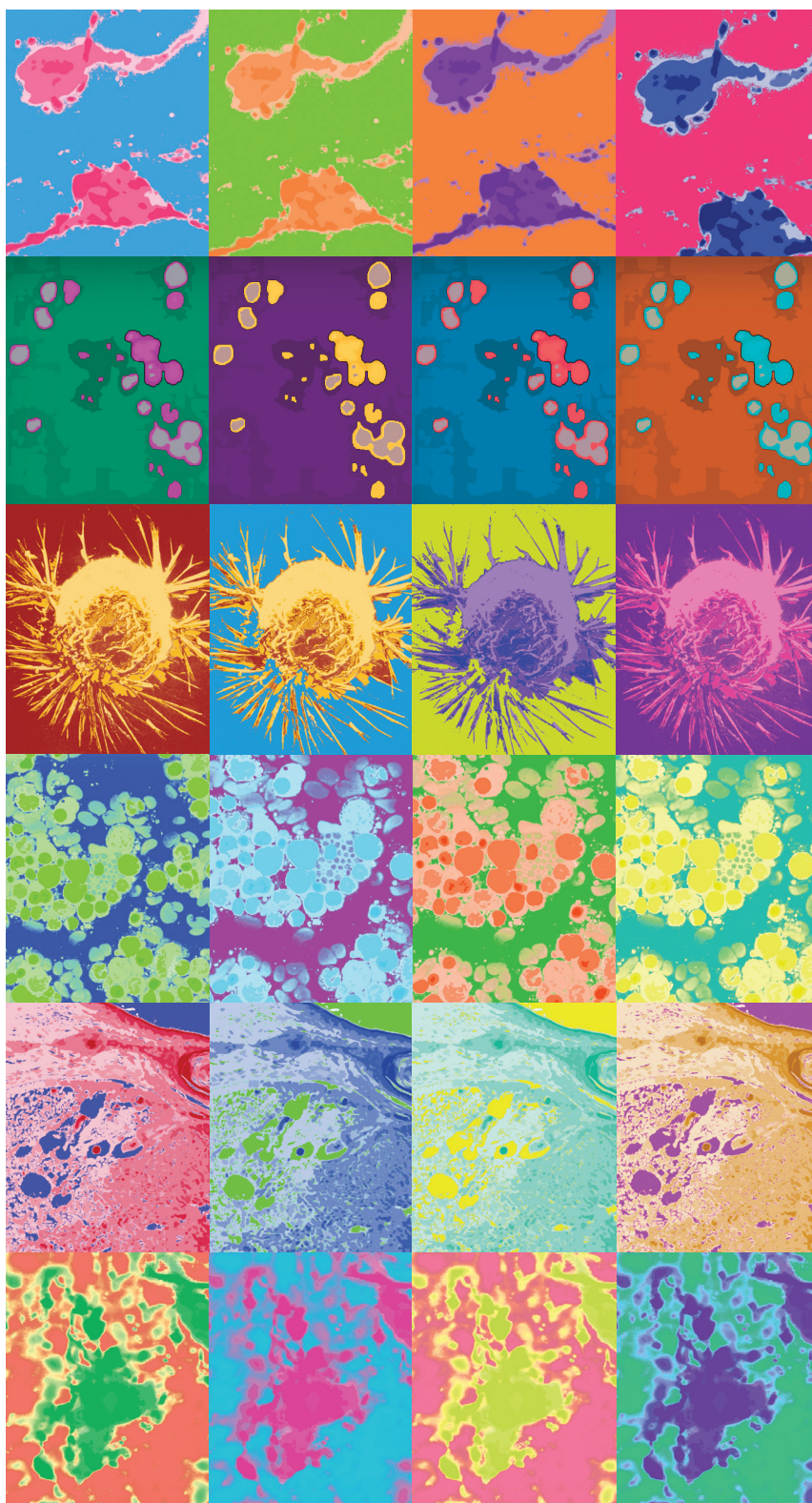


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LECOM RESEARCH COLLECTIVE

ABSTRACTS
ORAL PRESENTATIONS

O1

Name: Tom Doran

Affiliation: Other Resident

Title: A national survey of the Research curriculum at Osteopathic Emergency Medicine programs

Authors: Alex Kirkpatrick DO, Thomas Doran DO, David Mullins DO, Robyn King DO and John Ashurst DO, MSc

Affiliations: Other Resident

Abstract: Background: With the merger of the AOA and ACGME, a heightened awareness of the scholarly activities amongst the two has garnered significant interest. Surveyed allopathic emergency medicine residencies are typically from large university based programs with significant resources for research and publications. Objective: The objective of the study was to determine the percentage of osteopathic emergency medicine residencies require an original research project to meet the AOA requirement, describe the resources available to the residents to complete their projects, and to determine resident research productivity. Methods: This was a cross-sectional online survey of program directors from osteopathic emergency medicine residency programs. Participants were asked demographics and specifics related to their programs research curriculum which included resources, outcomes and challenges. Results: The response rate was 48.21% (27/56) of program directors from EM residencies. The majority (82.77%) of respondents were from a community based EM program, had a requirement that a research project be completed prior to graduation (87.5%) and did not have a research associate program to assist in recruiting patients (83.33%). A physician research director was noted to lead the department in 53.57% of respondents while 70.83% noted to have a statistician on staff. A total of 2.91% of program faculty had received federal grant funding and 13.88% had a research study indexed in PubMed. Program directors noted that analyzing data, designing a study and generating a hypothesis were the biggest challenges to residency research. Conclusion: Osteopathic emergency medicine residencies significantly differ from their allopathic counterparts in their research curriculum, capabilities and outcomes.

O2

Name: Brad Golden DO

Affiliation: Other Resident

Title: Fatigue Assessment in a Cohort of Pre-Hospital Providers in Southwestern Pennsylvania

Authors: Kevin Martin DO; Thomas Simunich MS, MBA, Brad Golden DO and John Ashurst DO, MSc

Abstract: Background: Fatigue and fatigue management are commonplace throughout America's workforce. Current literature demonstrates that between 10% and 55% of prehospital providers also suffer from fatigue. In this study we sought to evaluate the prevalence and severity of fatigue among a cohort of EMS providers in Southwest Pennsylvania. Methods: A cohort of prehospital providers was surveyed in Southwest Pennsylvania, all of whom are part of the Southern Alleghenies Emergency Medicine Services Council. They completed the Chalder Fatigue Questionnaire, and a set of demographics questions. The binomial test was applied to compare the prevalence of fatigue amongst providers and the amount of jobs and hours worked. Results: A total of 11% of surveys were completed and 97.6% of the surveys were appropriate for inclusion in the final dataset for statistical analysis.

Participants were 70% male and the majority were in the 30-39 age group (30%) and the 40-49 age group (29.1%). The most common level of certification was EMT-Basic with 47.9% of respondents followed by EMT-Paramedics with 46% of respondents. The prevalence of fatigue in the study population was found to be 49.5% and as hypothesized, statistically significantly greater than 40%, $p = .003$. A greater percentage of the fatigued group (57.3% vs. 34.3%) served an area with a population of 10K – 50K ($p=0.003$). Among those fatigued and not fatigued, the distribution of “hours worked per week”, “frequency of working after having not slept for at least 16 hours”, “does your pay rate affect the total hours you work” was statistically significant ($p = .014$, $p = .001$ and $p=0.036$). Conclusions: Those participants identified as being fatigued by their total score on the Chalder Fatigue Questionnaire were more likely to serve an area of greater population, not only work more hours per week but also work after having not slept for at least 16 hours, and likely allow their pay rate to influence the total hours that they work.

