIONS DBS measurements of HbA1c were too inaccurate for our on-site application in WPP. Apparent misclassification of normal WP participants as having prediabetes and diabetes precluded their use for health coaching or WP incentives. Possible causes of DBS inaccuracy are being investigated.

Abstracts

Summary of results Excessive bias (p=0.0001) was found in DBS results of HbA1c measurements for clients C1, C2 and C3 (table 1). Over half of normal WPP were upclassified to prediabetes or diabetes. Bias was negligible (−0.004) in head-to-head comparison of 120 DBS vs VB specimens by a commercial laboratory.

Conclusions DBS measurements of HbA1c were too inaccurate for our on-site application in WPP. Apparent misclassification of normal WP participants as having prediabetes and diabetes precluded their use for health coaching or WP incentives. Possible causes of DBS inaccuracy are being investigated.

Abstract 34 Table 1 HbA1c by dried blood spot vs venous blood in 3 client organisations

<table>
<thead>
<tr>
<th>Organisations</th>
<th>Dried blood spot</th>
<th>Venous blood</th>
<th>% misclassified</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1, n=207</td>
<td>6.00±0.60SD</td>
<td>5.34±0.41</td>
<td>74</td>
</tr>
<tr>
<td>C2, n=127</td>
<td>5.82±0.39</td>
<td>5.28±0.38</td>
<td>62</td>
</tr>
<tr>
<td>C3, n=561</td>
<td>6.08±0.49</td>
<td>5.46±0.41</td>
<td>72</td>
</tr>
<tr>
<td>Grand Mean, n=895</td>
<td>6.02±0.50</td>
<td>5.40±0.41</td>
<td>71</td>
</tr>
</tbody>
</table>

Purpose of study Muscular Dystrophy (MD) describes a range of inherited disorders characterised by progressive wasting and weakness of skeletal musculature. Many MD patients develop early cardiopulmonary disease. Myocardial injury occurs like that of skeletal muscle; genetic mutations, lead to inflammation and non-functional fibro-fatty replacement of myocardium. Currently, imaging findings in MD are limited to relatively small case series that tend to discuss a single imaging finding or clinical trait. This study aims to provide a single reference for magnetic resonance imaging (MRI) findings correlated with clinical traits in MD patients.

Methods used Chart reviews were performed for 47 patients diagnosed with Becker or Duchenne MD who underwent cardiac MRI between December 2007 and September 2016 noting relevant clinical data. Cardiac MRI exams were qualitatively and quantitatively evaluated [CCI software (Cary, AB)], recording LV/RV morphology and function, papillary muscle (PM) morphology, aortic and mitral valve function, and detection of late-gadolinium enhancement (LGE).

Summary of results Average age of diagnosis was 5.5±2.8 years and most patients were deletions of exons in the dystrophin gene. At time of MRI exam, 31 (73.8%) patients were wheelchair bound, 2 (4.8%) presented with cardiac arrhythmia, and 29 (69%) were taking an ACEi. LVSV (36.6±6.8 mL), LVEF (55.6±8.0 mL), RVSV (32.8±9.9), and RVEF (51.6±7.9) were all subjectively reduced compared to normal literature values. Abnormal LV morphology was detected in 8 (18.6%) patients, and 12 (27.9%) showed LGE. Interestingly, 36 (83.7%) patients displayed at least 1 bifid PM, with 15 (34.9%) exhibiting both bifid PMS. Pulmonary function showed signs of decline as evidenced by FVC (68.1±27.2) and FEV1 (67.5±27.8).

Conclusions On average, patients with MD displayed evidence of early cardiopulmonary disease, which will likely shorten lifespans. Given the high prevalence of anomalous PM anatomy among the studied population, any correlation between this finding and reduced cardiopulmonary function remains unclear. We hope that these findings can be used as an atlas to inform clinicians on prevalent clinical and functional abnormalities seen in MD patients to improve quality of life.

Purpose of study Influenza immunizations (Flushots) have overall effectiveness of 48% (point estimates 43%–57%). They are required for healthcare workers (HCW) in nearly half of US hospitals. Flushots usually cause only mild temperature elevation (101 F) and brief discomfort at the injection site. Prolonged shoulder pain and limited range of motion (Shoulder Injury Related to Vaccine Administration, SIRVA) are rare, often blamed on injections given too high in the deltoid muscle.

Methods used Inactivated Flushots were given to nearly all 36,937 Charlotte-based Carolinas HealthCare System HCW (99.8% compliance) in the autumn of 2015 and 2016, respectively. All who described SIRVA were interviewed and examined, prescribed oral anti-inflammatory and/or corticosteroid medications, and encouraged to do exercises to maintain full range of motion.

Summary of results SIRVA occurred in 6 and 8 HCW in the 2015 and 2016 Flushot cycles, respectively. None of these HCW had previously experienced SIRVA, despite receiving Flushots annually for many years. High injection site or other technique issues were described by 12 of 14 (86%). Examination findings were consistent with rotator cuff tendinitis (RCT, JAMA 2013;310:837). Symptoms lasted 2.9 months (SD 2.3, median 2.7). Four HCW were referred to an orthopaedist but no surgery was done. One HCW consulted the US Vaccine Injury Compensation Program to pursue possible benefits.

Conclusions SIRVA with signs and symptoms of RCT affected less than 0.04% of CHS HCW who received Flushots in 2015–2016. This may be an underestimate, however, since we did not canvass all of the HCW so immunised. Symptoms lasted less than 10 months except in one HCW. Attention to technique can probably avoid RCT after Flushots.
UNDERSTANDING PERCEIVED BARRIERS TO BECOMING A PHYSICIAN: COMPARISON OF UNDERREPRESENTED AND NON-UNDERREPRESENTED HIGH SCHOOL STUDENTS ATTENDING A SUMMER PRE-MEDICAL PROGRAM

M Lovio, K Lunny*, B Afghani. University of California Irvine School of Medicine, Irvine, CA

Purpose of study: Leaky pipeline, or departure from the path toward becoming a physician, remains prominent. The University of California Irvine Pre-Medical Summer Program seeks to address the problem of ‘leaky pipelines’ by offering a diverse group of high school students a unique glimpse into medicine as a career. The objective of this study is to compare the perceived barriers among underrepresented in medicine (URM) and non-URM (NURM) high school students in pursuing a career in medicine.

Methods used: A total of 6 sessions were held in 2016 and 2017 and surveys were distributed to participants at the end of each session. Students provided answers to two open-ended prompts ‘Please describe what you considered as the main barriers to study medicine starting this program’ and ‘after completing the program.’ The answers were categorised, and four main themes emerged as barriers (see table 1 below).

Summary of results: Of 288 participants, 281 (98%) completed the surveys and 47 (17%) were URM. Comparing the two groups, NURM students were more likely to perceive length of schooling as a barrier, while URM students were more likely to perceive the cost of schooling as a barrier. When comparing the pre and post-program barriers, the groups’ responses did not change significantly, except for ‘lack of exposure among URM (pre:15% vs post:5%, p=0.002).

Conclusions: Participants identified a number of significant barriers to pursuing a career in medicine. Our premed program was useful in improving the response for ‘lack of exposure’, especially among URM students. This data would help academic institutions to potentially help address the leaky pipeline among both NURM and URM students.

Abstract 451 Table 1

<table>
<thead>
<tr>
<th>Pre- and post-program barriers for URM vs. NURM students</th>
<th>URM n=47</th>
<th>NURM n=234</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-Program</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of Schooling</td>
<td>10 (21%)</td>
<td>93 (40%)</td>
<td>0.019</td>
</tr>
<tr>
<td>Cost of Schooling</td>
<td>20 (42%)</td>
<td>53 (23%)</td>
<td>0.006</td>
</tr>
<tr>
<td>Academic Requirements</td>
<td>12 (26%)</td>
<td>90 (38%)</td>
<td>0.099</td>
</tr>
<tr>
<td>Lack of Exposure</td>
<td>11 (23%)</td>
<td>36 (15%)</td>
<td>0.199</td>
</tr>
<tr>
<td><strong>Post-Program</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of Schooling</td>
<td>10 (21%)</td>
<td>102 (43%)</td>
<td>0.005</td>
</tr>
<tr>
<td>Cost of Schooling</td>
<td>17 (36%)</td>
<td>40 (17.1%)</td>
<td>0.005</td>
</tr>
<tr>
<td>Academic Requirements</td>
<td>14 (30%)</td>
<td>90 (38%)</td>
<td>0.32</td>
</tr>
<tr>
<td>Lack of Exposure</td>
<td>6 (13%)</td>
<td>11 (5%)</td>
<td>0.046</td>
</tr>
</tbody>
</table>

THE RELATIONSHIP BETWEEN UNDERGRADUATE INSTITUTION ATTENDED AND STUDENT PERFORMANCE IN MEDICAL SCHOOL: DOES SELECTIVITY MATTER?

BC Pino*, S Helf, F Dong, G Thrush. Western University of Health Sciences, Pomona, CA

Background: Malignant disease of the pancreas such as metastatic pancreatic cancer (MPC) is associated with 10%–20% of patients (pts) live ≤3 mo (STS); conversely 5%–10% pts live ≥24 mo (LTS). Patient outcomes and treatment are influenced by a number of patient and disease characteristics.

Methods used: Our study examines 421 patients with CTX who received CTX in March 2006 and August 2012; 291 pts received CTX alone, 90 pts received CTX + monotherapy, and 40 pts received CTX + poly-therapy. Inclusion criteria: age ≥18, untreated, metastatic, human epidermal growth factor receptor-2 (HER2) negative, non-Caucasian pts. The 291 pts received CTX alone were divided into four cohorts: 1) pts attended a select school (S), 2) pts attended a non-selective school (NS), 3) pts attended a non-competing school (NC), and 4) pts did not attend a medical school (MN). The data was analyzed using the chi-square test, Fisher’s exact test, and the t-test.

Conclusions: MCR and age ≥65 were significant predictors of survival in the CTX-alone cohort. The results suggest that selectivity in medical school may influence the treatment of MPC.

Haematology and oncology III

Concurrent session

Saturday, January 27, 2018
10:15 AM – 12:00 PM

METASTATIC PANCREATIC CANCER (MPC): CONTRAST OF SHORT- (STS) AND LONG TERM (LTS) SURVIVOR CHARACTERISTICS

M Kowalczyk*, M Mandelson, V Picozzi. University of Washington School of Medicine, Bellevue, WA

Abstract 453

Background: Malignant disease of the pancreas such as metastatic pancreatic cancer (MPC) is associated with 10%–20% of patients (pts) live ≤3 mo (STS); conversely 5%–10% pts live ≥24 mo (LTS). Patient outcomes and treatment are influenced by a number of patient and disease characteristics.

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Conclusions: MCR and age ≥65 were significant predictors of survival in the CTX-alone cohort. The results suggest that selectivity in medical school may influence the treatment of MPC.
analysed. A number of pretreatment characteristics were considered, including A) patient and B) disease-related factors.

Summary of results To date, 37 pts (median OS 2.0 mo)/41 pts (median 28.2 mo) have been identified as STS/LTS respectively. In univariate analysis factors significantly associated with STS/LTS (p<0.0001) were ECOG ≥2 and neutrophil/lymphocyte ratio (NLR) ≥5. Age at dx, pain at dx, BMI >30, albumin <4.0 g/dL, Ca19.9>500 U/mL, ascites at dx and liver involvement also were statistically significant (all p≤0.05 or greater). Among factors not statistically different between STS/LTS were sex, race, year of diagnosis, presence of diabetes or biliary obstruction at diagnosis. A multivariate model that included ECOG ≥2 and NLR ≥5 along with other of the above factors correctly discriminated between STS and LTS with 90% accuracy (95% CI: 83% to 97%).

Conclusions 1) Examination of pretreatment characteristics in MPC can aid in identification of patients more likely to be STS/LTS. 2) For STS and LTS these data may aid in identifying candidates for new initial and new consolidation treatment strategies, respectively. 3) Prognostics models for STS/LTS require additional validation in independent data sets. 4) Integrating additional pretreatment information (e.g. molecular, clinical, therapeutic) may further improve OS prognostication in MPC.

454 MELANOMA HISTOLOGY AND STAGE AT PRESENTATION IN AMERICAN INDIAN AND ALASKA NATIVE PEOPLE

1MM Franklin*, 2,3S Nash. 1Pacific Northwest University of Health Sciences, Anchorage, AK; 2Alaska Native Tribal Health Consortium, Anchorage, AK; 3University of Alaska, Anchorage, AK

Purpose of study American Indian and Alaska Native (AIAN) people have low incidence rates of melanoma nationwide relative to other ethnic groups. Previous studies have demonstrated superficial spreading melanoma as the most common subtype in Caucasians, and acral lentiginous melanoma as a more common subtype in groups with darker skin. This study compares clinical presentation of melanoma in AIAN patients vs US White (USW) patients. Understanding patterns of melanoma presentation in AIAN groups is important in providing early diagnosis.

Methods used Data from the Surveillance, Epidemiology, and End Result (SEER) 18 Database were gathered for the years 2000–2014 in AIAN and USW racial groups and included six melanoma histology categories. Distribution of disease was analysed and compared by age, gender, histology, SEER stage, and Breslow depth between AIAN and USW using Chi-Square test. Age-specific incidence rates were estimated using SEER*-Stat version 8.3.4.

Summary of results Incidence of melanoma was 6 times lower in AIAN than USW with rates of 5.3 and 35.8 per 100 000 population, respectively. Histology distribution was different among AIAN, relative to USW (p<0.0001). Proportion of superficial spreading melanoma demonstrated no significant difference in AIAN and USW populations, making up 21.9% and 20.5% of all cases, respectively (p=0.5). In contrast, AIAN people had higher proportion of acral lentiginous melanoma [2.2%] vs USW [0.6%] (p=0.001). Stage distribution differed between AIAN and USW (p<0.0001). Among AIAN, a lower proportion of cases were diagnosed in situ [AIAN: 24.3%, USW: 31.5%] (p=0.0001) and a higher proportion of cases were diagnosed at both regional and distant stages [AIAN: 11.3%, 5.3%] relative to USW [USW: 6.2%, 2.8%] (p<0.0001).

Conclusions AIAN people, like USW people, are most likely to present with superficial spreading melanoma. AIAN people may be more likely than USW to be diagnosed at a later stage and present with acral lentiginous melanoma. Despite lower incidence rates of melanoma among AIAN people, physical exam of AIAN patients should routinely include thorough inspection for common presentations including examination of the distal extremities.

455 TRACKING TUMOUR GROWTH AND ANGIOGENESIS IN MOUSE MODELS OF BREAST CANCER WITH PERFLUOROCARBON MICROBUBBLES

1,2D Robles*, 2T Matsunaga. 1University of Phoenix, Tempe, AZ; 2University of Arizona, Tucson, AZ

Purpose of study We tracked the progression of angiogenesis and tumour growth in three breast cancer cell lines (MDA-MB-231, MCF-7, and MDA-MB-468) using perfluorocarbon microbubbles. Each cell line overexpresses different receptors, which affects tumour growth rate and, perhaps, degree of angiogenesis. Our goal was to define growth, extent, and time of onset for angiogenesis.

Methods used SCID mice were used to study the effects of breast cancer cell types. Tumour growth rates and blood vessel development were monitored and followed using lipid-coated microbubbles and contrast-enhanced ultrasound (CEUS) at 50 MHz (Vevo 2100 pre-clinical ultrasound machine). To track angiogenesis, mice were injected with perfluorobutane gas microbubbles of 1–2 µm diameter. Bubble perfusion into the tumour was used as an indicator of vessel formation. A custom image analysis program was developed in Matlab to track microbubble motion from B mode grayscale images.

Summary of results Experiments demonstrated that microbubbles begin to penetrate the tumour when it has reached a specific size (i.e., 21.8 mm³ ±3.8). However, onset of angiogenic vessel imaging varied (MCF-7: 9.4±2 days, MDA-MB-468: 12.1±2.6 days, and MDA-MB-231: 17±7 days post inoculation).
Conclusions Consistent with previous studies, angiogenesis started when tumour volumes were approximately the same size for all cell lines. As angiogenesis progressed, there was a drop in tumour blood flow. This can be explained by the sudden influx of oxygen when angiogenesis first begins. Blood vessel formation may be momentarily inhibited while the tumour continues to grow. After this transient drop, tumour vascularisation resumes a steady increase.

Purpose of study Due to treatment advances, 83% of childhood cancer patients survive into adulthood. As such, trainees should expect to treat this unique population regardless of intended career path. Unfortunately, there is a paucity of graduate medical education dedicated to caring for childhood cancer survivors. Our purpose was to implement and evaluate a formal cancer survivorship curriculum aimed at paediatric residents of the University of California, Los Angeles (UCLA) that addressed important topics related to the care of childhood cancer survivors.

Methods used Based on an initial needs assessment sent to program residents, a small group, case-based curriculum was created. It was integrated into the existing UCLA outpatient program residents, a small group, case-based curriculum was created. It was integrated into the existing UCLA outpatient program dedicated to caring for childhood cancer survivors. Our purpose was to implement and evaluate a formal cancer survivorship curriculum aimed at paediatric residents of the University of California, Los Angeles (UCLA) that addressed important topics related to the care of childhood cancer survivors.

Summary of results 37 of 44 participants completed the curriculum evaluation for a response rate of 84.1%. Each response item assessing residents’ knowledge, skills, and attitudes concerning childhood cancer survivorship care showed a statistically significant increase from pre- to post-curriculum (p<0.05). Residents believed the curriculum enhanced their paediatric knowledge base (μ=3.27; σ=0.65) and would recommend it to residents at other programs (μ=3.30; σ=0.70).

Conclusions This study offers an effective curricular model for educating paediatric residents in the care of childhood cancer survivors. Residents were interested in receiving additional training to effectively care for this special population. Future directions include adaptation of this curriculum to educate additional providers, such as students, nurses, and faculty.

Purpose of study Triple negative breast cancer (TNBC) does not respond to conventional targeted therapy, necessitating novel treatment options. Metformin has shown evidence of possessing anti-proliferative and pro-apoptotic properties in TNBC, but its mechanism of action is incompletely understood. Our experiments aim to examine TRAIL signalling pathway’s involvement in Metformin’s effects on TNBC.

Methods used In Vitro – TNBC cell lines BT549, HCC1806, MDA231, and MDA468 were cultured. Cell survivability was assessed by MTS assay. Changes in protein levels of pro-caspase 8, pro-caspase 3, PARP and TRAIL were assessed by Western Blot analysis.

Summary of results Cell survivability decreased after Metformin treatment in a dose dependent manner by MTS assay in MDA231 and HCC1806 cell lines. BT549, HCC1806, MDA231, and MDA468 cell lines demonstrated increased apoptosis after Metformin treatment through evidence of decreased pro-caspase 8, pro-caspase-3, and increased PARP cleavage on Western Blot as compared to control. MDA231 cell line demonstrated increased TRAIL expression with Metformin treatment in a dose- and time- dependent manner on Western Blot as compared to control.

Conclusions TNBC cell lines demonstrate increased apoptosis and levels of TRAIL protein after treatment with Metformin. If our future experiments targeting the blockade of TRAIL signalling demonstrate an attenuation of apoptosis in TNBC cell lines after Metformin treatment we can conclude that the TRAIL signalling pathway plays a critical role in Metformin’s apoptotic effect.

Purpose of study Anaemia associated with bacteremia in a patient receiving hemodialysis

Methods used In Vitro – TNBC cell lines BT549, HCC1806, MDA231, and MDA468 were cultured. Cell survivability was assessed by MTS assay. Changes in protein levels of pro-caspase 8, pro-caspase 3, PARP and TRAIL were assessed by Western Blot analysis.

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Purpose of study A case of methemoglobinemia and hemolytic anaemia associated with bacteremia in a patient receiving hemodialysis

Methods used In Vitro – TNBC cell lines BT549, HCC1806, MDA231, and MDA468 were cultured. Cell survivability was assessed by MTS assay. Changes in protein levels of pro-caspase 8, pro-caspase 3, PARP and TRAIL were assessed by Western Blot analysis.

Summary of results Cell survivability decreased after Metformin treatment in a dose dependent manner by MTS assay in MDA231 and HCC1806 cell lines. BT549, HCC1806, MDA231, and MDA468 cell lines demonstrated increased apoptosis after Metformin treatment through evidence of decreased pro-caspase 8, pro-caspase-3, and increased PARP cleavage on Western Blot as compared to control. MDA231 cell line demonstrated increased TRAIL expression with Metformin treatment in a dose- and time- dependent manner on Western Blot as compared to control.

Conclusions TNBC cell lines demonstrate increased apoptosis and levels of TRAIL protein after treatment with Metformin. If our future experiments targeting the blockade of TRAIL signalling demonstrate an attenuation of apoptosis in TNBC cell lines after Metformin treatment we can conclude that the TRAIL signalling pathway plays a critical role in Metformin’s apoptotic effect.
Case report
We report a case of a 68 year-old male with end stage renal disease from diabetes who presented for his routine hemodialysis complaining of nausea, vomiting and diarrhoea along with the feeling that his throat was closing off. He was dazed and diaphoretic with an oxygen saturation of 82%–84% on room air. During dialysis, the patient experienced hypotension and he eventually was sent to the emergency department for evaluation. He was found to be icteric in the setting of an acute decrease in haemoglobin from 11.3 g/dl the week prior to 8.5 g/dl, chocolate coloured plasma and a markedly elevated LDH and bilirubin. Additionally, he had an elevated lactic acid and white blood cell count with a left shift. The percent methemoglobin in plasma was significantly elevated. He was diagnosed with methemoglobinemia with hemolysis. Levels of methemoglobin from whole blood dropped to 2.1% after 6 hours and 0.5% by day 3. Haemoglobin nadir was 7.0 g/dl. Blood cultures grew Enterobacter. The patient was treated with antibiotics, received blood transfusions and discharged. Follow-up haemoglobin was 12.9 g/dl and methemoglobin% 0.0. Review of dialysis water and exposure to environmental toxins, and medications did not reveal an aetiology for the patient’s presentation. Methemoglobin is a dysfunctional state of haemoglobin in which the ferrous iron is oxidised to the ferrous state. Methemoglobin can be elevated in the setting of sepsis. Nitrous oxide, released in large amounts with sepsis, interacts with haemoglobin quickly forming methemoglobin. The combination of methemoglobinemia and hemolysis has been described, usually in patients with glucose 6 phosphate dehydrogenase deficiency, which increases red cell susceptibility to hemolysis in the oxidative milieu. Similarly, methemoglobin with hemolytic anaemia has been described in those exposed to chloramines while undergoing hemodialysis. Uremia decreases the erythrocytes ability to withstand oxidative stress, increasing the risk of hemolysis. This, along with the oxidative properties of chloramines results in the generation of methemoglobin and hemolysis. We postulate that our patient experienced a similar occurrence, the oxidative environment being linked to sepsis and hemolysis to the altered red cell in renal failure.

Immunology and rheumatology II
Concurrent session
Saturday, January 27, 2018
10:15 AM – 12:00 PM

460 AMYLOID LEUKOCYTE CHEMOTACTIC FACTOR 2 INVOLVING THE LIVER AND KIDNEYS AND ASSOCIATED WITH PRIMARY BILIARY CHOLANGITIS AND RHEUMATOID ARTHRITIS

O Huerta*, J Kim, Y Wu, J Vadgama. Charles R Drew University of Medicine and Science, Chula Vista, CA, Cabo Verde

Purpose of study
HER2 is the one of the most aggressive types of breast cancer. Recent studies indicate that GROα had a significant role in migration/movement in TNBC cells (Bhat, Sarkissyan, Wu, & Vadgama, 2017), and IL-8 has a significant role in tumour metastases and treatment resistance (Chen et al., 2014). As a continuation to Dr. Vadgama’s research findings of GROα and IL-8’s significant roles in TNBC cells, the primary focus of this research project is to study the roles of cytokines GROα and IL-8 in HER2+ breast cancer cells. The objective of this research project is to understand the role of cytokines IL-8 and GROα in HER2+ breast cancer cells growth, migration and invasion.

Methods used
HER2+ cell lines, JIMT1 (ER-/HER2+), and known resistance to herceptin), SKBR3 (ER-/HER2+), and BT474 (ER+/HER2+) were used as cell model. The expressing levels of IL-8 and GROα were determined by RT-qPCR. MTT assay was used to determine the effect of IL-8 and GROα in cell growth. Cell migration and invasion were examined by Wound Healing Assay and Boyden Chamber Invasion Assay. The study also examined the effect of IL-8 and GROα in HER2+ cells response to Herceptin treatment by MTT and Wound Healing assays.

Summary of results
Baseline mRNA levels of GROα were expressed highest in TNBC cell line, MDA-MB231 and followed by HER2+ cells, JIMT1. IL-8 mRNA levels expressed highest in resistant cell line JIMT1. SKBR3 cell growth was induced by GROα and IL-8 and Herceptin was able to inhibit the cell growth induced by either GROα or IL-8. However, in JIMT1 cells the cell growth was induced by combination treatment of GROα and IL-8 only and Herceptin was not able to inhibit the growth. IL-8 and GROα also increased cell migration and invasion in SKBR3 cells. Herceptin was able to inhibit GROα- or IL-8-induced cell migration in SKBR3 cells, but not able to inhibit GROα and IL-8 co-treatment induced cell migration. We are continually investigating the mechanisms of GROα and/or IL-8 inducing HER2-cells growth, migration and invasion.

Conclusions
GROα and IL-8 seemed to work synergistically in HER2 +cells enhancing cell growth and migration toward to resistance to Herceptin treatment. Further study on the mechanisms that lead to up-regulation of GROα and/or IL-8 in HER2-overexpressing breast cancer is warranted.
globular amyloid pattern with LECT2 amyloidosis; no features of plasma cell neoplasm or other types of malignancy were identified. Bone marrow biopsy was also positive for Congo red stain for amyloid, indicating the possibility of LECT2 associated amyloidosis. Patient is also followed by haematologist for plasma cell dyscrasia-related amyloidosis with plans to start immunomodulatory therapy. She has family history significant for renal disease in her sister, who died from lupus nephritis requiring dialysis complications; also, patient’s mother who had renal failure of unknown aetiology. LECT2 is a multifunctional cytokine and its precise functions and mechanisms are unclear and currently being investigated. LECT2 has been linked to multiple pathologic conditions such as liver disease. Globular amyloid consists of large circular globules with extracellular deposits within the sinusoids or as intracellular deposits within hepatocytes. Our patient had this globular amyloid deposition confirming the diagnosis of ALECT2 amyloidosis, involving the liver and kidney.

Abstract 461 Table 1 Clinical course of class IV LN patients

<table>
<thead>
<tr>
<th></th>
<th>Early biopsy (n=9)</th>
<th>Late biopsy (n=3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical presentation at SLE diagnosis</td>
<td>Hematuria, HTN, proteinuria</td>
<td>No hematuria, HTN, or proteinuria</td>
</tr>
<tr>
<td>Median time to first renal manifestation diagnosis</td>
<td>N/A (at SLE diagnosis)</td>
<td>9 months</td>
</tr>
<tr>
<td>Median time to biopsy</td>
<td>5 days</td>
<td>48 months</td>
</tr>
<tr>
<td>Pre-biopsy corticosteroid received (n)</td>
<td>11.1% (1)</td>
<td>100% (3) median cumulative dose: 4152 mg/m2</td>
</tr>
</tbody>
</table>

Abstract 461 Table 2 Outcomes of class IV LN patients

<table>
<thead>
<tr>
<th></th>
<th>Early biopsy (n=9)</th>
<th>Late biopsy (n=3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage with CKD at follow-up (n)</td>
<td>0 (0)</td>
<td>66.7 (2)</td>
</tr>
<tr>
<td>Percentage with proteinuria at follow-up (n)</td>
<td>55.5 (4)</td>
<td>66.7 (2)</td>
</tr>
<tr>
<td>Percentage with repeat renal biopsy (n)</td>
<td>11.1 (1)</td>
<td>66.7 (2)</td>
</tr>
<tr>
<td>Incidence of orthopaedic complications (avascular necrosis or fracture)</td>
<td>11.1 (1)</td>
<td>100.0 (3)</td>
</tr>
</tbody>
</table>

Purpose of study
Lupus nephritis (LN) in children with systemic lupus erythematosus (SLE) is common. Timely confirmation of proliferative LN with renal biopsy facilitates appropriate therapy. No formal guidelines currently exist for biopsy timing. Our aim was to compare presentation and course of paediatric Class 4 LN in children who had a biopsy at time of SLE diagnosis (early) to those who had biopsy later (late).