O3

Name: Grayson Goldman

Affiliation: Other Resident

Title: Comparison of Intubation Modalities in Cadaver Models While Wearing Personal Protective Equipment

Authors: Roger Taylor DO, Matthew Pitzer DO, Grayson Goldman DO MBA, Augusta Cysz MD, John Ashurst DO MSc

Abstract: Background: With the advancement of chemical, biological and nuclear warfare and the reemergence of infectious diseases, the possibility of intubating in personal protective equipment (PPE) has become increasingly more real to the emergency physician. Objective: To determine the first pass success rate and average time to successful intubation while wearing PPE. Secondly, subjects were asked to rank their choice of a primary and back up device, as well as the most common encountered barriers using PPE. Methods: Emergency medicine residents and pre-hospital providers were enrolled in a double randomized sequence to either intubation with direct laryngoscopy (DL), video laryngoscopy (VL), or the Supraglottic Airway Laryngopharyngeal Tube (SALT) in a cadaveric specimen while wearing level C PPE or without PPE. Participants were then surveyed in order to determine the most common problem encountered while wearing PPE and what device they would use a back up while in PPE. Results: Sixteen residents and three EMS personnel participated in the study with 16% being female. First pass success rate was 96% without PPE and 58% while wearing PPE when all devices were considered ($p= <0.001$). Time to intubation while wearing PPE was 35.0 seconds while no PPE was 22.2 seconds ($p= 0.012$). While wearing PPE both DL and VL were found to allow for a faster intubation as compared to the SALT (23.0 seconds and 18.8 seconds; $p=0.002$ and $p=0.006$ respectively). No statistical difference was noted in intubations without PPE. Participants indicated the most common barrier to successful intubation included visibility while wearing hoods (73.7%). Furthermore, 52.6% of participants indicated they would chose DL as the primary method to intubate with if wearing PPE while 47.4% would choose VL. Conclusion: There is a statistically significant difference in first pass success and time to successful intubation while wearing and not wearing PPE.

O4

Name: Kevin A. Hough

Affiliation: MCH Resident

Title: LECOM Senior Living Center McGeer Criteria (2012) Urinalysis Study

Authors: Kevin A. Hough DO, MBA; Nicholas Podhorniak, BS, MSIV; Brandon Intrieri, BS, MSIV

Abstract: In an effort to maintain a set of guidelines for health services and testing at the LECOM Health Senior Living Center (SLC), it was proposed and put forth to initiate the McGeer Criteria for Long Term Care Facilities (LTCF). This standard is an updated 2012 version put out as a Society for Healthcare Epidemiology of America (SHEA) position paper endorsed by the Center for Disease Control & Prevention (CDC). The criteria were based on a previous set of guidelines set forth by Allison McGeer et al. (1991) and updated by the Long- Term Care Special Interest Group (LTCSIG) of SHEA (Stone et al., 2012). The updated 2012 McGeer Criteria was implemented in December 2015 at the SLC as a guideline for evaluation of patients with symptoms of a possible Urinary Tract Infection (UTI) that required a Urinalysis (UA) for further evaluation and possible antibiotic treatment. The data for the study were collected from the hospital lab where all the UA's for the SLC are sent for analysis. If the urine was positive for pyuria, bacteria or nitrites, then it was further evaluated with culture and sensitivity (C&S). Over a 5-month period of time, there was a statistical difference in the pre and post McGeer Criteria for the number of UA's ordered related to the SLC census, as well as the percentage of UTIs diagnosed as related to the SLC census. The implementation of the criteria decreased the overall number UA's collected by 38%. UTIs diagnosed also decreased by 40%. With the criteria now in place, the improper diagnosis and treatment of asymptomatic bacteriuria (ASB) should have been all but eliminated, and only a Symptomatic Urinary Tract Infection (SUTI) would be diagnosed and given a treatment plan of antibiotics. Thus helping to eliminate the unnecessary use of antibiotics and the promotion of antibiotic resistance.

O5

Name: Parth Javia

Affiliation: LECOM Student

Title: Utilizing Scribes to See More Patients: How Does it Affect Physician and Patient Satisfaction

Authors: Dr. William Lovett, Dr. Okju Yi, Parth Javia

Abstract: Current EHR use poses many challenges to medical practice; it has been shown to decrease face-to-face interaction time, decrease physician productivity, and even to cause at least a temporary loss of income. One possible solution to these challenges is the implementation of medical scribes. Scribes have primarily been used in the emergency room setting where they have been shown to generate 100% return on investment. However, research into the use of scribes in a primary care setting remains rather limited. This study hypothesizes that the "use of scribes in a family medicine residency practice will lead to improved provider and patient satisfaction, even when patient volume per session is increased." This was a prospective interventional study focusing on assessing patient satisfaction across 3 domains and physician satisfaction across 2 domains. The 3 domains on the patient satisfaction side are office visits: on a standard schedule without a scribe, on a standard schedule with a scribe, and on an enhanced (busier) schedule with a scribe. The 2 domains on the physician satisfaction side are office visits: with a scribe and without a scribe. Data was collected via responses to Likert scale questionnaires assessing patient satisfaction with their office visit and the scribe and physician satisfaction with their patient load and the scribe. Analysis of the data is currently ongoing and includes t-tests and ANOVAs to compare questionnaire responses. Based on the results available thus far from a sample of 325 patient surveys and 115 physician surveys, two conclusions are evident. First, patient and physician satisfaction with the scribe remain unchanged even when the physician sees a higher volume

of patients. Second, patient satisfaction with the office visit was very high at baseline and remains unchanged with or without a scribe, however, it decreases when the physician sees a higher volume of patients.

O6

Name: Kristin Juhasz, DO

Affiliation: Other Resident

Title: TRIAD IX - Can a Patient Testimonial Safely Help to Ensure Pre-hospital Appropriate Critical vs. End-of-Life Care?

Authors: Ferdinando Mirarchi, DO, FACEP; Christopher Cammarata, DO; Timothy E. Cooney, MS; Kristin Juhasz, DO; Stanley A. Terman, PhD, MD

Abstract: Objective: The present study sought to assess the clarity of Physician Orders for Life-Sustaining Treatment (POLST) or Living Will (LW) documents alone or in combination with a video message/testimonial (VM). Methods: EMS personnel responded to survey questions about the meaning of standalone POLST and LW documents and those used in conjunction with emergent care scenarios. Personnel were randomized to receive documents only or documents with VM. Questions prompted a code status for each scenario and a resuscitation decision. Code status responses were scrutinized for consensus (95% response rate), resuscitation responses for correct treatment decisions. Results: The survey response rate was 85%. Approximately half of respondents were EMT-B, half EMT-P, with an average age of 42 years. Less than half had prior POLST/LW training averaging 2 hours. Consensus failed to be reached for standalone documents. For clinical scenarios, responses to POLST documents specifying DNR/CMO or CPR/Full Treatment exceeded 80% for code status designation and correct resuscitation decisions. VM exerted little effect. Other POLST resuscitation/treatment combinations showed more disparate responses and most benefited from VM with changes in responses of $\geq 20\%$ ($p \leq 0.025$). Code status responses to LW-based scenarios evidenced a non-consensus majority (79%-83%) that was significantly affected with video messages ($\geq 12\%$, $p \leq 0.004$); half evidenced large changes in resuscitation decisions (49%, $p < 0.001$). Conclusion: Document clarity, judged by consensus response, was rarely evidenced. VM appears to be a helpful aid to both POLST and LW's. Standardized education and training reveal opportunities to improve patient safety to ensure patient wishes.

Presentation preference: Poster or Oral

07

Name: Kevin Keith, DO,MS

Affiliation: MCH Resident

Title: ALTERNATIVE REFERENCING FOR DISTAL FEMUR CUT IN TKA: USE OF THE ANTERIOR FEMORAL CORTEX

Authors: KEVIN KEITH, DO, MS, DANIEL KWON, OMS-I, Robert Woods, DO, Donald Smith, MD

Abstract: Background: There are several methods for determining the valgus/varus angle of the distal femoral cut during total knee arthroplasty(TKA). The most common method is the use of an intramedullary(IM) guide. This requires drilling into the distal femur to place the IM guide, which is associated with increased blood loss. With the advent of patient specific instrumentation, the need for drilling is no longer needed but the cost can be prohibitive .By utilizing the anterior cortex of the femur, there is no need for drilling and no increased cost for instrumentation as compared to the standard IM system. system. Methods: Records were reviewed retrospectively for patients who underwent TKA at an institution where surgeon one exclusively utilizes the anterior femoral cortex for determining distal femoral cuts and surgeon two exclusively utilizes the IM referencing. 30 patients who underwent TKA for each surgeon was found. The time frame was from January through December 2015. Charts were reviewed to confirm the diagnosis, age, sex, immediate post-operative hemoglobin and hematocrit, need for transfusion, and surgical time. Pre- and post-operative x-rays were reviewed and the valgus/varus angles measured for each patient. Results: 30 patients for each surgeon were identified. The mean post-operative distal femur valgus angle in the control group was 5.53° and in the alternative group was 3.87°. This was significantly different but fell well within the accepted ranges as demonstrated by prior authors. The mean total post-operative hemoglobin drop in the control group was 3.01 and in the alternative group was 2.22 which was statistically significant. Conclusion: The use of the anterior cortex of the femur is a viable option in setting the valgus angle for the initial distal femur cut in TKA. This method also has the added benefit of decreased blood loss, as well as shorter operative time.