Methods
Children with class 4 LN seen at our tertiary care hospital were identified through a renal biopsy database (1995–2016). We have reviewed 40 of 91 biopsies (32 patients). 16 patients were excluded due to non-class 4 LN; 3 did not meet SLE diagnostic criteria; and 1 had diagnosis, subsequently corrected to Class 4 LN. 9 patients were excluded due to biopsy later than 1 year after SLE diagnosis (late). Our aim was to compare presentation and course of paediatric Class 4 LN in children who had a biopsy at time of SLE diagnosis (early) to those who had biopsy later (late).

Definitions
• First onset renal manifestation: hematuria with proteinuria on 2 consecutive urinalyses
• Nephrotic range proteinuria: >3 g/L on urinalysis or urine protein:creatinine ratio >200 mg/mmol
• Hypertension (HTN): BP>95th percentile for sex, age, and height, or antihypertensive treatment
• Chronic kidney disease (CKD): HTN, proteinuria, or eGFR <60 mL/min/1.73 m2

Summary of results
Median presenting age at SLE diagnosis was 13 years (range 8–15) 83.3% of patients female, 91.7% of Asian or southeast Asian descent. Median follow up time was 53 months (range 19–115). Striking differences were noted between patient cohorts (tables 1 and 2).

Conclusions
Preliminary data reveals two cohorts with differences in lupus nephritis presentation, biopsy, and clinical course. Ongoing data collection and further analysis are expected to generate insight into outcome patterns associated with biopsy timing, and ultimately help standardise practice at our institution.
remained dependent on mechanical ventilation via tracheostomy and did not recover. His code status was changed to comfort care and he deceased.

Conclusions This case represents the fifth confirmed case of Aspergillus subramanianii found on pathology specimen in the United States. To the best of our knowledge none of the previous cases have been published.

Purpose of study Anti-Glomerular Basement Membrane (Anti-GBM) disease is extremely rare affecting 0.5–1 case per million per year in the United States. It is an autoimmune disease that attacks the alpha 3 chains on type IV collagen present on the basement membrane of alveoli and glomerulus in the nephron. Anti-GBM disease is different than Goodpasture’s disease because there is no pulmonary involvement and injury is isolated to the kidney. Approximately, one-third of patients who present with Anti-GBM disease are also positive for anti-neutrophilic cytoplasmic antibodies (ANCA), most commonly myeloperoxidase (MPO-ANCA). Previous studies have stated that patients with Anti-GBM and MPO-ANCA positivity have better outcomes, however, conflicting studies suggests these patients unfortunately do worse. The following describes the case of a patient with double seropositivity of both Anti-GBM and MPO-ANCA.

Methods used Retrospective case report.

Summary of results 60-year-old Jehovah Witness female with history of asthma presented with nausea and vomiting for 3 weeks. She was found to have an elevated BUN and Creatinine of 82 mg/dL and 12.6 mg/dL, respectively. She was started on hemodialysis and later found to be positive for anti-GBM IgG Ab and MPO-ANCA. Pulse steroid therapy was started and a renal biopsy demonstrated necrotizing and crescentic glomerulonephritis with activity and chronicity. The biopsy specimen also displayed 43% active crescents, 3% subacute crescents, and 47% remote crescents with a moderate amount of tubulointerstitial scarring. Acute tubular injury and tubulointerstitial nephritis was also present along with arterial and arteriolar nephrosclerosis. Plasmapheresis was not initiated since there was no pulmonary involvement; however, Cytoxan therapy was started and later discontinued because her kidney function failed to improve. Subsequently, she progressed to end stage renal failure and continued dialysis.

Conclusions We present a patient with double positive anti-glomerular basement membrane antibodies and myeloperoxidase antineutrophilic cytoplasmic antibodies who required dialysis upon presentation and did not recover kidney function despite intravenous pulse steroids and cyclophosphamide therapy.

Purpose of study To describe a case of Kikuchi-Fujimoto lymphadenitis, to describe the presentation of this clinical entity, and review the differential diagnosis of a non-malignant neck mass.

Methods used The medical records of a patient treated at a tertiary care academic facility was reviewed. A pubmed/MEDLINE search was performed for the key words ‘Kikuchi-Fujimoto Lymphadenitis.’

Summary of results A 31 year old female presents with a several week history of a tender right neck mass. All other physical exam findings were normal. Patient was initially treated with a course of avelox, but did not improve. Two fine needle aspirates were performed which resulted in non-diagnostic findings. Over the course of 1 month the patient developed multiple nodes in the neck without resolution of the original neck mass. PET/CT confirmed the neck masses without any other significant findings. Patient was taken to the operating room for an excision of the initial neck mass which revealed Kikuchi’s disease.

Conclusions Kikuchi’s disease is a rare disease of unknown aetiology that causes cyclic fevers, lymphadenopathy, skin rashes and headaches. Some studies have proposed either an infectious or autoimmune aetiology, however, none have been confirmed. Kikuchi’s disease is self limiting and may overlap with Hodgkin’s lymphoma necessitating care when evaluating young patients with neck masses. An extensive review of the differential diagnosis of a benign neck mass is included.
While most commonly idiopathic, UV can also occur in association with autoimmune diseases, drug reactions, infection, or malignancy. Hypocomplementemic urticarial vasculitis (HUV) is a distinct clinical entity in a subset of patients with urticarial vasculitis and should also be distinguished from hypocomplementemic urticarial vasculitis syndrome (HUUPS). This report serves as a review of the presentation, common findings, and a single treatment option for HUV in a patient with SLE and Sjogren’s syndrome.

**Case Summary** A 38-year-old Hispanic woman with a history of systemic lupus erythematosus (SLE) and Sjogren’s syndrome presented to our hospital in January 2016 with diffuse non-pruritic burning hives for two days associated with fever, diffuse abdominal pain, and facial swelling. Hypocomplementemia and a skin biopsy demonstrating leukocytoclastic vasculitis (LCV) confirmed the diagnosis of hypocomplementemic urticarial vasculitis. Subsequent treatment with high dose steroids was curative in this patient.

**Conclusion** When there is suspicion for urticarial vasculitis, particularly in patients with autoimmune disease such SLE and Sjogren’s syndrome, skin lesions should be biopsied and complement levels should be measured to distinguish between hypocomplementemic urticarial vasculitis (HUV) and normocomplementemic urticarial vasculitis (NUV). Low complement levels are associated with more severe disease. Although urticarial vasculitis treatment is often challenging, systemic glucocorticoids and a skin biopsy demonstrating leukocytoclastic vasculitis (LCV) confirmed the diagnosis of hypocomplementemic urticarial vasculitis. Subsequent treatment with high dose steroids was curative in this patient.

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induction; this was also supported by proteomic analysis (top 5 upregulated and downregulated proteins included COPD9, UAP111, FERM, Importin α−1, PAI1; and CRABP1, Proenkephalin-A OS, LSM-7 homolog 1 CRAD, N-acetylneuraminic lyase, Egfl6 OS, respectively). 500VD group most effectively blocked the effects of perinatal VD deficiency. Lastly, LMSC conditioned media from 0VD group inhibited ATII cell proliferation and differentiation, while 250 and 500 VD groups conditioned media enhanced ATII cell proliferation and differentiation.

Conclusions These data suggest that VD deficiency during lung development alters LMSC proliferation and differentiation, potentially contributing to increased respiratory morbidity seen in infants born to VD-deficient mothers. (Grant Support:HL107118)

469 RESCUE OF SURFACTANT PROTEIN-B DEFICIENCY IN PATIENT SPECIFIC INDUCED PLURIPOTENT STEM CELL DERIVED ALVEOLAR TYPE II CELLS USING LENTIVIRAL GENE THERAPY

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Purpose of study Lethal neonatal respiratory distress syndrome can be caused by a rare, recessive mutation in the surfactant protein-B (SFTPB) gene (P133ins2) and the only treatment option is lung transplantation. Using human induced pluripotent stem cell (hiPSC) technologies to differentiate them into organ specific cells and correct the mutations with cell based gene therapies, patient specific diseases can be investigated and treated. Our hypothesis is that alveolar type II (ATII) cells can be derived through directed differentiation of hiPSCs from individuals genetically deficient in pulmonary SFTPB and function can be restored through lentiviral mediated over-expression of SFTPB.

Methods used We used a lentivirus vector containing the SFTPB wild type sequence downstream from a constitutively expressed promoter and a GFP-puromycin reporter sequence for infection verification. We infected hiPSCs derived from patient specific SFTPB deficient fibroblasts and then differentiated the SFTPB-rescued hiPSCs into 3D lung organoids made up of ATII cells.

Summary of results The SFTPB deficient hiPSCs were successfully infected with the lentivirus and expression levels of SFTPB were elevated in the SFTPB-rescued hiPSCs compared with the SFTPB deficient hiPSCs with QPCR and western blots. Using a novel directed differentiation protocol, the 3D organoids derived from the SFTPB-rescued hiPSCs showed gene and protein expression ATII cells. Lamellar bodies, representing surfactant storage in ATII cells were detected through electron microscopy in the SFTPB-rescued cells.

Conclusions This represents the first step in using cell based gene therapy to overexpress a non-functional gene in surfactant deficiency which will hopefully lead to a possible cure for newborn babies.

470 DOCOSAHEXAENOIC ACID SUPPLEMENTATION INDUCES DOSE- AND SEX-DEPENDENT CHANGES IN LUNG FUNCTION IN POSTNATAL GROWTH RESTRICTED RATS


Purpose of study Preterm infants often experience postnatal growth restriction (PGR). PGR increases the severity and incidence of the chronic lung disease of infancy, bronchopulmonary dysplasia (BPD), with male infants more severely affected. Docosahexaenoic acid (DHA), a long-chain fatty acid important for lung development, is decreased in human preterm infants who develop BPD. However, outcomes from clinical studies examining the effects of postnatal DHA supplementation on BPD outcomes are conflicting. As a result, consensus on dose and sex effects of DHA supplementation in human PGR infants are lacking. We previously showed in a rat model, that 1) PGR causes sex-divergent deficits in lung function, 2) PGR decreases circulating DHA in male rats, but not female rats.

We hypothesise that postnatal DHA supplementation causes dose and sex-dependent changes in lung function in PGR rats.

Methods used We induced postnatal growth restriction by randomising newborn rat pups into litters of 8 (control) or litters of 16 (PGR). Each litter was randomised to receive diets supplemented with DHA at 0.0%, 0.01%, 0.1%, and 0.25%. Pup weights (g) were measured every other day. At d24 of life, lung compliance, tissue and airway resistance were measured using the FlexiVent.

Summary of results Results are PGR as% sex-control ±SD (p<0.05). Rat pups in the PGR group weighed significantly less than control by postnatal d5 and continued to weigh less through d21 on all DHA diets. PGR decreased lung compliance in male (67%±26%*) and female (66%±25%*) rats. In male PGR rats, DHA did not improve lung compliance at any dose. In contrast, in female PGR rats, 0.1% and 0.25% DHA normalised lung compliance. PGR increased airway resistance in female (166%±148%*) rats, but not male rats. All DHA doses (0.01, 0.1 and 0.25%) normalised airway resistance in female PGR rat lungs.

Conclusions We conclude that postnatal DHA supplementation results in dose and sex-dependent changes in lung function in PGR rats. These data highlight the importance of dose and sex considerations in postnatal DHA supplementation. We speculate that sex-divergent fatty acid metabolism in the lung may contribute to sex-divergent effects of supplementation.

471 NICOTINE RE-EXPOSURE IN F1 GESTATION FOLLOWING G0 GESTATION EXPOSURE EXACERBATES THE ASTHMA PHENOTYPE SEEN IN F2 GENERATION OFFSPRING

J. Liu*, V. Kamam, V. Rehan. LA Biomed Research Institute at Harbor-UCLA Medical Centre, Torrance, CA

Purpose of study F0 gestational nicotine exposure exacerbates the asthma phenotype seen in F2 generation offspring. This mechanism is not fully understood.

Methods used and results We induced nicotine re-exposure in F1 gestation following F0 gestation exposure as follows: 1) F0 rats were exposed to nicotine (0.15 mg/ml) from gestation day 17 to P4, 2) F1 rats were exposed to nicotine (0.1 mg/ml) from P1 to P21, 3) F2 rats were exposed to nicotine (0.1 mg/ml) from P1 to P14. We also examined effects of stable nicotine exposure throughout all three windows. We also used nicotine re-exposure models in combination with genetic mouse models to better understand the mechanism.

Summary of results We observed a dose-dependent asthma phenotype in F2 generation offspring following nicotine re-exposure in F1 gestation, as compared to nicotine re-exposure in F0 gestation only. In addition, nicotine re-exposure in F1 gestation following F0 gestation exposure exacerbated the asthma phenotype seen in F2 generation offspring.

Conclusions These results suggest that nicotine re-exposure in F1 gestation following F0 gestation exposure exacerbates the asthma phenotype seen in F2 generation offspring.
Purpose of study In a well established rat model, we have previously demonstrated transgenerational (TG) transmission of perinatal nicotine (Nic)-induced asthma, which is driven epigenetically. Similar to the epigenetic TG transmission scenario in some other models, perinatal Nic-induced asthma tends to wane over successive generations; however, the effect of Nic re-exposure in F1 gestation following its exposure in F0 gestation on asthma phenotype in F2 generation is unknown.

Methods used Pair-fed pregnant Sprague Dawley rat dams received diluent or Nic 1 mg/kg daily from e6 until postnatal day (PND) 21. At PND60, F1 rats were mated to obtain F2 generation offspring. Using the Nic administration protocol utilised in F0 gestation, F1 pregnant dams were classified into 3 groups: 1) Not exposed to Nic in either F0 or F1 gestation (Control); 2) exposed to Nic in only F0 gestation (F0-Nic); and 3) exposed to Nic in both F0 and F1 gestations (F0+F1 Nic). At PND21, F2 pups were studied to determine pulmonary function (total airway resistance and compliance, and tracheal contractility), key mesenchymal airway contractility markers expression in both lung and tracheal tissues by immunoblotting and immunostaining in a sex-specific manner, and global DNA methylation in testes of F2 males.

Summary of results Compared to controls, both F0-Nic and F0+F1 Nic offspring demonstrated a clear asthma phenotype; however, F0+F1 Nic group offspring demonstrated a significantly enhanced asthma phenotype, as determined by pulmonary function studies and mesenchymal contractility protein levels, in both lung and tracheal tissues (p<0.05, F0-Nic vs F0+F1 Nic), with all of these changes being more pronounced in males (p<0.05, males vs females). Lastly, testicular global DNA methylation was significantly higher in F0+F1 Nic group rats vs F0-Nic group rats.

Conclusions Perinatal Nic re-exposure in F1 gestation exacerbates the F2 offspring asthma phenotype, seen following Nic exposure in F0 gestation. Increased testicular global DNA methylation in F0+F1 Nic males further corroborates the importance of epigenetic mechanisms underlying the TG transmission of perinatal Nic-induced asthma.

Neonatology – general VI

Concurrent session

Saturday, January 27, 2018

10:15 AM – 12:00 PM

472 CARBON DIOXIDE LEVELS DURING TRANSITIONAL PERIOD AND DEVELOPMENT OF PERI-INTRAVENTRICULAR HAEMORRHAGE IN EXTREMELY LOW BIRTH WEIGHT NEONATES

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Purpose of study High pCO2 dilates cerebral vessels and attenuates cerebral autoregulation. The effect of pCO2 on cerebral blood flow evolves during postnatal transition with a weak positive correlation in the first day of life (DOL) and a strong positive correlation by DOL 3. We previously reported a breakpoint in this relationship at a pCO2=53 mmHg, with no relation below this cutoff and a strong relation above it in the first 3 days of life. Epidemiologic data has indicated that fluctuations and extremes in pCO2 in the first days of life are linked to peri/intraventricular haemorrhage (P/IHV). Ischemia in DOL 1 followed by reperfusion on DOL 2–3 is a major factor in development of P/IHV. We investigated the relationship between daily pCO2 values in DOL 1–3 and P/IHV in extremely low birth weight (ELBW) infants.

Methods used We retrospectively identified inborn ELBW infants over a 7 year period using our prospectively collected database. Blood gas values and P/IHV status was verified manually by reviewing our laboratory database and ultrasound reports. We examined the relationship between P/IHV and daily maximum pCO2, pCO2 >53 mmHg, and cumulative exposure to pCO2 above certain cutoffs.

Summary of results In this ongoing study, we have collected complete data for 162 ELBW infants (gestational age 25±2 wks and birthweight 696±171 g). Seventy-seven (47.5%) had grade I-IV P/IHV. Max pCO2 on DOL 2 (p=0.009) and fluctuation in pCO2 on DOL 2 and 3 were associated with development of P/IHV (p<0.01). For each 1 mmHg increase in max pCO2 value, the risk of P/IHV increased by 2.3% (p=0.01). There was a 2.2-fold increase in risk of P/IHV if pCO2 values were >53 mmHg (p=0.017). Cumulative exposure to pCO2 >65 mmHg was associated with development of P/IHV (p=0.036).

Conclusions Exposure to high pCO2 and fluctuation in pCO2 during the DOL 2 and 3 was associated with development of P/IHV. Prolonged exposure to pCO2 above 65 mmHg increased the risk of P/IHV.

473 EFFECT OF A SYSTEMS IMPROVEMENT INTERVENTION ON NEWBORN SURVIVAL IN A RURAL KENYAN HOSPITAL

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Purpose of study Neonatal mortality rate in Kenya remains a challenge with 56% of infant deaths in Kenya occurring in the first month of life, the majority of them occurring health facilities. The purpose of this study is to determine the effectiveness of a multifaceted quality improvement intervention (QI) in the labour and delivery (LD) and newborn unit (NBU) in a rural hospital in Kenya over a period of three years.

Methods used The study took place at Naivasha Sub-county hospital in Nakuru county, Kenya between November 2015 and January 2017. In 2015, the hospital formed a multidisciplinary QI team (nurses, clinicians, hospital and county health administrators) who engaged in monthly QI meetings and completed a benchmarking visit to a larger tertiary facility. The team received training and ongoing mentorship in systems analysis and basics of QI strategies and performed a gap analysis of NBU and LD patient care. NBU/LD staff completed training in Helping Babies Breathe and Emergency Obstetric Care; clinical staff participated in weekly problem based small group clinical training sessions. The hospital introduced care pathways with decision support for common conditions, high-risk rooms for mothers and infants, a triage room for new...
admissions and infection prevention measures. We abstracted aggregated monthly NBU and LD admission and mortality data from the hospital database; July 2013 to April 2015 was the baseline pre-QI intervention period, May 2015 to January 2017 was the post-intervention maintenance phase.

**Summary of results** A total of 4438 children (pre: 1750; post: 2688) were admitted to the NBU and 23 256 deliveries (pre: 12,227; post: 13,522) were recorded. In the NBU monthly mean all-cause neonatal mortality rates decreased from 14% to 8% (p=0.05). In LD average monthly cases of fresh still-born changed from 7.6 to 6, macerated stillbirths from 8.3 to 8.9 and neonatal deaths from 1.8 to 1.3. [all NS].

**Conclusions** Improvement in neonatal outcomes is achievable when consistent efforts to improve the care processes are made. Involvement of stakeholders has been key factor in achieving these successes.

### Abstracts

**474** INVESTIGATING THE ASSOCIATION BETWEEN ENVIRONMENTAL TEMPERATURE AND NEWBORN BODY TEMPERATURE IN RURAL GUJARAT, INDIA

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**Purpose of study** Fever in newborns is highly concerning for serious infections, prompting clinicians to perform a workup and initiate prophylactic antibiotic treatment. High environmental temperatures may be associated with non-infectious temperature elevation in newborns, yet little is known about the prevalence of fever in summer in tropical climates. Previous studies have determined the distribution of healthy infant temperatures in temperate environments. Our goal was to determine the prevalence of elevated body temperatures of asymptomatic infants <3 months during routine exams during summer in India.

**Methods used** The study took place in Mota Fofalia Paediatric Centre in Gujarat, India, and included randomly selected infants <3 months who received routine (non sick) newborn care in the postnatal ward or during routine post-hospitalisation home health checkups. 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** 181 environmental and body temperature measurement pairs were obtained in 80 children: female: 37 (46%); mean age: 4 days (range: 0–91 days). The average environmental temperature was 34.9°C (Range: 32.3°C–40.4°C) (95% CI: 34.72 to 35.16); the mean rectal temperature in infants was 37.6°C. (Range: 35.9–41.5) (95% CI: 37.46 to 37.68), 33/80 (41%) of children were measured febrile >38°C with 43/181 (24%) of rectal temperatures elevated at 38.0°C or above (Range: 38.0°C–41.5°C).

Ambient temperatures in febrile vs afebrile measurements were not significantly different (35.2°C vs 34.84°C; p>0.2). Febrile vs afebrile children did not differ with regards to age, birth weight, and vital signs (p>0.1). 3/81 children exhibited signs of systemic infection; 5/81 infants received systemic antibiotic therapy, one child expired.

**Conclusions** Elevated body temperatures in asymptomatic infants less than 3 months of age are common in high environmental temperatures. Further studies are needed to determine the clinical implications on this finding.

**475** TRENDS IN THE DIAGNOSIS OF RETINOPATHY OF PREMATURENESS IN THE UNITED STATES FROM 1997–2012

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**Summary of results** There were 70 541 weighted diagnoses of ROP identified and 7167 (10.2%) were treated. From years 1997 to 2012, ROP diagnosis has increased but the proportion of treated ROP decreased except for year 2003. Covariates such as being outborn (aOR=2.27; 95% CI: 2.08 to 2.43), extremely low birth weight (aOR=10.69; 95% CI: 7.99 to 14.32), presence of patent ductus arteriosus (aOR=1.6; 95% CI: 1.48 to 1.74) and receiving invasive mechanical ventilation for respiratory support (aOR=1.40, 95% CI: 1.28 to 1.53) were associated with treated ROP.

**Conclusions** There has been an increase in the number of infants requiring laser photocoagulation or surgery has decreased. This can be attributed to the increase in number of surviving preterm infants and better care in the prevention of severe ROP requiring treatment. Extremely low birth weight, inborn, and sicker infants are at higher risk of treated ROP. It is important to develop and continue prevention strategies to reduce the occurrence of treated ROP in preterm infants.

**476** TRENDS IN MATERNAL INSURANCE STATUS DURING AFFORDABLE CARE ACT IMPLEMENTATION IN COLORADO

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**Purpose of study** Maternal insurance status in the perinatal period may be associated with maternal and neonatal health outcomes. The Affordable Care Act (ACA) was enacted in
March 2010 and its major provisions went into effect in Colorado in 2012. According to the 2017 Colorado Health Access Survey, decrease in the uninsured rate within the state followed, from 15.8% in 2012 to 6.5% in 2017. Data on insurance status of mothers as well as the effect of insurance on neonatal outcomes are lacking. Thus, the objectives of this study are to 1) Evaluate change in maternal pre-pregnancy insurance status following ACA implementation in Colorado and 2) Assess the association between pre-pregnancy maternal insurance status and neonatal health outcomes (low birth weight- LBW, NICU admission, and length of birth hospitalisation).

Methods used We analysed 2012–2015 data from the Colorado Pregnancy Assessment and Risk Monitoring System, a national perinatal surveillance system. We evaluated change in pre-pregnancy maternal insurance status (private, public, uninsured). We calculated adjusted prevalence ratios to evaluate the independent association of maternal insurance status and neonatal outcomes: LBW (<2500 g), NICU admission, and prolonged birth hospitalisation (>5 d), controlling for maternal age, education, race/ethnicity, marital status, and infant gestational age. Weighted prevalence estimates and standard errors were used.

Summary of results Following implementation of the ACA, the percentage of uninsured mothers decreased from 18.4% in 2012 to 13.2% in 2015, while the percentage of publicly insured mothers increased from 19.2% in 2012 to 27% in 2015 (p<0.01). In the adjusted models for neonatal outcomes, infants of uninsured mothers had a 52% higher risk of prolonged birth hospitalisation (RR 1.52, 95% CI: 1.11 to 2.07). There was no difference in risk for LBW or NICU admission by pre-pregnancy maternal insurance status.

Conclusions Infants of mothers who are uninsured prior to pregnancy are at increased risk of prolonged birth hospitalisation. Ongoing investigation is needed to understand the relationship between maternal insurance status and neonatal outcomes. Ensuring that mothers have insurance prior to pregnancy may lead to improved neonatal outcomes.

477 DELAYED CORD CLAMPING AMONG CALIFORNIA NEONATAL INTENSIVE CARE UNITS

1CL Tran*, 2) Parucha, 3) Jegatheesan, 4)H Lee. 1University of California Irvine School of Medicine, Irvine, CA; 2California Perinatal Quality Care Collaborative, Palo Alto, CA; 3Santa Clara Valley Medical Centre, San Jose, CA; 4Stanford University School of Medicine, Palo Alto, CA

Purpose of study Delayed cord clamping provides benefits for term and preterm infants and is recommended by many healthcare organisations. The objective of this study was to determine hospital level or patient level factors that may predict likelihood of receiving DCC in California NICUs.

Methods used This was an observational study of self selected NICUs in the California Perinatal Quality Care Collaborative from January 2016 to December 2016. DCC rates were analysed for trends and variation between hospitals. Hospital characteristics and patient demographics were analysed using multivariate logistic regression.

Summary of results Of 5332 deliveries in 52 hospitals, 1555 (29%) newborns received DCC. DCC rates among hospitals ranged from 0% to 74.5% and increased from 21% in January to 37% in December 2016. Preterm infants delivered <32 weeks or with a birthweight <1500 grams were more likely to receive DCC (OR: 2.80; 95% CI: 2.33, 3.36), whereas infants delivered via caesarean were less likely to receive DCC (OR: 0.68; 95% CI: 0.59, 0.79). Even after adjusting for patient characteristics, hospitals still varied significantly in DCC practices and only 17 (33%) hospitals performed above expected.

Conclusions Less than a third of the newborns received DCC with significant variation between the hospitals. Further studies need to evaluate the barriers for this gap between DCC policy and practice. This DCC practice variation is an opportunity for hospitals to collaborate and disseminate best practices.
Purpose of study Traumatic brain injury (TBI) is a major cause of disability that lacks any effective treatment. For unknown reasons, TBI triggers a secondary inflammatory response and oxidative stress in the brain that worsens the original insult. Serendipitously, we developed a ‘tolerant’ strain of rats that survive indefinitely in hyperoxia while control rats all die in ~66 hours. Tolerant rats also develop less lung inflammation, oxidative stress, and injury following hyperoxia. Tolerant rats also have higher expression of heme oxygenase-1 (HO-1) (a potent multidimensional anti-inflammatory antioxidant) in their alveolar macrophages and bone marrow mononuclear cells. Given the upregulation of HO-1 in progenitor cells, we postulated that tolerant rats would resist oxidative stress following a traumatic brain insult.

Methods used Control and tolerant rats were anaesthetized with isoflurane and then exposed to mild TBI using a stereotactic impactor tip (5 mm) accelerating at 5 m/s to an impact depth of 1.5 mm aimed at a point (~4 mm from bregma and 2.5 mm left of sagittal suture) on the exposed skull. 24 hours later, brains were perfused with saline, OCT fixed, and cryotome sliced in 8 mm sections at the approximate site of injury. Section slides then underwent immunofluorescence staining for HO-1, nitrotyrosine, and Fluoro-Jade B.

Summary of results Following mild TBI, tolerant rats have greater brain HO-1 immunofluorescence staining than control rats. In addition, following mild TBI, tolerant rats have less nitrotyrosine staining than control rats. Nitrotyrosine staining is most prominent in the proximal cortex of control rats subjected to TBI. Cell death by Fluoro-Jade B stain was not observed in brains of either tolerant or control rats.