08

Name: Dr Nicholas Loffredo

Affiliation: MCH Resident

Title: DEVELOPMENT & FUNCTIONAL ANALYSIS OF A REVERSE TOTAL HIP ARTHROPLASTY

Authors: Dr Nicholas Loffredo

Abstract: ABSTRACT DEVELOPMENT & FUNCTIONAL ANALYSIS OF A REVERSE TOTAL HIP ARTHROPLASTY OBJECTIVE The purpose of this study was to develop a functional model of a reverse total hip replacement. Once the proto type was developed it was inserted into a composite bone pelvis and femur to assess the stability of the prosthesis throughout range of motion and weight bearing stressors. METHODS First the model was sketched into blueprints with exact dimensions calibrated to allow it to be compatible for implantation into an actual pelvis and femur. Next a digital 3D model was constructed using the written blueprints. Once the 3D model was complete on software the first reverse total hip proto-type was printed in the engineering laboratory at Edinboro University. The first proto-type was printed in a plastic polymer using the laboratory's 3D printing machine. The third a final proto-type was then inserted into a composite bone pelvis and femur. RESULTS Functional analysis of the reverse total hip reveals it will perform all ranges of motion of a normal hip with stability. The reverse total hip model when tested in the composite bone of the pelvis and femur was able to perform all motions that a regular total hip would perform. The prosthesis does place a rotational force against

the acetabular component. This is noted with stress placed across the joint in flexion. The reverse total hip model fractured at the base of the acetabular component when weight bearing stress was applied to the model. **CONCLUSIONS** The primary goal of the reverse total hip was to evaluate if the model would be more stable in flexion and adduction which a regular total hip is most vulnerable. The reverse total hip does not appear to be likely to dislocate in flexion and adduction. The reverse nature of the component allows the hip to be stable in flexion and adduction. An advantage noted in this model is its ability to accommodate a large 36mm head size.

O9

Name: Stacey Main

Affiliation: LECOM Student

Title: Cerebellar structure and function after repeated prenatal exposure to valproic acid

Authors: Stacey Main, Randy Kulesza Jr.

Abstract: Autism spectrum disorder (ASD) is a developmental brain disorder characterized by restricted and repetitive patterns of behavior, social and communication defects, and motor deficiencies. The etiology of ASD, while mostly idiopathic, can also be linked to a genetic predisposition, as well as to known teratogens such as valproic acid. Valproic acid (VPA) is used clinically to treat epilepsy, mood disorders, and in the prevention of migraines. The use of VPA during pregnancy increases in the risk of the fetus developing ASD. Neuropathological studies show decreased cerebellar functioning in patients with ASD, resulting in gait, balance and coordination impairments. VPA is commonly used in research to produce an animal model that emulates the quantitative neuronal changes seen in individuals with ASD. Additionally, studies examining cerebellar neuropathology following VPA exposure in animals, report a reduction in the size of Purkinje cells. Purkinje cells are a major cell type in the cerebellar cortex and dysfunction of these neurons likely contributes to motor deficiencies in ASD. Herein, we utilized a VPA exposure model of ASD in the attempt to identify a relationship between cerebellar dysmorphology and motor dysfunction. A clear connection between structure and function will be necessary in developing strategies to better cope with this ever-growing disorder.

O10

Name: Shane R Sergent

Affiliation: Other Resident

Title: Urine Arsenic Levels in the Adult Population of Pantaz, Peru

Authors: Ward S, Briceno RK, Benites SM, Phelps K, Manimaethu L, Lim L, Willyerd G, Sergent S, Ashurst J

Abstract: Arsenic is an odorless and tasteless metal that occurs naturally. Over time, water that comes into contact with these rocks and soils can also become contaminated, which can lead to numerous health implications including renal dysfunction and cancer once ingested. To demonstrate a correlation between arsenic in the urine and an increase prevalence of renal disease, multiple biomarkers such as urinary malondialdehyde (MDA), 8-hydroxy-2'-deoxyguanosine (8-OHdG), beta(2)-microglobulin (B2M) and N-acetyl-beta-D-glucosaminidase (NAG) were tested. Urine and blood samples were collected from 102 patients ranging in age from 2 to 81 years of age in Pantaz. For the control, 38 urine and blood samples were collected from patients in the same age range from Trujillo, Peru, an area

which lacks arsenic exposures. Values were analyzed and compared to standards set by the World Health Organization. In Pantaz, 91.2% (n=93) of patients had elevated urine arsenic levels and 93.1% (n=95) had MDA levels $>5.0\mu\text{mol/L}$. In the control samples, none had elevated urine arsenic levels and only 5.3% (n=2) had MDA levels $>5.0\mu\text{mol/L}$. Abnormal creatinine levels were found in 58.4% (n=59) of the Pantaz samples, whereas only 18.4% (n=7) of the Trujillo samples were abnormal. This study suggests that the Pantaz population has a significantly high level of urine arsenic, which directly correlates to the known elevated levels of arsenic in drinking water. The almost equally high levels of serum MDA suggests that the elevated arsenic could be the causative factor. The abnormal creatinine results further suggest early signs of renal impairment in this population. This study suggests that the population in Pantaz has renal impairment due to the high levels of arsenic in the water and would benefit from a water filtration device to prevent further renal damage. Future research into this topic should include additional MDA and arsenic levels after the implementation of a filtration device.

O11

Name: Shane R Sergeant

Affiliation: Other Resident

Title: Use of region-specific human papilloma virus serotypes in improving cervical cancer prevention methods in Peru

Authors: Sergeant SR, Harding L, Jelinek K, Briceno RK, Phelps K, Kariagina A, Li Z, Benites S, McCormick J, Willyerd G, Johnson S, Ashurst J

Abstract: For nearly forty years, human papilloma virus (HPV) has been accepted as the most frequent cause of cervical cancer worldwide and is the most fatal cancer for women in Peru. The high-risk (HR) HPV genotypes covered by the vaccine are types 16, 18, 31, 33, 45, 52, and 58. HR types 35, 39, 51, 56, 59 and 68 are not covered by the vaccine. Globally, HR types 16 and 18 account for 70% of cervical cancer. This project aims to discover whether the increasing prevalence of cervical malignancy could be mitigated by the current HPV vaccination. Cervical cell samples were collected from women in the Loreto and La Libertad regions of Peru. Cell samples were preserved using Hologic PreservCyt Liquid Media kit and viral DNA was extracted using a Qiagen DNA extraction kit. RtPCR with type-specific primers were used to determine which of the 13 high-risk serotypes were present in the cell samples. DNA analysis revealed a 15.9% incidence in high-risk HPV in women from Loreto and La Libertad (Loreto, n=126; La Libertad, n=111.) Serotyping of these samples showed marked deviation from the high-risk strains covered by HPV vaccine, with 35 and 45 being most common in Loreto. Strain 16 was the most common in La Libertad. The results of this study indicate that the current HPV vaccination alone may not be sufficient to protect women against cervical cancer. This may be true in Loreto where HPV strain 35, which is not covered by the vaccine, appears to be one of the most prevalent serotypes of HPV. It is in these areas especially that a strong emphasis should be placed on early and consistent Papanicolaou screening. In order to protect the women of Peru and other developing nations from cervical cancer, it is crucial that policy changes be introduced. This study suggests that the most effective prevention strategies would include programs encouraging early screening and education on HPV prevention as well as creation of a more economically efficient, type-specific vaccine.

O12

Name: Derek Shirey

Affiliation: LECOM Student

Title: A Deep Dive into the Diagnostic Utility of Eosinophil- and Basophil-bound C4d
Authors: Derek J Shirey Chau-Ching Liu, MD, PhD
Abstract: Systemic lupus erythematosus (SLE) proves to be a challenging diagnosis due to its unknown pathoetiology and its multifarious nature of clinical presentation. Lack of validated screening tools leads to misdiagnosis and is a major hindrance for successful treatment of SLE. Previous work has demonstrated that fragments of complement proteins attaching to circulating cells can potentially serve as lupus biomarkers. The diagnostic utility of eosinophil- and basophil-bound C4d as specific biomarkers for SLE was analyzed to differentiate the condition from other autoimmune diseases (OD) and healthy controls (HC). With this in mind, the Lupus Center of Excellence lab further hypothesized that unique clinical manifestations could be identified among a subtype population of SLE patients exhibiting elevated eos- and baso-C4d when compared to SLE patients with normal C4d values. Blood samples from SLE (n=151), OD (n=84), and HC patients (n=40) were collected and stained for complement protein C4d on leukocytes in an immunofluorescence staining process using fluorochrome-labeled monoclonal antibodies. Utilizing flow cytometry, SLE patients were observed to have a significantly greater amount of eos-C4d compared to OD ($p<.001$) and HC ($p<.001$). Furthermore, SLE patients had significantly higher levels of baso-C4d compared to OD ($p=.005$) and HC ($p<.001$). Upon medical record review, the data suggest that SLE patients with elevated eos- and baso-C4d may be less likely to experience oral ulcers ($p=.056$) and renal disorders ($p=.051$) when compared to the low eos- and baso-C4d SLE group. The results support the hypothesis that eos- and baso-C4d is a specific SLE biomarker and can be utilized as a diagnostic tool to distinguish SLE from other inflammatory diseases. Additionally, the clinical manifestation trend observed in the elevated eos- and baso-C4d patients provides an important insight into the expected clinical presentation of such patients.

O13

Name: Jordan Spencer

Affiliation: LECOM Student

Title: Co-evolution of psychotropics and mammalian addictive tendencies

Authors: Jordan M. Spencer

Abstract: One of the more difficult questions in evolutionary theory is the how and why the co-evolution of addictive substances and addictive behaviors in mammals emerged. This involves the two part question of why plants would engage in an evolutionary process that would decrease their fitness by increasing the demand for their consumption; and why mammals would have developed a neurological system that would lead to and thus decrease the fitness of the organism. We will discuss possible positive fitness benefits for the development of neurotoxic chemicals on the part of plant life. While for mammals (with special emphasis given to humans) what reasons may have led to the Achilles heel of addictive behavior? One of the reasons that this is such a pertinent subject to consider is for medical purposes. Addiction is a major concern in the world as a whole, and understanding its evolutionary beginnings may help in research methods for recovery. In light of the current opioid epidemic this seems to be a highly relevant subject of consideration. The following gives a few perspectives that have come to light regarding the subject matter. We will also give some suggestions for further proposals for research.

O14

Name: Margarita Vinogradova

Affiliation: LECOM Student

Title: Patency of the Internal Iliac Artery After Placement of Common and External Iliac Artery Stents

Authors: Margarita Vinogradova, BA (1) Hye Joon Lee, BS (1) Ehrin J. Armstrong, MD, MAS (2) John Laird, MD (1) Misty Humphries, MD, MAS, FACS (1)

Abstract: Introduction: Treatment of severe Aortoiliac Occlusive Disease (AIOD) frequently requires long-segment stenting of the common and external iliac arteries. This study aims to analyze the patency of the internal iliac artery after placement of a common and external iliac artery stents across the orifice. Methods: A retrospective analysis of all patients that underwent de novo ipsilateral stent placement in the CIA and EIAs between 2006 and 2014 was performed. Kaplan Meier analysis was used to analyze patency of the IIA and Cox proportional hazards models were used to identify characteristics associated with occlusion. Results: We identified 77 patients and 93 limbs where ipsilateral common and external iliac artery stents were placed. Pre-intervention angiographic review found 52 cases of patent ipsilateral IIAs. Stents were placed across the origin of the IIA in 31 of these cases and staggered across the orifice in the remaining 20 cases. Kaplan-Meier analysis demonstrated a 37% patency in limbs where the stent covered the IIA orifice compared to 78% patency in uncovered arteries. ($p=0.04$). New onset buttock claudication developed in 4 patients, two with patent IIAs and two with occluded IIAs. New onset impotence also developed in 3 patients with occluded IIAs and 5 patients with patent IIAs. Conclusion: Placement of stents across the origin of the IIA may not result in immediate occlusion, but long-term patency of covered IIAs is decreased compared to uncovered IIAs. This study is limited by a small sample size, but when treating AIOD avoiding coverage of the internal iliac origin should be avoided to maintain patency of the pelvic circulation.

ABSTRACTS

POSTER PRESENTATIONS

A1

Name: Patricia Abrudan

Affiliation: LECOM Student

Title: Isolation of Pathogenic Bacteria from Magazines: Potential Fomites in the Home and Physician Office

Authors: Patricia Abrudan M.S, Nancy Carty Ph.D., Christopher C. Keller Ph.D.

Affiliations: LECOM Student

Abstract: Introduction & Objectives: Identification of possible fomites as a source of human infection can lead to education and elimination of those fomites to drastically reduce disease transmission. Previous studies observed that different items found in health care settings, including stuffed animals in pediatric wards, can act as potential sources for microbial transmission. We hypothesized that magazines in the healthcare setting can be potential fomites. In this study, three different types of swabs were tested to determine which most effectively isolated bacteria from magazines. The length of time bacteria can survive on magazines was determined and magazines obtained from physician offices were compared to magazines from the home to determine if there is a difference in the number of bacterial contaminants.

Methods: An optimal method for isolation of bacteria from magazine covers was determined, using three different types of swabs and three different species of bacteria; *Staphylococcus epidermidis*, *Staphylococcus aureus* and *Escherichia coli*. Magazines were obtained from the home and a grid was designed to encompass the entire magazine cover that was then streaked with standard stock cultures of the bacteria. Specifically, each bacterial strain was grown overnight in tryptic soy broth. Cultures were diluted to a standardized absorbance at a wavelength of 600nm measured via the spectrophotometer and the magazines were incubated at room temperature overnight. These magazines were then sampled and cultured onto trypticase soy agar (TSA) for a total bacterial colony count, eosin methylene blue (EMB) which selects for Gram negative rods and allows for identification of *E. coli* and mannitol salt agar (MSA) agar which selects for Gram positive organisms and allows for identification of *S. aureus*. Sampling of inoculated magazine covers at different time intervals over a 24-hour time period was also investigated to determine bacterial survival over time. The number of bacteria on magazines from two primary care waiting rooms was then compared to those from the home.

Results: Moistened swabs were found to efficiently isolate bacteria from magazines with no significant difference seen when comparing the three types of swabs. Following contamination of magazines, isolation of *S. epidermidis* significantly decreased after 24 hours, *S. aureus* significantly decreased after 8 hours, and *E. coli* significantly decreased after 1 hour. Significantly more bacteria were isolated from magazines in primary care waiting rooms compared to magazines obtained from the home

Conclusions: In conclusion, magazines are potential fomites. Bacterial viability is an important variable in the transmission of pathogens. Bacteria do not survive on magazines for extended periods of time; however, magazines may be potential fomites that can be dangerous to human health especially when encountered in a health care setting.