Discussion This case is important because: 1. screening for syphilis is recommended in early pregnancy because the CDC reported an 38% increase in rate of cases of congenital syphilis in the United States from 2012–2014, indicating failure in the existing antenatal screening with some experts suggesting a re-screen in the third trimester; 2. hepatosplenomegaly is a common presentation for congenital syphilis, direct hyperbilirubinemia is not; 3. Given the resurgence of congenital syphilis worldwide, clinicians need to keep this diagnosis in mind when presented with isolated direct hyperbilirubinemia in a newborn, even if maternal serology was negative early in gestation. 4. Placental pathology can be vital in guiding the work-up of the infant’s presentation.
AN UNUSUAL PRESENTATION OF A CONGENITAL ANTERIOR THIGH MASS

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10.1136/jim-2017-000663.482

Case report: An 11-year-old Caucasian male with the history of alopecia universalis presents with a right-sided anterior thigh mass. While obtaining a history the mother reports that 5 days prior to presenting the patient began to have a gradual onset of increasing anterior thigh pain. Over the next subsequent days, the patient began to develop a new mass. The patient described the pain as localising and aching with a 6 out 10 on the pain scale. He denies any history of trauma, insect bites, recent travel. The patient did mention possible cat scratch four weeks prior to presentation in the hand but the wound had already healed. On the day of presentation, the parents went to an urgent care which did an ultrasound which showed right inguinal mass and sent the patient to the emergency room for further management.

Diagnosis: The initial chest radiograph was concerning for a mass. Further imaging with Computed Tomography (CT) and Magnetic resonance imaging (MRI) of the chest showed a diaphragmatic hernia. This case illustrates the importance of considering mediastinal mass as a differential diagnosis of diaphragmatic hernia. Although, mediastinal mass is less common, the risks with invasive airway management is an important consideration in the management of acute respiratory failure.
swelling has diffused margins; it is mobile and tender. No other regions of LAD. The skin overlying the mass is erythematous. No tracks. No fissures. The rest of the physical exam was within normal limits.

Laboratory studies are obtained, and a CBC and CMP are within normal limits. An LDH is 456 and uric acid is 5.4. An MRI showed right inguinal adenopathy; there are 2 large adjacent lymph nodes. These are measured together as 3.4 × 2.1 × 4.3 cm. No abscess; hip joint effusion noted.

Additional interventions and workup lead to the diagnosis.

484 A RARE CASE OF BRAIN ABSCESSE DUE TO STREPTOCOCCUS CONSTELLATUS FOLLOWING PNEUMONIA AND EMPYEMA IN A YOUNG IMMUNOCOMPETENT MALE

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10.1136/jim-2017-000663.484

Case report Streptococcus constellatus is a regular commensal of the oral cavity and is known to cause pyogenic infections. We present an interesting case of an immunocompetent male found to have a brain abscess and pneumonia with empyema due S. constellatus.

A 17 year-old male with well-controlled type 2 diabetes mellitus and history of pneumonia with empyema due to Streptococcus intermedius treated with antibiotics and video assisted thoracoscopic surgery (VATS) 2 years prior, presented to the emergency department (ED) with acute onset of altered mental status. Imaging performed in the ED was suggestive of brain abscess (figure 1a) and pneumonia with empyema (figure 1b). S. constellatus was isolated from the pleural fluid and from the brain abscess. The patient was started on appropriate antimicrobial therapy. Studies, including an echocardiogram and nuclear scan of the body, did not show any other focus of infection. Immunodeficiency was excluded by normal T-cell subsets, immunoglobulin assay and complement studies. Other infectious, inflammatory and neoplastic etiologies were excluded as well.

Very few cases of brain abscesses caused by S. Constellatus have been reported in the literature. Only one case in an immunocompetent patient has been reported to date. Recurrent pleural effusions at the same pleural space, associated with an intracranial abscess, due to S. constellatus, in an immunocompetent individual makes our case unique. This unexpected presentation demonstrates the necessity of timely surgical debridement with appropriate intravenous antibiotics to treat pyogenic infections caused by this common commensal bacteria.

485 ACUTE HEMORRHAGIC EDEMA OF INFANCY PRESENTING AS POSSIBLE CHILD ABUSE

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10.1136/jim-2017-000663.485

Case report The finding of bruising in young infants, particularly without clear accidental traumatic explanation, is a widely recognised manifestation of physical abuse. This requires prompt medical and social assessment to assure child well-being.

A 9 month-old infant presented to a paediatric emergency department with fussiness, spontaneous onset of ‘bruising’ and swelling of the feet.

Due to unexplained possible traumatic findings, protective services was notified, safety plan established, and infant was referred for outpatient consultation with the UNM Child Abuse Response Team (CART).

The infant re-presented to the ED within 12 hours due to superior progression of bruising and swelling to legs and hands.

On second exam, diffuse petechiae, purpura, and oedema of the hands and feet were noted. The infant had mild nasal congestion, but otherwise was well, with stable vital signs.

Laboratory studies including complete blood count, coagulation studies, Von Willebrands Screen, electrolytes, liver function tests, urinalysis were normal. Medical history included hospital admission for viral bronchiolitis 2 months prior. Based on presentation, a clinical diagnosis of Acute Haemorrhagic Oedema of Infancy (AHEI) was made.

Abstract 484 Figure 1  a. MRI brain: Left posterior parietal abscess with surrounding vasogenic edema. b. CT chest: Right lower lobe consolidation with pleural effusion.
AGGRESSIVE FIBRO-OSSEOUS LESION OF THE GINGIVAL METASTASIS: A CASE REPORT

MOLARIZATION OF A MAXILLARY LATERAL INCISOR

Two years later, the patient received a mastoidectomy followed by a revision mastoidectomy. The patient received a mastoidectomy followed by a revision mastoidectomy a year later. All pathological specimens were consistent with a BFOL. The patient developed left facial weakness 3 months after the revision as the erosive lesion continued to invade the temporal bone and approach the jugular bulb despite its benign histopathologic appearance.

Summary of results Two years later, the patient received a resection via a lateral skull base approach which resulted in dramatic improvement of compressive symptoms.

Conclusions Temporal bone BFOLs are rare and even more rarely feature an aggressive clinical course. This case demonstrates a particularly destructive presentation of a temporal bone BFOL and also emphasizes that temporal bone tumours benign on histopathology may be clinically aggressive. Early and complete resection seems to be required for such histologically benign yet locally destructive lesions. These aggressive clinical entities should be considered when fine needle aspirates or biopsies suggest benign-appearing fibro-osseous lesions.

MOLARIZATION OF A MAXILLARY LATERAL INCISOR

Case report Dens invaginatus (DI) is a relatively uncommon condition of the teeth occurring from developmental infolding of dental structures toward the pulp, creating an unusual depression in the dental anatomy. Similarly, dens evaginatus (DE) is a developmental malformation with a higher rate of incidence resulting in the presence of extraneous dental structures arising from the occlusal, incisal or lingual surfaces of the tooth. Both conditions may involve varying amounts of pulpal tissue as categorised by Oehler in 1957. Presentation of DI and DE on a single tooth is rare with only two cases documented in English literature. Here we describe a 56 year old Hispanic female with a molarized lateral incisor who presented to a large urban-based community clinic for her routine dental evaluation. Review of medical history reveals presence of non-morbid obesity, prehypertension, osteoporosis and non-malignant left breast cyst removed ~30 years ago. Medications include calcium supplements for osteoporosis. Patient denies any past or current consumption of alcohol or tobacco and exhibits fair oral hygiene, mild periodontitis, and several new carious lesions including two occlusal pits of the molarized lateral incisor. Awareness of such anatomical anomalies are critical in maintaining oral hygiene and planning potential endodontic treatment.
Abstracts

The patient chose a palliative regimen of radiation to both his primary and secondary sites for the management of his stage IV lung adenocarcinoma.

Conclusion This case report highlights a rarely encountered but clinically important finding: that gingival metastases from solid cancers may be a rare but underappreciated diagnosis when presenting as oral mucosal lesions.

Conclusions While telephone coaching appears to be an effective modality for behavioural modification among parents of obese youth, continued efforts are needed to further elucidate optimal strategies in reinforcing positive behaviours among families in high-risk communities.

Interpersonal education should be a priority in my profession.

IMPLEMENTATION OF A COMMUNITY BASED MULTIDISCIPLINARY TELEPHONE COACHING INTERVENTION FOR PARENTS OF OBESE YOUTH: A PILOT STUDY

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Purpose of study Obesity has been declared a global epidemic by The World Health Organisation and is associated with increased morbidity and mortality. In the county of San Bernardino, where our intervention was held, almost three quarters of adults are overweight. Recent reports show 38% of San Bernardino County adults were overweight, 34% obese and 27% with a healthy body weight, in contrast to 35.8% of adults in California. The Operation Fit program is a week-long summer day camp that was developed in part to address this health concern in children and adolescents. Critical appraisal of obesity prevention programs for children and youth, however, suggest that modest results of efforts among this group can be linked to lack of reinforcing efforts by parents at home.

Methods used Our program sought to address this need by providing incentivized health screening and telephone based health coaching to parents of participants in the Operation Fit program that encouraged and motivated positive health behaviours.

Summary of results The response rate was 34%. Facilitators reported that IPE is an important responsibility, 79% marking ‘Strongly agree’ or ‘Agree’ 79% when asked ‘IPE should be a priority in my profession.’ 73% of the respondents marked ‘Somewhat important’ or ‘Extremely important’ when asked to rank the importance of being an IPE facilitator. 96% marked ‘Strongly agree’ or ‘Agree’ when asked ‘Interprofessional collaboration has the potential to reduce errors in the delivery of medical care.’ Respondents listed the top three contributions to patient outcomes as ‘Competency of individual practitioners’, ‘Communication between health specialists,’ and ‘Teamwork skills of health professionals.’ When asked to identify the greatest barriers to a successful IPE program, the top three barriers were: 39% curriculum or course management, 25% student perception, and 17% need for increased faculty buy-in. The strongest positive and negative Pearson correlation statistics revealed a weak positive association (0.30) between ‘Interprofessional education should be a priority in my profession’ and ‘The IPE courses at WesternU have met the expectations I had when I enrolled at WesternU’ and a moderate negative correlation (−0.50) between ‘Do you feel you can make a difference in your students’ perceptions of interprofessional collaboration’ and ‘Overall, I found this course to be a valuable educational experience.’

Conclusions Results indicate positive attitudes toward IPE and its importance in patient safety. The correlation data paints a paradox: the more invested the facilitator is in IPE education, the lower the opinion of students about the IPE course. Open responses hint that selection bias should be considered. Also, limitations may exist regarding the representativeness of the student responses to the specific matched facilitator, including the timing of the IPE course survey and the matching process.

A SURVEY OF ATTITUDES AND PERSPECTIVES OF INTERPROFESSIONAL EDUCATION (IPE) INSTRUCTORS

L Baldwin*, A Aguero. Western University of Health Sciences, Arcadia, CA

Purpose of study This study aims to capture the views of the facilitator regarding the importance of IPE.

Methods used We conducted a cross-sectional study of IPE facilitators to determine attitudes toward their role, the importance of, and the need for interprofessional collaboration in healthcare. Responses were matched to student course evaluation data to determine if correlations exist between facilitator attitudes and student opinions.

Summary of results The response rate was 34%. Facilitators reported that IPE is an important responsibility, 79% marking ‘Strongly agree’ or ‘Agree’ 79% when asked ‘IPE should be a priority in my profession.’ 73% of the respondents marked ‘Somewhat important’ or ‘Extremely important’ when asked to rank the importance of being an IPE facilitator. 96% marked ‘Strongly agree’ or ‘Agree’ when asked ‘Interprofessional collaboration has the potential to reduce errors in the delivery of medical care.’ Respondents listed the top three contributions to patient outcomes as ‘Competency of individual practitioners’, ‘Communication between health specialists,’ and ‘Teamwork skills of health professionals.’ When asked to identify the greatest barriers to a successful IPE program, the top three barriers were: 39% curriculum or course management, 25% student perception, and 17% need for increased faculty buy-in. The strongest positive and negative Pearson correlation statistics revealed a weak positive association (0.30) between ‘Interprofessional education should be a priority in my profession’ and ‘The IPE courses at WesternU have met the expectations I had when I enrolled at WesternU’ and a moderate negative correlation (−0.50) between ‘Do you feel you can make a difference in your students’ perceptions of interprofessional collaboration’ and ‘Overall, I found this course to be a valuable educational experience.’

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A HIDDEN SOURCE OF NICKEL EXPOSURE

J Chen*, B Limone, C Rundle, JK Parker, L Jacob. Loma Linda University School of Medicine, Loma Linda, CA; VA Loma Linda Healthcare System, Loma Linda, CA

Purpose of study This study aims to capture the views of the facilitator regarding the importance of IPE.

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Conclusions Results indicate positive attitudes toward IPE and its importance in patient safety. The correlation data paints a paradox: the more invested the facilitator is in IPE education, the lower the opinion of students about the IPE course. Open responses hint that selection bias should be considered. Also, limitations may exist regarding the representativeness of the student responses to the specific matched facilitator, including the timing of the IPE course survey and the matching process.
Purpose of study. The incidence of nickel sensitisation continues to rise in the United States, while rates in Europe declined after the implementation of the Nickel Directive which outlined allowable levels of nickel release from consumer goods. Stringent environmental regulations have been adopted by consumers, leading to reduced exposure to nickel. This case study is intended to evaluate chinrest brackets in the US for releasable nickel and confirm use of nickel brackets by professional musicians in the US.

Methods used. Dimethylglyoxime (DMG) tests were used to evaluate new chinrest brackets from music stores in California and brackets professionally in use.

Summary of results. Of the 114 DMG tested new chinrest brackets, 66 (57.9%) demonstrated significant nickel release, while 15 (65.2%) of the in-use chinrest brackets tested positive.

Conclusions. The chinrest brackets that were in-use had a higher percentage of positive nickel DMG tests compared to those in stores. This could be due to selection bias in the type of brackets or potentially indicate that use, sweat and friction may impact nickel release.

492 3D VIRTUAL IMAGING MADE ACCESSIBLE AND INEXPENSIVE

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Purpose of study. We have identified a novel technique that allows for creating portable, precise 3D virtual images using the camera on everyday mobile devices. This alleviates the use of expensive scanners that require considerable training.

Methods used. Using a Canon DSLR as our control, and an iPhone 6, and a Samsung Galaxy S4 we photographed pathology specimens. Photographs were taken on one surface and then flipped to image the undersurface. Overlapping images were taken to ensure full coverage. On average 90 images were taken per specimen, per researcher. Various objects such as rulers, push pins, and LEGOS were used to orient the specimens.