A2

Name: Zachary Ahart

Affiliation: LECOM Student

Title: Reelin's Role in the Morphology of Brainstem Nuclei

Authors: Zachary C. Ahart Dr. RJ Kulesza

Affiliations: LECOM Student

Abstract: Reelin is an extracellular glycoprotein responsible for initiating cellular signaling in neurons. Developmentally, it is involved in neuronal migration but also serves the process of synaptic plasticity throughout adulthood. Several neuropsychiatric diseases in humans have been shown to have reduced Reelin levels in their cerebrospinal fluid. Previous work in our lab has shown that the auditory system in rodents is impaired in a rat genetic model of autism. Therefore, considering Reelin's association with this disease, we hypothesized that neuronal morphology of the auditory nuclei would also be affected in Reeler mice. Gross comparison shows that there is an obvious lack of brain mass in Reeler mice compared to controls. Stimuli from the cochlear nucleus follow various axonal pathways to the superior olivary complex (SOC) which is anatomically situated between the caudal pons and rostral medulla. One of the major nuclei comprising this region is the lateral superior olive (LSO) and a major periolivary nucleus is the medial nucleus of the trapezoid body (MNTB). Also involved in the many aspects of facial motor function is the facial motor nucleus (FN). By focusing on the neuronal cell bodies in each nucleus described, we have shown that their cross-sectional area distribution is significantly larger in Reeler mice compared to control mice. Additionally, immunofluorescence studies using an antibody against calbindin were also conducted. This protein complex is normally observed in the majority of neurons in the MNTB of rodents. Here, we demonstrate that there is not a significantly different number of calbindin-expressing cells in Reeler mice. Similarly, CB expressivity lacks a topographical gradient in both control and Reeler MNTB. We have begun to show the developmental changes to the auditory system associated with loss of Reelin. The physiologic and behavioral implications of these anatomical changes are still not understood.

A3

Name: Kaitlyn Blackburn

Affiliation: LECOM Student

Title: Dymorphology in the Human Medial Superior Olive after Environmental Exposure to Pollution

Authors: Kaitlyn Blackburn, Dr. Randy Kulesza

Affiliations: LECOM Student

Abstract: Air pollution has long been associated with various health conditions and exposure has been a major concern for many people residing in high pollution areas. The central nervous system in children has recently been studied to determine the effects of pollution on the developing brainstem. Previous research has demonstrated significant structural and functional changes in auditory brainstem neurons after long-term exposure to air pollution. Air quality in Mexico City is consistently poor and is among the worst in the entire world. Indeed, we have identified both functional deficits and structural abnormalities in a small cohort of subjects exposed to air-pollution in Mexico City. Specifically, we have identified significantly delayed brainstem auditory evoked potentials and elevated inflammatory markers in children exposed to pollution. Additionally, children exposed to pollution in Mexico City have accumulated α synuclein and β amyloid in brainstem neurons, further implicating neurodegenerative effects of air-pollution. Finally, we have found severe neuronal dymorphology of auditory brainstem neurons in these subjects. Herein, we have investigated a larger cohort of subjects exposed to air-pollution and a group of three subjects from northwestern Pennsylvania. In subjects exposed to air-pollution, we have identified a marked reduction in the number of neurons while remaining neurons

were significantly smaller and exhibited dysmorphology. These changes suggest that exposure to air-pollution has a significant impact on structure and function of auditory brainstem neurons. We propose that non-invasive auditory tests could be used to screen for detrimental effects of pollution in children and that such deficits may be permanent as long as subjects continue to be exposed to air-pollution. The long term effects of such damage should be addressed in order to protect children from future exposures and to identify potential hazardous toxins.

A4

Name: Kaitlyn Blackburn

Affiliation: LECOM Student

Title: A Case of Peripheral Neuropathy Due to Toxic Levels of Pyridoxine from NOS Energy Drink Consumption

Authors: Kaitlyn Blackburn, Katie Warren, DO

Affiliations: LECOM Student

Abstract: Peripheral neuropathy has a variety of different causes such as diabetes, vitamin deficiency, viral infection, and medication side effects. It is a commonly encountered condition in both the primary care setting and also in the field of neurology. While there are many different causes of peripheral neuropathy, we will focus on one individual and relatively rare form. Herein, we report on a 65-year-old man who presented to Meadville Medical Center with a recent increase in falls and troubles with his balance. After a detailed neurological exam, we determined that he was suffering from peripheral neuropathy due to a cause that was not initially apparent. After blood work was completed, we discovered an abnormally high vitamin B6, or pyridoxine level. We later determined his vitamin B6 toxicity was due to his excessive consumption of NOS energy drinks. An individual NOS energy drink is documented to contain at least 200% of the daily value of vitamin B6. The mechanism of pyridoxine induced peripheral neuropathy is due to necrosis of the dorsal root ganglion (DRG) and is duration and dose dependent (Perry TA et al). There is a high risk of irreversible nerve damage with continuous ingestion of the causative agent (Goetz, Christopher G). There is very important to diagnose and provide early intervention in order to decrease the risk permanent discomfort for the patient.

A5

Name: Andrew Coppa

Affiliation: LECOM Student

Title: THE FUNCTION OF NITRIC OXIDE IN THE EXPRESSION OF CALCIUM-ACTIVATED POTASSIUM CHANNELS, SK3 AND IK1

Authors: Andrew Coppa, OSM1 Heather M. Jones, Ph.D.

Affiliations: LECOM Student

Abstract: High blood pressure is a primary risk factor for cardiovascular diseases, which is the leading cause of deaths worldwide. Identifying novel treatments for hypertension can be discovered by looking at the underlying molecular mechanisms involved in vascular constriction. One of these mechanisms is the signaling between the surrounding endothelial tissue and vascular smooth muscle ion channels and soluble mediators. The relationship between nitric oxide (NO) and the inwardly-rectifying, calcium-activated potassium channels SK3 and IK1, is not well understood. To further investigate the hypothesis that these channels are key modulators of vasodilation, the effect of NO on expression of these channels was studied. We investigated the effects of increasing concentrations (1.0, 2.5 and 10.0 μ M) of NO donors and inhibitors on the endogenous expression of the SK3 and IK1 channels in human airway epithelial cells (Calu-3) and human colonic epithelial cells (T84) for varying incubation periods (4, 8 and 12 hours). The NO donors used were sodium nitroprusside (SNP) and S-nitrosoglutathione (GSNO), and the NO inhibitor used was N ω -nitro-L-arginine methyl ester hydrochloride (L-NAME). The expression of each of these channels was increased when T84 and Calu-3 cells were treated with SNP and GSNO. Furthermore, treatment of cells with the NO inhibitor, L-NAME decreased expression of these channels. These findings suggest an additional, long-term potential therapeutic treatment for hypertension with SNP and GSNO through increased expression of SK3 and IK1 leading to hyperpolarization of the endothelial cell reducing vascular resistance and blood pressure.

A6

Name: Tiffany Dilello

Affiliation: LECOM Student

Title: Effects of Weak Androgens on Adipocyte Function

Authors: Tiffany F. Dilello and Diana L. Speelman, Ph.D.

Affiliations: LECOM Student

Abstract: Polycystic ovary syndrome (PCOS) affects the reproductive, endocrine, and metabolic health of affected females. It is characterized by the presence of at least two of the three following features: polycystic ovaries, oligo-ovulation, and hyperandrogenism. Androgens of ovarian origin (testosterone, androstenedione, and dehydroepiandrosterone) are elevated in the blood, and may contribute to the increased prevalence of obesity in these women. The effects of androstenedione (A4) and dehydroepiandrosterone (DHEA) on 3T3-L1 adipocyte triglyceride storage and on the expression and secretion of adiponectin (an adipocyte-derived hormone) were analyzed. Adipocytes were differentiated and treated with either acetonitrile (vehicle) or varying concentrations of DHEA or A4, every 48 hours for 10 days throughout the course of differentiation. On day 10, lipid droplets in adipocytes were stained with Oil Red O and the amount of lipid droplet accumulation was quantified. Treatment with A4 at concentrations of 10 nM and 10 μ M caused an increase in lipid droplet accumulation compared to vehicle-treated adipocytes, as did DHEA at concentrations of 10 μ M and 100 μ M. These results support the hypothesis that A4 and DHEA at these concentrations contribute to obesity. Additionally, adipocytes treated with 10nM A4 or 10 μ M DHEA throughout the course of differentiation demonstrated increased adiponectin expression and secretion compared to adipocytes treated with vehicle alone.

A7

Name: Jessica Goddard

Affiliation: LECOM Student

Title: Auditory Brainstem Effects of Developmental Exposure to Phthalates

Authors: Jessica Goddard and Randy J. Kulesza

Affiliations: LECOM Student

Abstract: Di-(2-ethylhexyl)-phthalate (DEHP) is a ubiquitous plasticizer used broadly in the production of polyvinyl chloride (PVC) plastic products including some medical products such as tubing, IV bags, and catheters. It is also an endocrine disruptor known to cause a wide variety of developmental and neurological abnormalities in humans and animals. Some animal models have suggested pre- and post-natal exposure to DEHP could contribute to behavioral abnormalities in animals consistent with autism spectrum disorders (ASD). Furthermore, DEHP exposure has been shown to cause neuronal dysmorphology in the hippocampus. However, the impact of DEHP on brainstem circuits has not been examined. Based on these observations we hypothesized that pre-natal and post-natal exposure to DEHP will disrupt brain stem neuronal pathways and function. Herein we describe the results of our investigation of the cerebellum, facial nucleus (FN) and medial nucleus of the trapezoid body (MNTB) in animals exposed to DEHP from E12 to P21. We found fewer neurons expressing the calcium binding protein calbindin in the cerebellum and MNTB compared to control animals. Additionally we saw an increase in soma size, but a decrease in the overall number of neurons in the MNTB of exposed rats. We interpret these observations to suggest that DEHP impacts development of brainstem neuronal populations. We believe that these abnormal morphometric patterns support the conclusion that DEHP adversely affects the brainstem and that DEHP exposure could contribute to idiopathic cases of autism spectrum disorder.

Presentation preference: Poster Only

A8

Name: Corbyn Minich

Affiliation:

Title: Active Surveillance of Human Pathogen Carrying Ticks from Presque Isle State Park (Erie, PA)

Authors: Corbyn Minich*, Nancy Carty, Ph.D., Christopher C. Keller, Ph.D., FNAOME

Affiliations: Laboratory of Human Pathogens, Lake Erie College of Osteopathic Medicine, Erie, PA

Abstract: Objectives: Black-legged ticks (*Ixodes scapularis*) and dog ticks (*Dermacentor variabilis*) transmit pathogens to humans, including *Borrelia burgdorferi*, *Babesia microti*, and *Rickettsia rickettsii*. Our previous studies have shown both tick species are present throughout Erie County with the highest prevalence on Presque Isle State Park (PISP). This is an area of interest due to its public access and increased attention as a tourist attraction, particularly during the summer. Therefore, this study was designed to examine the distribution of the tick population on PISP in order to identify areas with a high tick load and factors affecting their presence.

Methods: Questing adult and nymph *I. scapularis* and *D. variabilis* ticks were collected from PISP during June 2016 via flagging. Parameters such as time of day, temperature, humidity, overall weather conditions and trail area were recorded during the collection process. The data was pooled and examined for various factors affecting tick collection.

Results: Ticks (n=335) were found through active surveillance within the trail areas of PISP. Sidewalk Trail, Pine Tree Trail and Dead Pond Trail were the areas with the highest tick load in decreasing order. Nymphs (n=244) were the most predominate life cycle stage that was collected in June. Additionally, the evening hours seemed to yield the highest number of ticks, with the highest tick load collected between 8-10 pm.

Conclusions: Ticks are present in high numbers on the trails of PISP in June, with nymph ticks being predominate and tick load highest during evening hours.

A9

Name: Robert Waters

Affiliation: LECOM Student

Title: The Effect of Essential Plant Oil Combinations on Growth Inhibition of *Pseudomonas aeruginosa*

Authors: Robert Waters*, Christopher C. Keller, Ph.D., Nancy Carty, Ph.D.

Affiliations: LECOM Student

Abstract: Introduction: *Pseudomonas aeruginosa* is a Gram negative pathogen that causes a variety of opportunistic infections, such as pulmonary infections, urinary tract infections, and ear infections in immunocompromised patients. Most strains of *P. aeruginosa* are resistant to several antibiotics, thus the discovery and implementation of novel therapeutics for use against *P. aeruginosa* is of utmost importance. Our previous work has shown that cinnamon cassia oil and tea tree oil inhibited the in vitro growth of *P. aeruginosa*; therefore, the goal of this study was to determine the effects of combining essential plant oils on inhibiting *P. aeruginosa* growth. Methods: *P. aeruginosa* lab strain 27853 was grown overnight and disk diffusion assays were conducted with essential oils alone or in combination. The zone of inhibition (ZOI) was compared between combinations of oils and individual oils to determine if there was a synergistic effect. Statistical significance was determined using ANOVA followed by Tukey's multiple comparisons test. Results: The combination of cinnamon cassia oil (5 µL) with tea tree oil (5 µL) significantly inhibited *P. aeruginosa* growth when compared to 5 µL of either oil individually. However cinnamon cassia oil alone at 10 µL had a ZOI significantly larger than that of the combination of cinnamon cassia oil (5 µL) with tea tree oil (5 µL). The combinations of cinnamon cassia oil (5 µL) with ginger oil (5 µL) and tea tree oil (5 µL) with ginger oil (5 µL) did not significantly affect the ZOI when compared to the 5 µL of cinnamon cassia or tea tree oil individually. Conclusion: These results indicate that there is an additive affect between cinnamon cassia oil and tea tree oil on the growth inhibition of *P. aeruginosa*. Ginger oil is neither additive nor antagonistic when used in combination with cinnamon and tea tree oils. However the greatest inhibition of *P. aeruginosa* growth was obtained using 10µl, the maximum amount, of cinnamon cassia oil alone.

A10

Name: Amy Farris

Affiliation: MCH Resident

Title: Surveillance of identification badge microbial contamination load at a small tertiary hospital

Authors: AJ Farris, D.O., Matthew Strohmeyer, OMSIII

Affiliations: MCH Resident

Abstract: Employee identification badges are a requirement at all healthcare institutions in the state of Pennsylvania. This study compared microbial contamination loads between those badges from employees with direct patient contact and those with no direct patient contact. Statistical analysis on the collected data revealed a significant difference among the two groups, with significantly higher microbial loads found on the badges of employees with direct patient contact. This study highlights the need for routine badge cleaning, or alternate methods for displaying badges.

A11

Name: Jennifer Carson

Affiliation: MCH Resident

Title: Antibiotic Resistance to Levofloxacin at Community Hospital

Authors: Jennifer Carson, D.O., M.B.A.

Affiliations: MCH Resident

Abstract: Background: Fluoroquinolones are considered broad spectrum antibiotics and utilized in the hospital and community setting. They work to inhibit DNA replication. As their utilization has grown, so too has antibiotic resistance. Gram-positive and gram-negative bacteria have adapted to resist fluoroquinolones through three different mechanisms. Methods: This study focused on antibiotic resistance to levofloxacin at a community hospital. Data obtained from culture and sensitivity results of patients treated for pneumonia at the community hospital during November 2014 to December 2015 was analyzed to determine if there was significant resistance to levofloxacin, ampicillin, and ceftriaxone. Results: A significant association between antibiotic resistance to levofloxacin and ampicillin was prevalent, however there was no association of antibiotic resistance to ceftriaxone. Conclusions: This results of this study indicate that levofloxacin and ampicillin are not adequate antibiotics for treatment of pneumonia. These results, along with similar results of other studies, indicate a growing epidemic in antibiotic resistance and the imperative need for change in empiric approach to treat these patients.