Summary of results. 3D images rendered from photos taken with the Canon DSLR were used as a control, while images obtained using smartphones were compared with the images obtained using smartphones. Both methods produced 3D images, with the images obtained using smartphones being precise and accurate. Images obtained using a Galaxy phone took lower quality images and required the addition of more manual markers in order to orient PhotoScan. Medium to large sized specimens rendered high quality 3D images. Researchers spent on average 20 min photographing each specimen. Rendering time of the 3D images for each specimen varied depending on photo quantity and amount of overlap.

Conclusions. Precise high quality 3D images can be easily created using smartphones. These compare well with 3D images created from images using a Canon DSLR as well as standard expensive scanners. To optimise image quality, we may want to consider newer smartphones. The iPhone was easier to use, allowing for automatic point and shoot capability without adjustment while the Canon required specific, complicated settings to yield high quality images. Overall, these images can be widely accessed on mobile devices, catering to the changing technological needs of today’s students.

493 CASE OF PRIMARY PLASMA LEUKAEMIA PRESENTING AS BILIARY OBSTRUCTION

A Ammar, H Chahine, S Morcos, J Coleman*, Cobos E. Kern Medical, Bakersfield, CA

Case report. Plasma cell leukaemia is a clonal involvement of malignant immunoglobulin-secreting mature B-lymphocytes. PCL is an aggressive and rare plasma cell dyscrasia that can occur de novo, or secondary due to plasma cell myeloma. We describe a case of a 65 year old male who presents with diarrhoea and worsening right upper quadrant pain radiating to the back for 1 month. Clinical examination was remarkable for scleral icterus and epigastric tenderness. Labs were significant for alkaline phospotase of 266 u/l, AST 208, u/l, total bilirubin 3.2 mg/dl conjugated bilirubin 2.4 mg/dl, with negative lipase. CT Abdomen showed changes consistent with pancreatitis, and inflammation to adjacent duodenum. MR Abdomen revealed a large inflammatory mass around the head of the pancreas. Pancreatic biopsy revealed plasma cell dyscrasia, with cells positive for CD38 with a lambda light chain predominance. A bone marrow biopsy showed circulating plasma cells that make up 60% of the total nucleated cell population, and are positive for CD38, CD138, and lambda light chain. These pathological findings are consistent with a rare condition called primary plasma cell leukaemia. Even more rare is the involvement of the pancreas. A biopsy of the pancreas in imperative for the final diagnosis. This case report discusses the importance of considering plasma cell neoplasms in the differential diagnosis of obstructive jaundice or an atypical presentation of pancreatitis.

494 FANCONI-LIKE SYNDROME SECONDARY TO CISPLATIN TOXICITY

S Kaur*, H Younis, A Heidari. Kern Medical, Bakersfield, CA

Purpose of study. Cisplatin is a chemotherapeutic agent widely used for the treatment of many solid-organ malignancies. However, its clinical use is complicated by its dose related renal injury. Nephrotoxicity due to cisplatin is manifested as progressive renal impairment, salt wasting, a fanconi-like syndrome, hypomagnesemia and anaemia. We are presenting an extreme case of cisplatin renal toxicity.

Methods used. Retrospective case study.

Summary of results. 63 year old Caucasian female with stage IIIC endometrial carcinoma. She completed 9 cycles of 40 mg/m2/week cisplatin chemotherapy with radiation presented to the emergency department with intractable nausea and vomiting which started after completing her 7th cycle of cisplatin. On presentation, her vitals were stable, physical exam was remarkable for orthostatic hypotension and a resting tremor in both upper extremities. Her labs where significant for...
potassium of 2.5, chloride of 89, bicarbonate 33, creatinine of 0.74 and magnesium levels<0.3, calcium of 5.4. She received fluids and electrolyte replacement in the ED. However patient continued to have low level of serum magnesium, potassium, phosphorus, calcium despite adequate IV replacements indicating renal losses. 24 hour urine electrolytes were obtained which showed increase excretion of magnesium, potassium and sodium. Elevated levels of multiple amino acids were noted on 24 hour amino acid urinalysis. Once her nausea was controlled she was switched to oral supplementation of magnesium, potassium, and calcium. Daily serum levels of potassium, phosphorous and calcium were stable, however, magnesium levels continued to be low. Patient was clinically stable and was subsequently discharged home with a plan for daily IV infusions of magnesium at an infusion centre with close monitoring of serum electrolytes. She currently receiving daily magnesium infusion and will need long term magnesium infusion.

Conclusions Exposure of tubular cells to cisplatin leads to tubular cell injury and death. Renal damage has been observed at doses 50 mg/m2 given without adequate hydration. Cisplatin toxicity can be seen as early as 10 days after administration as a fanconi-like syndrome. Long term effects of cisplatin toxicity may lead to subclinical and/or permanent reduction in GFR.

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495 ‘ONE IN A MILLION – WHEN THE CK GOES UP, BUT NEVER COMES DOWN’

J Patel*, A Sandhu, R Jariwal. Kern Medical, Bakersfield, CA

Introduction Rhabdomyolysis is condition of skeletal muscle break down which results in release of myoglobin, creatine phosphokinase (CPK), lactate dehydrogenase (LDH), and transaminases. We present this case for its unique presentation as it appeared with mild exertion and activity leading to patient’s diagnosis of severe rhabdomyolysis with an exceptionally high plasma creatine kinase level of over 1 million U/L.

Case presentation A 47-year-old morbidly obese male presented with muscle ache and dark urine for 2 days. The patient reported that symptoms started 2 days ago after gardening with his lawn for 2 hours. This patient had a significant history of a sedentary lifestyle as he was minimally active during the day. Patient denied any recent drug or alcohol use, having fever or flu like symptoms. Patient’s laboratory values revealed an elevated CK of 250,000 U/L which trended upward to 750 k and furthermore exceeding 1 million U/L while patient continued to have lack of symptoms and no complications of compartment syndrome.

Discussion Rhabdomyolysis is a syndrome caused by muscle injury that results in activation of proteases and caspases due causing direct myocyte damage. Despite the severity of rhabdomyolysis, our patient did not develop kidney failure or compartment syndrome as he was maintained on aggressive fluid resuscitation. Review of reported literature revealed a similar case with 7-digits (1 778 856 IU/L) creatine kinase in a child secondary to viral myositis who had flu like symptoms before presenting with rhabdomyolysis. In our case, the diagnosis of rhabdomyolysis could have been disregarded, as our patient did not have any prior symptoms. We conclude that performing mild exercise could have triggered the rhabdomyolysis in our patient secondary to his significant sedentary lifestyle. Despite the severity of rhabdomyolysis, with early diagnosis and proper treatment, the potentially life-threatening consequences such as acute renal failure or compartment syndrome were prevented. Hence, it is crucial to raise the awareness of this phenomenon with an exceptionally unusual presentation not only by physicians but also by the community, as regular activities are recommended for healthier lifestyle.

496 AN UNUSUAL PRESENTATION OF MULTIPLE MYELOMA

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Introduction Multiple myeloma is a progressive neoplastic proliferation of plasma cells, and accounts for 10% of hematologic malignancies. There is a prevalence of 0.7% in the United States. The median age of onset is 66 years, and only 2% of patients are less than 40 years of age at diagnosis (a). We present a case of a 41-year-old female who presented with diffuse bone pain, hypercalcemia, and microcytic anemia and subsequently confirmed to have multiple myeloma with an unusually high paraprotein (gamma) gap.

Case presentation A 41-year-old female with a past medical history of diabetes mellitus and asthma presented with pleuritic chest pain, dyspnea, and diffuse myalgias for 1 month. Initial labs were significant for calcium of 13.7, ionised calcium of 1.66, total protein of 13.1, and albumin of 2.6. She also presented with a haemoglobin of 6.2 requiring transfusion of 2 units of pRBCs.

Bone scan showed multiple, small, widespread, and punched-out lesions of the skull, mandible, clavicles, humeri, pelvis and femurs consistent with multiple myeloma. Kappa/lambda ratio was greater than 32.26, kappa level was 2000 mg/dl, immunoglobulin IgA was 5861, and Beta-2 MicroGlobulin was 13.70 mg/L. Patient was initially started on pamidronate IV and dexamethasone 40 mg PO.

Subsequent bone marrow biopsy showed numerous plasma cells with basophilic cytoplasm comprising approximately 50% of the nucleated cells. Blood smear showed slight Rouleaux formation of the erythrocytes, decreased platelets, scattered nucleated red blood cells, and left-shifted maturation of the myeloid series. Patient was then started on Bortezomid 2.6 mg weekly subcutaneous injections and dexamethasone.

Discussion Multiple Myeloma in women younger than 40 or 30 account for 2% and 0.3% respectively (B). The Bortezomib plus Dexamethasone regimen is one of the many option for initial treatment of newly diagnosed Multiple myeloma. It is a well-tolerated treatment used as an induction therapy prior to autologous hematopoietic cell transplantation (HCT) (C). Young patients with Multiple Myeloma might benefit from early high-dose therapy followed by autologous or allogeneic stem cell rescue (D).
INTRODUCTION

BRCA is a tumor suppressor gene and is responsible for repairing double-stranded DNA breaks. Mutations of this gene lead to an increased risk of developing breast cancer, ovarian cancer as well as primary neoplasms at other sites. There is little evidence in literature demonstrating a link between BRCA mutations and primary CNS neoplasms. The possible link between BRCA mutations and glioblastoma may play a key role in the addition of targeted therapies, such as PARP-inhibitors.

Case Report
A 62-year-old female with a history of bifrontal headaches of 10 years was referred to Neurology after abnormal CT and MRI studies were obtained after presenting for a mechanical fall due to dizziness. The MRI exhibited an abnormal right temporal cortex and subjacent white matter with expansion of the cortex with mild local mass effect, consistent with a low-grade tumour. Neurosurgery was subsequently consulted and agreed to perform a craniotomy with biopsy and debulking of the tumour. Biopsies were taken in the right and central lobes, both exhibiting grade IV glioblastoma multiforme (GBM). Patient was started on treatment with radiation therapy and chemotherapy with Temozolomide, an alkylating agent used as first-line-therapy for GBM. After further discussion with the patient, the patient reported a significant family history of ovarian and breast cancer in her mother and sister, respectively. Subsequently, genetic testing for BRCA 1/2 was done. Results were positive for BRCA-1 mutation. In addition, MGMT methylation testing and IDH1/IDH2 mutation testing were also performed, both of which were negative.

Discussion
Although BRCA mutations have not been associated with the development of CNS neoplasms, we present a patient with GBM who was found to have familial BRCA-1 mutation, one of the first few to ever be reported. With the possibility of GBM being linked to the spectrum of BRCA variants, it may be beneficial to screen patients with known GBM for BRCA mutations. In addition to screening, recent studies have shown that PARP-inhibitors provide additional therapy in BRCA-associated cancers and may play a potential role in targeted therapy in BRCA positive associated brain tumours. Therefore, studies on PARP-inhibitors as second-line therapy in GBM should be further explored.

Purpose of study
Buschke-Lowenstein tumours (BLT) also known as Giant Condyloma Acuminatum (GCA) are a progression of long standing Condyloma Acuminatum to Squamous Cell Carcinoma caused by HPV. The treatment of choice is early surgical excision with possible addition of chemo and radiation therapy for inoperable tumours. Hypercalcemia is very rare in cutaneous squamous cell carcinomas, here we present an active case of BLT associated with paraneoplastic hypercalcemia which has only been reported once.

Methods
Retrospective case report.

SUMMARY OF RESULTS

A 42-year-old Native American male presented with nausea, vomiting, groin pain, and foul-smelling discharge from genital warts initially diagnosed at age 17. Within 5 months the mass increased in size, ulcerated, and began discharging fluid. Patient also reported fatigue, decreased appetite, and a 100 pounds weight loss over the past year. Physical exam revealed 3 × 17 × 6 cm GCA covering bilateral inguinal regions, penis, scrotum and perineum which were grossly disfigured. Serum calcium: 13.8 mg/dL and PTHrP: 24.1 pmol/L suggest secondary hyperparathyroidism. Patient was HSV-1 positive and HTLV, HIV negative. Pathology showed infiltrating chromatic squamous cells with high nuclear/cytoplasmic ratio, enlarged nuclei, hyperkeratotic spears and acanthosis. Imaging showed marked skin thickening/irregularity in the affected area with inflammation and fistulous tracts in the right inguinal region but is negative for metastasis. Zolendronic acid corrected Calcium to 8.3 mg/dL at discharge. Pemrolizumab therapy was initiated as the mass was inoperable.

HPV completes its life cycle outside the genital epithelial basement membrane. The HPV E7 gene impairs Antigen Presenting Cells in the skin, enabling it to stay undetected for extended periods of time. Oncogenes E6, E7 induce chronic oxidative stress which increases susceptibility to DNA damage thus paving way for carcinogenesis. Moderate symptomatic paraneoplastic hypercalcemia indicates poor prognosis and its unique association with BLT malignancy has only been reported once.

CONCLUSIONS
We present a patient with a Buschke-Lowenstein Tumour and paraneoplastic hypercalcemic symptoms which has only been reported once before.
AN ATYPICAL PRESENTATION OF HAND-FOOT-MOUTH DISEASE WITH BILATERAL MUCOPURULENT CONJUNCTIVITIS IN ADULT

H Abukamleh*, D Nguyen, S Salameh, M Bryan, G Petersen. Kern Medical, Bakersfield, CA

Case report A 22-year-old Hispanic male with medical history of treated chlamydia presented to ED with complaint of painful and itchy eyes for five days. Two days after, he returned to ED with fever, mucopurulent discharge on eyes bilaterally, sore throat, tongue and lip swelling with tender lymphadenopathy. Next day after admission, patient started to have vesicular rash on his hands and feet that spread proximally. Physical examination revealed bilateral conjunctival injection with mucopurulent discharge, multiple ulcerations on lower lip, periocular swelling, and tender vesicular rash on bilateral palms of hands and soles.

Laboratory results showed C-reactive protein of 9.13, Leukocytosis of 13.9 with neutrophil of 12.1. Temperature of 103.2 degrees. Autoimmune serology panel was negative. PCR for enterovirus and Coxsackie A was negative. PCR for Coxsackie B showed 1:16 titer of antibody against B2 antigen. Antibodies against herpes simplex was 2.23. Antibodies against HIV was negative.