A12

Name: Mujtaba Soniwala

Affiliation: LECOM Student

Title: Effect of p53 activating drug, PRIMA-1Met (APR-246) on wild-type p53 in estrogen receptor α -positive breast cancer

Authors: Mujtaba Soniwala, Christina Adams, Gokul Das

Affiliations: LECOM Student

Abstract: PRIMA-1Met (APR-246) is a drug that has been shown to restore the wild type (wt) structure and function of mutant p53, selectively killing cancer cells with the mutant genotype¹. In addition to its effects in a mutant p53 setting, PRIMA-1Met can also activate endogenous wt-p53 to induce a tumor suppressor response. However, the ability of PRIMA-1Met to induce sufficient apoptosis for cell death is less in a wt-p53 setting than in a comparable mutant p53 setting in the same cell line². Therefore, PRIMA-1Met may need to be utilized as part of a combination therapy with other chemotherapeutic agents in order to be effective in a wt-p53 setting. p53 is a tumor suppressor protein that prevents tumorigenesis by halting the cell cycle, upregulating DNA repair mechanisms, or triggering apoptosis³. Most cancer cells disable the wt-p53 functions by mutating p53 or increasing negative regulators of wt-p53 (such as MDM2). In luminal breast cancers, p53 is only mutated 23% of the time, meaning that most tumors still express wt-p53. However, most luminal breast cancers also express estrogen receptor α (ER α), which has been shown to directly bind to and inhibit wt-p53. This leads to loss of the tumor suppressor function and contributes to the onset and progression of breast cancer⁴. Current treatment of ER α positive breast cancer is via inhibition of ER α signaling with tamoxifen, which has led to a significant decrease in mortality. However, a large number of patients are resistant to endocrine therapy, requiring better treatment options to prevent or treat recurrence⁵. Thus, we hypothesize that combining activation of wt-p53 by PRIMA-1Met with other chemotherapies will increase apoptosis (cell death) over either treatment alone. To test this hypothesis, we are using MCF-7 cells as a model of ER α -positive, hormone-responsive luminal breast cancer.

A13

Name: Katherine Schrenker

Affiliation: LECOM Student

Title: "Effect of Nutritional Intervention on Growth of Children with Inflammatory Bowel Diseases"

Authors: Katherine Schrenker, Hongyue Wang, Elizabeth Carnes, Lawrence J. Saubermann

Affiliations: LECOM Student

Abstract: When Inflammatory Bowel Disease is diagnosed in children many children, especially those with Crohn's disease, experience growth retardation. While careful monitoring of growth and pubertal progression are recognized as an essential part of care, what helps these patients grow is not completely understood. We hypothesize that patients with IBD who are treated with nutritional supplements or meet with a registered dietician will have higher growth velocities than those who do not. A retrospective chart review was conducted on all IBD patients between 12 and 17 seen by the Division of Pediatric Gastroenterology and Nutrition at Golisano Children's Hospital in Rochester, NY. Data from 215 patients including height, weight, BMI percentile, medications and lab values were recorded before and after diagnosis of IBD. The height velocity and averages of each lab value were calculated for each patient before and after IBD diagnosis. Statistical analysis included an ANOVA with a Dunnett's t-test and a Pearson's correlation. Differences in height velocity due to age, diagnosis and sex were also assessed. No significant difference between groups was found in the change of any of the parameters. Additionally, no significant association in the change in height velocity was found for age, diagnosis or sex. However, there was a very strong trend towards an increase in height velocity in those subjects who received nutritional supplements and/or met with a dietician. A positive correlation between calcium, albumin and hemoglobin and a negative correlation between hemoglobin and both ESR and CRP were found, all were expected based on the pathophysiology of IBD. To better assess changes in height velocity, a study with a larger sample size or a prospective study should be undertaken, but in the meantime we would strongly recommend the use of nutritional supplements in children with IBD.

A14

Name: Chad Walls

Affiliation: MCH Resident

Title: CRITERIA AND CONTROVERSIES REGARDING SURGICAL VS. CONSERVATIVE MANAGEMENT OF FRACTURES OF THE SHOULDER GIRDLE. A Meta-Analysis.

Authors: Chad Walls, D.O. Orthopedic Resident PGY3

Affiliations: MCH Resident

Abstract: Background: There continues to be controversy regarding the surgical management of these displaced mid-shaft clavicle fractures. Criteria for operative treatment of the scapula remains controversial and there continues to be no universal parameters in the literature. A meta-analysis was conducted to investigate current controversies regarding criteria for surgical and non-surgical treatment of fractures about the shoulder girdle. Methods: A search using the Pubmed online database was performed. Key words "clavicle fractures" and "scapular fractures" were used with all studies dating back to 2005 reviewed. Results: Six studies were identified that compared the results of non-operative versus operative treatment of displaced mid-shaft clavicle fractures. The total non-union rate for non-operative treatment was 14%. The non-union rate after operative fixation was 1%. The total complication rate was 28% for the non-operative group and 24% for the operative group. For scapular fractures, no randomized controlled trials were found. Conclusions: Treatment of mid-shaft clavicle

fractures continues to be a topic of debate. Newer studies have shown the operative fixation does decrease the rates of non-unions and also improves functional outcomes, however there may be some increased complication rates and re-operation rates related to local hardware irritation and also significantly increased cost of treatment associated with operative treatment. There is need for future studies to definitively determine surgical indications for scapula fractures.

A15

Name: Aaron Leininger D.O.

Affiliation: Other Resident

Title: The Role of Adenosine in Degenerative Joint Disease, A Meta Analysis

Authors: Aaron Leininger D.O. Hayley Ross MS4

Affiliations: Other Resident

Abstract: To date osteoarthritis is largely considered a disease secondary to mechanical wear. In recent years multiple papers have been published that relate adenosine, adenosine deaminase, and adenosine receptor subtypes to various bone and joint pathologies. This meta-analysis is designed to review current research relating the metabolic involvement of adenosine to degenerative joint disease. Keywords: adenosine, osteoarthritis

A16

Name: Mark Messmer

Affiliation: MCH Resident

Title: Patterns and Trends in Coal Mining Orthopedic Injuries Admitted to a Level One Trauma Center in Southern West Virginia Over Ten Years

Authors: Mark Messmer, DO, Frederic H Pollock, MD, Frederic J Pollock, PhD, JP Maurer, DO, Aaron Sop, DO,

Affiliations: MCH Resident

Abstract: There is a paucity of medical literature on patterns of orthopedic injuries sustained by coal mine workers. This manuscript describes patterns of coal mine-related orthopedic injuries among patients admitted to a West Virginia Level 1 trauma hospital over a 10 year period (2005-2014), including patient age and gender, injury type, length of stay, Injury Severity Score, mine location, and prognosis. From 2005 to 2014, 316 patients were admitted with mining-related orthopedic injuries. A statistically significant positive correlation was found between mining-related hospital admissions and tons of coal produced within our hospital's referral base. Decreased coal production over the study period corresponded to a reduction in coal mine-related orthopedic admissions. Pelvic injuries (9.8% of all orthopedic mine injuries) and finger amputations (7%) were the most common admission types, suggesting that the adoption of better hand protection and amelioration of crush injuries at coal mines could improve miner workplace safety.

A17

Name: Dalton Fishel

Affiliation: Pharmacy Faculty

Title: Retrospective Evaluation of Fall Admissions in Geriatric Patients.

Authors: Dalton Fishel, PharmD Candidate 2017; M. Keawe Makaimoku, PharmD Candidate 2017; Kristen M. Gawronski, PharmD,

Affiliations: Millcreek Community Hospital (MCH), and LECOM School of Pharmacy, Erie, PA

Abstract: Elderly persons are at an elevated risk of falls due to multiple factors. Some risks identified include orthostatic hypotension, visual impairment, impairment of balance, limitations in basic activities of daily living, hyponatremia, cognitive impairment, and medication use. Previous studies show that persons 65 years and older will experience at least one fall per year. Selective serotonin reuptake inhibitors (SSRI) and serotonin and norepinephrine reuptake inhibitors (SNRI) use has been associated with an increased risk of falls in elderly persons. A retrospective study was conducted on all patients admitted to Millcreek Community Hospital for a fall-related injury who met inclusion criteria. There was a low incidence of fall-related hospital readmission in the cohort. We found that patients taking an SSRI or SNRI did not have an increased risk of a fall-related readmission within 30 days of hospital discharge.