Considering these results, the skin lesions were diagnosed as severe hand, foot and mouth disease, they resolved within two weeks after discharged.

EXTRAPULMONARY TUBERCULOSIS PRESENTING AS A PAINFUL TESTICULAR MASS

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Discussion Mycobacterium Tuberculosis (MTB) is a relatively rare infection in the United States with substantial decline since 1992, falling to a historic low of 2.9 per 100 000 in 2014. Nevertheless, it is still an important cause of infectious disease deaths worldwide. A majority of cases reported in the United States are immigrants from endemic countries which poses a challenge for infectious disease control. Urogenital tuberculosis is the second most common extrapulmonary manifestation of tuberculosis in endemic countries and the third most common in countries with low incidence. In developed, countries, approximately 2%–10% of patients with pulmonary tuberculosis also have dissemination to the urogenital system. Of those with urogenital tuberculosis, isolated genital involvement appears to be rare.

Case Patient is a 48 year-old Hispanic male immigrated from Mexico, presented with a left painful testicular mass that did not resolve with multiple course of antibiotics. Urinalysis and urine cultures were negative for infection at time of presentation. Patient reported he had past surgical history significant for right epididymal cysts excision for calcified mass two years prior. Patient had exposure in 2010 to Isoniazid resistant tuberculosis and underwent treatment with Rifampin for latent tuberculosis; a history which posed a challenge of possible infection with multi-drug resistant TB. This patient eventually underwent surgical resection of the infected (left) epididymis, with tissue pathology, stains and cultures positive for MTB. He was started on direct observation therapy with rifampin, isoniazid, pyrazinamide and ethambutol (RIPE).

Results Histopathology reported necrotizing mycobacterial granulomatous inflammation with foreign body-like multinucleated giant cell reaction and haemorrhage. AFB stain was positive for acid fast bacilli. PAS and GMS stains were negative for fungal organisms; ruling out coccidioidomycosis in a greatly endemic area. Pathology was negative for malignancy. Most recent ultrasound of left scrotum showed resolution of left epididymal mass and a slightly progressed heterogeneous echo pattern laterally. Patient complains of minimal post-operative left testicular pain, improving. Patient is continued on RIPE treatment and continues adherent to follow-up in ID outpatient clinic.
AN ADOLESCENT WITH A FORGOTTEN DISEASE

Case report Lemierre’s Syndrome (LS) ‘the forgotten disease’ is an oropharyngeal infection usually caused by Fusobacterium necrophorum or mixed anaerobic flora. There has been an increase in diagnosis of LS in the recent years. Even though rare, LS has a life threatening nature. Complications include septic thrombophlebitis and disseminated septic emboli, especially to the lungs which can cause respiratory distress. We report a case of a 17-year-old previously healthy female presenting to the emergency department (ED) at an outside facility due to six days of sore throat, fever and chills. She had a new onset of left sided chest pain and respiratory distress upon arrival. She was then transferred to Lubbock, Texas due to sepsis and thrombocytopenia for higher level of care. The physical examination was remarkable for moderate distress, pale appearing skin, dyspnea, tachypnea, mild oedema of left lateral neck with extreme tenderness extending to the left shoulder. Initial laboratory tests showed leukocytosis, anaemia, and thrombocytopenia. Computerised tomography (CT) angiogram of the chest showed septic emboli to the lungs as well as a left sided loculated pleural effusion and chest wall abscess. On further evaluation, complete thrombosis of left internal jugular vein was identified on CT angiogram of the neck consistent with Lemierre’s Syndrome. She was started on intravenous (IV) broad spectrum antibiotics empirically and the loculated pleural effusion/chest abscess was drained later. Blood cultures were found to be positive for Fusobacterium nucleatum, but abscess cultures remained negative. Patient improved on IV followed by mouth antibiotics which were extended to a total of 4 weeks. On her follow-up at one month after discharge, she was clinically improving and her inflammation markers were down trending. She also received anticoagulation for 4 weeks. Even though use of anticoagulation therapy and the choice of anticoagulant in LS are controversial, it might be considered in critical patients and screening for hypercoagulability might be needed. In a patient presenting with pharyngitis associated with respiratory distress and neck pain should prompt consideration of LS diagnosis and start treatment with antibiotics and drainage of empyema or abscess as needed.

ACTINOMYCES ISRAELII AND COCCIDIOIDES MASQUERADING AS MALIGNANCY

Purpose of study Actinomyces is a gram positive anaerobe that colonises the oral cavity, digestive and urogenital track. This infection has a wide range of symptoms and the potential to cause erroneous diagnoses, earning the nickname as a ‘great pretender.’ It is an indolent, slow growing infection that can take several weeks to isolate and speciate making it a diagnostic challenge. We present a case of Actinomyces israelii with a co-infection of Coccidioides representing as retroperitoneal mass.

Methods used Retrospective case report.

Summary of results 36-year-old Hispanic male with diabetes mellitus presented for nausea, vomiting, unintentional 60 lb weight loss over one month, and a painful right flank mass that developed over the last 2 weeks. CT of the chest and abdomen revealed pulmonary nodules, a large retroperitoneal mass involving the liver and right kidney. MRI also revealed extension into the peritoneum, pararenal space, and paraspinal muscle. Core and CT guided biopsies were performed, both negative for malignancy. He underwent a video assisted thoracoscopy and wedge biopsy of lung nodules. The right middle lobe was not malignant and revealed a cavitating granuloma and spherules with endosporulation typical for Coccidioidomycosis although cocci serology repeatedly remained negative. Liposomal amphotericin with Ambisome was started for presumptive dissemination to retroperitoneal structures as described. The old biopsy sites developed purulent drainage that was sent for gram stain showing gram negative rods and grew Bacteroides fragilis later on. He was started on Ampicillin/Sulbactam. A repeated gram stain and culture of the back abscess revealed gram variable filamentous beaded rods. He was discharged on Amoxicillin plus Metronidazole and was continued on Ambisome. 6 weeks later, abdominal CT showed a decrease in the size of the mass in the liver and of the mass in the abdominal musculature. The second culture grew Actinomyces israelii. He was continued on the same antibiotics and his antifungal was changed to fluconazole planning to continue until complete resolution of mass.

Conclusions We report a case of Actinomyces israelii presented as retroperitoneal mass co-infected with Bacteroides fragilis presumptively from a indolent gastrointestinal source, concomitant with pulmonary nodular coccidioidomycosis.

EVALUATION OF THE EFFICACY OF AUTOLOGOUS PLATELET-RICH PLASMA IN POST-OPERATIVE MOHS SURGERY PATIENTS: A PROSPECTIVE ANALYSIS

Purpose of study Autologous plasma rich in platelets (PRP) is a derived blood product whose application and value in both clinical therapy and the cosmetics industry is still being assessed. Although the effectiveness of PRP as an antibacterial and regenerative agent in wound healing trajectories highlights its potential therapeutic value, more studies are still needed to understand this therapy’s possible effectiveness, mechanism of action, and ideal dosing; especially in post-operative Mohs surgery patients. In this study, we are characterising the efficacy of autologous PRP on the closure of wounds healing by second intent in patients who have just undergone Mohs surgery for the removal of a non-melanoma skin cancer.

Methods used Procedure consists of obtaining a small sample of fresh whole blood from a patient, isolating the PRP from this sample by centrifugation using a specialised separating gel, and then reinserting this concentrated PRP back into the patient at the surgical wound site and 5 mm in all directions around the periphery of the wound site. Mohs surgery patients with non-melanoma skin cancers were notified and recruited for our study following their operation if their wound was appropriate for healing by second intent. Eligible patients had to meet specific inclusion/exclusion criteria prior to recruitment.

Summary of results Though the study is still ongoing, we have noticed an improvement in patients when using PRP over standard treatment regimens and alternative growth factor based therapies. 5 patients have thus far been enrolled with 3 already graduating from the study (they have complete tissue...
regeneration). Our 2 other patients are still being monitored and scored weekly.

Conclusions Preliminary results are promising and indicate an expedited timeframe to wound recovery with less complications and wound care on the part of the patient as compared to therapeutic alternatives. Patients waiting longer between PRP shots have a stall in their wound score, with weeks following PRP administration showing the greatest improvements in wound regeneration. We are still trying to identify the most ideal timeframe for patient PRP administration, as well as variables that hinder wound-recovery/PRP-efficacy from one patient to the next.

505 ABSTRACT WITHDRAWN

506 THE EFFECT OF INCREASING FLOW WHEN GROOVING USING PHACOEMULSIFICATION

1B Bird*, 2R Thomson, 3L Stutz, 4A Heckel, 5A Bernhisel, 6W Barlow, 7Z Zaugg, 8J Petrey, 9R Olson. 1University of Nevada, Reno, Reno, NV; 2Moran Eye Centre, Salt Lake City, UT; 3University of Texas Southwestern Medical Centre, Dallas, TX

Purpose of study To determine optimal flow settings on the CENTURION Vision System during the grooving step in cataract surgery.

Methods used Intact porcine lenses hardened by formalin and placed in a chamber designed to simulate the anterior chamber of the eye were used to test flow rate settings at 20, 40 and 60 mL/minute (min). Vacuum was set at 400 mm Hg, longitudinal power at 80%, torsional power at 80%, and intraocular pressure (IOP) at 50 mm Hg; and a balanced phaco tip with a 20 degree tip and a 30 degree bevel was used. Efficiency (time to groove the lens in half) was determined.

Summary of results Increasing flow from 20 to 40 mL/min during grooving increased efficiency by 17% (p=0.05), with no significant improvement shown at 60 mL/min.

Conclusions A flow rate of 40 mL/min was determined to be most efficient during the grooving step of cataract surgery. Further increases in flow rate demonstrated no statistically significant improvement in efficiency, and with only 17% improvement, flow rates less than 40 mL/min may be almost as efficient and safer.

Abstract 506 Figure 1 Grooving efficiency

507 THE ROLE OF POLYACRYLONITRILE IN TREATING AGE-RELATED MACULAR DEGENERATION

J5 Johnson*, A Jones, J Olson. University of Colorado School of Medicine, Aurora, CO

Purpose of study Age-Related Macular Degeneration (AMD) is the leading cause of vision loss in individuals over the age of 50. The disease presents in two stages, a neovascular stage called wet AMD, and a geographic atrophy stage called dry AMD. The dry stage accounts for up to 90% of cases and is characterised by an accumulation of lipoprotein called drusen, leading to atrophy of retinal pigment epithelial (RPE) cells and destruction of the macula. There are currently no available pharmaceutical or procedural options available for treating dry AMD. The alternative complement pathway has been implicated in AMD pathogenesis, and individuals with Complement Factor H (CFH) polymorphisms display an increased incidence of AMD. Polyacrylonitrile (PAN) fibres have been shown to adsorb complement factors D, C1q, C3, and C5 in vitro. The purpose of this study is to analyse the efficacy of PAN fibres in preventing the progression of dry AMD in vivo. Additionally, this study aims to find other proteins implicated in disease states that may be sequestered using PAN fibres.

Methods used Six-month old CFH +/- mice (n=18) were used for in vivo models. A posterior sclerotomy was performed bilaterally, with a 4 mm PAN fibre injected into the posterior chamber of the right eye, and the left eye receiving a 4 mm segment of surgical suture to serve as a control. RPE thickness was determined using Optical Coherence Tomography (OCT) imaging. The eyes will be sectioned and stained for complement C3 and C5b-9 deposition, the drusen marker APOE, and retinal cell count.

In Vitro: 4 mm segments of PAN fibre were incubated for 1 hour at 37°C in solutions of Tau protein with concentrations varying between 2000 pg/ml and 37.5 pg/ml. Adsorption was determined by ELISA.

Summary of results The in vivo portion of this study is ongoing, and results will be reported at the time of the conference.

PAN fibres demonstrated adsorption of Tau when analysed through ELISA (p<0.001 by two-way ANOVA).

Conclusions We hope to conclude that PAN fibres prevent the progression of dry AMD in vivo as measured by RPE thickness and drusen deposition. Future directions include analysing the ability of PAN fibres to adsorb hyperphosphorylated tau and alpha-synuclein in hopes of treating tauopathies and synucleinopathies, respectively.

508 THE UN-WISE PATTERN BREAST REDUCTION: INCORPORATING THE PREEXISTING SUPEROMEDIAL SCAR

E Magtanong*, D Nguyen, H Kim. Loma Linda University Medical Center, Loma Linda, CA

Purpose of study The Wise pattern is the most popular method of reduction for moderate to large breasts. An advantage of this approach includes limiting scars to the inferior pole. Management of patients with preexisting superior or superomedial scars becomes very challenging with this technique due to increased risk of flap necrosis and a poor aesthetic outcome. We present a modification to the Wise pattern for breast
reduction that incorporates these difficult scars and expands perfusion to the nipple.

A 51 year old female s/p two left breast lumpectomies (2008, 2013) and radiation therapy for left DCIS presented with complaints of macromastia and firm necrosis underneath a 7 cm superomedial left breast scar. Current breast size was 38DD. Past medical history included hypertension and obesity without diabetes or smoking. Most recent mammogram showed benign findings.

Intraoperatively, the left breast superomedial scar and underlying mass were excised. The lateral half of the left breast was then de-epithelialized and reduced in the standard Wise pattern, leaving perfusion to the nipple on a large inferomedial pedicle. The lateral skin flap was overlapped onto the pedicle in the usual fashion, and the medial pedicle was advanced superiorly and closed to recreate and refine the superomedial incision. A periareolar skin only mastopexy was performed to remove residual skin excess in the pedicle. The right breast was reduced in the standard Wise pattern for symmetry.

Postoperatively, the patient did well despite previous radiation to the skin flaps. Minor superficial wound separations healed within several weeks. Principles of this flap design may be applied to mastopexy techniques in similar patients with aesthetically challenging scars.

Abstract 508 Figure 1  (Top left) Preoperative anterior view of bilateral macromastia and pre-existing superomedial scar on left breast. (Top right) Postoperative anterior view at 3 months of bilateral breast reduction; traditional Wise pattern for right breast and UnWise pattern for left breast. (Bottom left) UnWise pattern breast reduction markings on the left breast showing incorporation of the superomedial scar. (Bottom right) Anterolateral view of UnWise pattern breast reduction markings on left breast.

PAEDIATRIC ELBOW FRACTURES FROM A CHILD’S VIEWPOINT: A MIXED-METHODS STUDY

1AV McCutcheon*, 1A Cooper, 2H Chinna, 2D Duffy. University of British Columbia, Vancouver, BC, Canada; 2BC Children’s Hospital, Vancouver, BC, Canada

Purpose of study Supracondylar fractures of the humerus (SCH) are the most common fractures sustained following a fall among children. The majority of these fractures are mild, but the most severe injury types can result in a disruption to the nerves and blood supply resulting in limb-threatening injuries and potential life-long disability. Better understanding of mechanisms of injury and child-related factors that influence injury, especially for severe cases, is crucial to identifying best practices and informing policy.

We aim to stratify fractures and examine the associated mechanisms and circumstances of injury to identify best practices and inform supportive policy. In doing so, we plan to investigate why some children sustain more severe fractures than others by exploring mechanisms and locations of injury, risk-taking behaviours, and bone density.

Methods used A prospective, mixed-methods pilot study employing a concurrent embedded research design. Our approach links narratives from qualitative photo elicitation interviews (PEI) to mapped images of the locations of injury using geo-tagged photographs children have taken themselves. Quantitative data includes incidence and classification of SCH fracture severities to ultimately identify those at risk of long-term or irreversible complications.

Summary of results Screening and recruitment are underway with 15 patients currently recruited. We aim to recruit and interview 20–25 for the pilot portion of our data.

Conclusions We are exploring why some children sustain more severe fractures than others using their viewpoints of their injury and investigating for potentially modifiable and non-modifiable risk factors. This is a unique multidisciplinary team collaboration between the Department of Orthopaedics, the School of Population and Public Health, the BC Injury Research and Prevention Unit, and the Office for Paediatric Surgical Evaluation and Innovation. Translational knowledge can be shared with clinicians, patients/care-givers, community-based health teams, and local policy makers to make timely and impactful improvements in injury prevention, clinical practice, and play structure safety.
Comparisons of Operative and Non-Operative Management of Uncomplicated Appendicitis in Children: A Literature Review

1,2 L Rizkalla*, 1 D Ahn, 2 Y Bade, 2 B Kadakia, 2 A Nguyen, 2 X Wu, 2,3 B Afghani. Virginia Commonwealth University, Richmond, VA; 4 University of California Irvine, Irvine, CA; 5 CHOC Children’s Hospital, Orange, CA

Purpose of study The role of non-operative management of uncomplicated appendicitis remains contentious. The purpose of our study is to compare the success rate of operative and non-operative management of uncomplicated appendicitis in paediatric patients.

Methods used The literature databases Pubmed and Google Scholar and review of references were used to find research articles related to this topic. Only studies with follow-up period of >6 months that included both antibiotic (non-operative) and surgical management of appendicitis in paediatric patients were used in this analysis.

Summary of results We found 6 studies that met our inclusion criteria (see Table 1 below). All studies excluded patients with complicated appendicitis. Follow-up period ranged from 6 months to 4.5 years. Antibiotics used were variable and included a combination of ceftriaxone, metronidazole, piperacillin/tazobactam, ertapenem, amoxicillin-clavulanate or a quinolone. In different studies, the immediate success rate for the operative and non-operative management were 100% and >80%, respectively. The overall failure rate for the non-operative group at the last follow-up (6 m to 4.5 years) ranged from 25% to 60%. Patients with appendicolith had a higher failure rate in the non-operative group. Patients in surgical group did not have recurrences but a minority of patients had complications, such as surgical site infection. The hospital stay was longer for the non-operative group compared to the operative group.

Conclusions Our review suggests that while antibiotic treatment of uncomplicated appendicitis in paediatric patients is associated with high initial success rate, some patients have recurrences later which require appendectomy. It is important that the physicians be able to discuss management options with patients and their families so they can be involved in the decision making.

Abstract 510 Table 1

<table>
<thead>
<tr>
<th>Author, year, location</th>
<th>Criteria</th>
<th>Surgery group (N)</th>
<th>Antibiotic group (N)</th>
<th>Overall failure antibiotic</th>
<th>Hospital stay, surgery</th>
<th>Hospital stay, antibiotic</th>
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<tbody>
<tr>
<td>Mahida J, 2016</td>
<td>United States</td>
<td>7–17 y, &lt;48 hours of abdominal pain, WBC&lt;18,000/L, CT diagnosis</td>
<td>9</td>
<td>5</td>
<td>60% (at 4.7 months f/u)</td>
<td>Study halted when 60% failed in antibiotic group</td>
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<tr>
<td>Minneci P, 2016</td>
<td>United States</td>
<td>7–17 y, &lt;48 hours of abdominal pain, WBC&lt;18,000/L, CT diagnosis</td>
<td>65</td>
<td>37</td>
<td>24.3% at 1 year f/u</td>
<td>20 hours</td>
</tr>
<tr>
<td>Svensson J, 2015</td>
<td>Sweden</td>
<td>5–15 y, Clinical and ultrasound/CT diagnosis</td>
<td>26</td>
<td>24</td>
<td>37.5% at 1 yr f/u</td>
<td>34.5 hours</td>
</tr>
<tr>
<td>Tanaka Y, 2015</td>
<td>Japan</td>
<td>6–16 y, Clinical and ultrasound or CT diagnosis</td>
<td>86</td>
<td>78</td>
<td>28.6% at 4.5 yr f/u</td>
<td>6.5 days</td>
</tr>
<tr>
<td>Armstrong J, 2014</td>
<td>Canada</td>
<td>&lt;18 y, &lt;48 hours symptoms, Clinical Diagnosis and/or CT diagnosis</td>
<td>12</td>
<td>12</td>
<td>25% at 7 months f/u</td>
<td>1.3 days</td>
</tr>
<tr>
<td>Hartwich J, 2016</td>
<td>United States</td>
<td>5–15 y, &lt;48 hours symptoms and/or CT diagnosis</td>
<td>50</td>
<td>24</td>
<td>29% at 2 months f/u</td>
<td>24 hours</td>
</tr>
</tbody>
</table>

Return to Driving After Hip Arthroscopy

A Rounds*, S. Rosario, P. Nava, NA Trasolini, E. Mayer, A. Abdelhalim, BC. Yoshida, A. Weber, GF. Hatch. Keck School of Medicine of the University of Southern California, Los Angeles, CA

Purpose of study We aim to prospectively measure driving parameters following arthroscopic hip surgery and identify risk factors for delayed return to preoperative or proposed ‘safe’ reaction times which vary 700–2500 ms.

Methods used Licensed, adult drivers undergoing right (RHA) or left hip arthroscopy (LHA) used a driving simulator to perform a series of random turning and braking tasks in response to a visual stimulus. We recorded 100-point visual analogue scale (VAS), gas pedal release (GPRT), brake (BRT), and turn reaction times (TRT), as well as total brake (TBD) and turn distance (TRD).

Summary of results Preliminary, 2 week results of 8 patients (age 28.4±6.2 years) are shown in Table 1. By abstract presentation we anticipate 12 week follow-up of 30 patients. Demographics and reaction values were similar between groups. All preoperative values met the liberal 2500 ms ‘safe’ threshold, but only GPRT met 700 ms. TRT improved 41 ms (p=0.048) in the entire cohort at 2 weeks postoperatively. GPRT, BRT, and TBD were all prolonged from baseline for LHA patients, whereas these parameters improved for LHA patients, but significance was not reached. No new variables met the conservative safe threshold.

Conclusions All patients demonstrated learning with decreased TRT. Despite this, RHA patients’ braking function acutely worsened. This may be due to pain not captured by VAS,
mechanical changes, or psychological causes. RHA patients need longer than 2 weeks to safely return to driving.

### 512 ASSESSING THE NEED FOR ORTHOPAEDIC FOLLOW-UP IN THE SURGICAL MANAGEMENT OF PAEDIATRIC ELBOW FRACTURES: A RETROSPECTIVE REVIEW

**Purpose of study** Paediatric elbow fractures often do not require regular long-term follow-up with an orthopaedic surgeon. With strong recovery potential expected, good functional and radiographic outcomes can be expected. However, it is not uncommon to see frequent clinical and radiographic visits. These follow-up visits require significant time from clinic staff, the surgeon, as well as the patient and family, creating economic and social costs. The purpose of this 5-year retrospective observational study is to review the care patterns and outcomes of patients with elbow fractures treated operatively at BC Children’s Hospital to identify management patterns, assess the need for clinical and radiological follow-up, and capture surgeon variability in management.

**Methods used** Operative elbow fracture patients seen between 2010 and 2015 were eligible for review. Data gathered includes demographic details, treatment/operative details, post-operative management, and clinical outcomes. Radiographic images were analysed to determine fracture location, type, displacement, and shortening at the time of injury, as well as

### Abstract 511 Figure 1

Mean Measurements. *All measurements presented as means + one standard deviation*
each subsequent follow-up image. Personal information about the patient was de-identified to maintain patient confidentiality. Collected data was entered into the REDCap database housed at BC Children’s Hospital. Qualitative methods and descriptive statistics are being used to profile the study population and to highlight trends in care and management.

**Summary of results** This study has involved multiple steps in optimising study design and building the necessary tools and instruments required for data collection. Data entry and statistical analysis is presently underway to determine the relationship between the complexity of the injury, care pathway followed, and functional outcomes.

**Conclusions** Identification of fracture patterns that do not require extensive clinical or radiographic follow-up will result in significant cost savings for the hospital and improvements in patient care. The results can be used to assess treatment and follow-up periods until full-recovery for the different types of elbow fractures so specific evidence-based guidelines and care pathways can be designed accordingly.

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**Fungal Appendicitis: An Unusual Diagnosis in an Immunocompetent Patient**

K Unruh*, HS Hsieh. University of Washington School of Medicine, Spokane, WA, Loma Linda University, Loma Linda, CA

Case report: Appendicitis is an inflammation of the vermiform appendix, usually caused by a combination of luminal obstruction and bacterial infection. Fungal infections are an unusual cause of appendicitis and have only been recorded in immunocompromised patients. We present a case of a young, immunocompetent woman with vague, persistent abdominal pain found after diagnostic laparoscopy and appendectomy to have fungal appendicitis caused by Candida species. Another less likely consideration for our patient’s presentation is bacterial enterocolitis with a concurrent Candida colonisation, though this is unlikely due to our patient’s clinical improvement following appendectomy and fluconazole therapy, as well as no initial improvement following multiple antibiotic therapies. The lack of definitive radiologic or visual findings of appendicitis in our case raises the possibility that fungal appendicitis may present in an unpronounced manner, thereby warranting high clinical suspicion for this disease, especially in patients presenting with vague abdominal pain. This unpronounced presentation also raises the question of medical treatment alone vs appendectomy with or without medical treatment for fungal appendicitis. Our case also raises the question of screening for Candida colonisation in patients with abdominal pain and a history of antibiotic use – especially before appendectomy – and the use of empiric antifungal therapy status-post appendectomy in those patients. Our case also highlights the need for good clinical judgement and a high index of suspicion for appendicitis, as well as a low threshold for diagnostic laparoscopy in similar cases of vague abdominal pain.

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**Relative Risk of Breast Cancer Occurrence Based Upon Known Genetic Mutations**

J Yoo*, J Campwala, S Gupta. Loma Linda University, Loma Linda, CA

**Purpose of study** For women in the United States, breast cancer is the most commonly diagnosed cancer and the second most common cause of cancer death. For every eight women in the United States, one will develop breast cancer in her lifetime. While the increase in risk for breast cancer due to

<table>
<thead>
<tr>
<th>Gene</th>
<th>Relative Risk</th>
<th>Eponym</th>
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<tbody>
<tr>
<td><em>TP53</em></td>
<td>RR = 22</td>
<td>Li-Fraumeni syndrome</td>
</tr>
<tr>
<td><em>BRCA1</em></td>
<td>RR = 11</td>
<td></td>
</tr>
<tr>
<td><em>BRCA2</em></td>
<td>RR = 10</td>
<td></td>
</tr>
<tr>
<td><em>PTEN</em></td>
<td>RR = 7</td>
<td>Hamartoma Tumor syndrome/Cowden syndrome</td>
</tr>
<tr>
<td><em>STK11/LKB1</em></td>
<td>RR = 7</td>
<td>Peutz-Jeghers syndrome</td>
</tr>
<tr>
<td><em>PALB2</em></td>
<td>RR = 4</td>
<td>Fanconi anemia</td>
</tr>
<tr>
<td><em>RAD51D</em></td>
<td>RR = 2</td>
<td></td>
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<tr>
<td><em>ATM</em></td>
<td>RR = 2</td>
<td></td>
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<tr>
<td><em>CHEK2</em></td>
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<td><em>NBN</em></td>
<td>RR = 2</td>
<td></td>
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<tr>
<td><em>BRIP1</em></td>
<td>RR = 2</td>
<td></td>
</tr>
<tr>
<td><em>BARD1</em></td>
<td>RR = 2</td>
<td></td>
</tr>
</tbody>
</table>

Abstract 514 Figure 1 Relative risk of genetic mutations associated with breast cancer
BRCA1 or BRCA2 genes has been widely reported and accepted, relatively little has been reported on the less severe genetic mutations that increase risk of breast cancer. Additionally, no comprehensive list exists in which each of the genetic mutations known to contribute to breast cancer diagnosis is compared to the normal risk for the general population.

Methods used A comprehensive literature review was conducted to find the risk of breast cancer attributed to a set of genetic mutations listed in figure 1. The risk reported for each of these mutations was compared to that reported for specific age groups within the normal population, and relative risk was calculated for each.

Summary of results A summary table displays the affected gene name, mutation, risk of breast cancer attributed to the mutation, and relative risk of each genetic mutation. Calculated relative risks ranged from 1.1 to 21.6.

Conclusions Physician-patient dialogues regarding breast cancer risk as well as post-diagnosis action plans involve a discussion of patients’ relative risk of acquiring breast cancer. When consulting genetically-predisposed patients regarding contralateral prophylactic mastectomy, understanding each patient’s relative risk of contralateral breast cancer is essential. We anticipate this comprehensive list of relative risk of various breast cancer-affiliated genetic mutations will be important for breast cancer-related decision-making protocols.