A18

Name: matthew vajen

Affiliation: LECOM Student

Title: Incidental Parathyroidectomy During Thyroid Surgery at a Community-Based Hospital: A Retrospective Chart Review

Authors: Matthew Vajen DO, Phillip Khalil DO, Matthew Lutz DO

Affiliations: LECOM Student

Abstract: Introduction: We wish to examine our incidence of incidental parathyroidectomy, compare our results to the literature, and assess its importance. Methods: A retrospective chart review of 96 thyroid lobectomies, completion thyroidectomies, and total thyroidectomies by two surgeons at a community-based hospital was performed over a 42-month time period ranging from January 2012 to July 2015. Pathology reports and patient charts were reviewed for this time period and statistical analysis performed via chi-squared test. Results: Ninety-six thyroid procedures were performed. The incidence of incidental parathyroidectomy was 29.2%. No statistical significant difference was found among incidence between initial operation vs. reoperation, lobectomy vs. total thyroidectomy, or benign vs. malignant thyroid pathology. There was a statistically significant difference between incidental parathyroidectomy and no incidental parathyroidectomy patients in regards to transient post-op biochemical hypocalcemia (47.1% vs. 15.9%, $P = .011$) Conclusion: Variability exists in the literature regarding the risk factors for incidental parathyroidectomy, and some cannot be avoided secondary to intrathyroidal parathyroid glands, but data suggests minimal long term effects in regards to calcium homeostasis.

A19

Name: Matthew S. Irwin

Affiliation: MCH Resident

Title: Tranexamic Acid Use in Total Shoulder Arthroplasty (TSA): A retrospective analysis of the use of tranexamic acid in TSA to reduce postoperative blood loss and transfusion rates at a single hospital

Authors: Matthew S. Irwin, D.O., M.S., PGY-4 Orthopaedic Surgery LECOM Vincent Paczkoskie, M.D. Michael Bogard, OMS-II LECOM

Affiliations: MCH Resident

Abstract: Tranexamic acid (TXA) is a competitive inhibitor of plasminogen activation, and at much higher levels, a noncompetitive inhibitor of plasmin. It functions by blocking the lysine binding sites on plasminogen, thereby slowing the conversion of plasminogen to plasmin (Gandhi, 2013). Numerous previous studies have analyzed the use of tranexamic acid to reduce blood loss during total knee arthroplasty and total hip arthroplasty, thus decreasing the need for blood transfusion, however there appears to be a lack of supporting literature regarding total shoulder arthroplasty and the use of tranexamic acid to reduce blood loss. This study analyzed the data from 80 patients over a five-year period, at a single institution and single surgeon, attempting to determine if intravenous TXA use during total shoulder arthroplasty reduced perioperative blood loss and transfusion rates. Tranexamic acid use does decrease postoperative blood loss during total shoulder arthroplasty, and thus decreases the transfusion rate as a result as demonstrated in this limited patient study, however due to limited participants these results were not statistically significant. This is the first study to my knowledge demonstrating the use of tranexamic acid in total shoulder arthroplasty, while many studies have previously been performed demonstrating its effectiveness and safety in total knee arthroplasty and total hip arthroplasty. Further research is needed to reproduce these results in reverse total shoulder arthroplasty and shoulder hemiarthroplasty, as these may indicate a higher or lesser incidence of blood loss.

A20

Name: Jennifer Fretwell

Affiliation: MCH Resident

Title: Prevalence of Acute Hepatitis C Virus in a Drug and Alcohol Detoxification Unit in a Rural Community Hospital in Pennsylvania

Authors: Jennifer L. Fretwell, DO

Affiliations: MCH Resident

Abstract: Background: Hepatitis C is an important topic in medicine due to the high rate of infected individuals and the high cost of treatment. Accurate estimates of prevalence are important to plan for future health care diagnosis, treatment, and policy. CDC estimates indicate that the prevalence of HCV infection is 1.6% to 2%. This estimate does not reflect the risk of HCV in at-risk populations. Methods: A random sample was obtained of 100 subjects admitted to the Detoxification Unit from October 1, 2014 , through October 1, 2015, at Millcreek Community Hospital in Erie, PA. From retrospective chart review, data was collected on the subjects' age, sex, IV drug use history, and whether or not the subjects were positive for HCV. Results 11% of the subjects were HCV positive. Conclusions: The rate of HCV infection was 11% in the sample of subjects from an inpatient detoxification unit admission. As expected, this is higher than the rate of HCV infection expected in the general population. This at –risk population, in spite of the rural location and distance from a major urban center, was positive for HCV at a high rate.

A21

Name: Jonathan Callegari

Affiliation: MCH Resident

Title: A Retrospective Analysis of the Possible Cardiac Complications Associated with the Use of Tranexamic Acid on Patients Who Have Underlying Cardiac Disease and Have Undergone Total Joint Replacement.

Authors: Jonathan Callegari DO Roger Gregush MS3

Affiliations: MCH Resident

Abstract: Background: Tranexamic acid is an anti-fibrinolytic medication used to limit bleeding during orthopedic surgery. It is used in major orthopedic surgery to reduce bleeding in the surgical field and reduce post-operative blood loss and surgical site infections due to a reduction in wound drainage. Many studies have examined its use in orthopedic surgery but very few studies have examined the effect of tranexamic acid in patients with pre-existing cardiac morbidity. In someone who has a cardiac disease and at the risk of ischemic insults, tranexamic acid theoretically has the potential to promote clot formation and lead to ischemic insults to the body. Objective: To retrospectively examine any increased risk of tranexamic acid use in patients with a pre-existing cardiac history during total hip or knee arthroplasty. Methods: Data on 1000 patients were accessed via medical records without patient identifying information. 713 patients did not have a cardiac history while the remaining 287 did. Cardiac history included atrial fibrillation, coronary artery disease, valvular disease, cardiomyopathy, CHF, or history of DVT/PE. Post-operative complications were identified via ICD 9 codes and were used to calculate an odds ratio. Data: 713 pts were control (without cardiac risk) and 287 pts had a pre-existing cardiac history. 9 in the exposed group and 9 in the control group experienced a qualifying outcome. An odds ratio was calculated retrospectively and determined to be 2.532; 95% CI 0.99 – 6.4; p value 0.0513. Discussion: These values indicate that those with a cardiac history undergoing a THA or TKA who received TXA during the procedure have a 2.5 increased chance in cardiac risk compared to those who do not have a cardiac history. The result is not statistically significant. Conclusion: Therefore, those with a cardiac risk do not have an increased risk of developing cardiac complications after given TXA during a major orthopedic joint surgery compared to the control.

A22

Name: Christopher Buzas

Affiliation: MCH Resident

Title: Quality of Life and Visual Acuity in Long-Term Care Residents

Authors: Chris Buzas DO

Affiliations: MCH Resident

Abstract: Visual impairment has been well-documented among long-term care facility residents. The purpose of the study is to determine if there is a correlation between decreased visual acuity and perceived quality of life. The visual acuity of long-term care residents was measured, then a 10-question survey was administered. The survey focused on perceived quality of vision and quality of life. As a result, it was found that there was a correlation between visual acuity and quality of life. As vision decreased, the perceived quality of life by the resident also decreased. Interestingly, there was also a correlation between the ability to perform hobbies and other activities that increase quality of life standards. If steps can be taken to improve vision, long-term care residents may also have the ability to improve their overall quality of life.

A23

Name: Brian Merritt

Affiliation: LECOM Student

Title: Osteopathic Authorship Trends in Obstetrics and Gynecology Publications over a Fifteen Year Period

Authors: Brian Merritt BS (1), Amanda Ellis DO (2), Megan Wasson DO (3) and John Ashurst DO, MSc (2)

Affiliations: LECOM Student

Abstract: Background: The recent merger of the American Osteopathic Association (AOA), the American Association of Colleges of Osteopathic Medicine (AACOM) and the Accreditation Council for Graduate Medical Education (ACGME) has increased the call for research and publications. The goal of this study was to identify any disparity in medical degree title and advanced degree title regarding authorship in four obstetrics and gynecology journals. Methods: Obstetrics and Gynecology, The American Journal of Obstetrics and Gynecology, Fertility and Sterility, and Menopause were analyzed for the title held by the first and senior authors for original research articles published in the years 2000, 2005, 2010, and 2015. Results: Collectively, 0.77% of all authors in this study held a degree in Osteopathic Medicine. A total of 1.09% of first authors and 0.44% of senior authors were Osteopathic physicians. No statistical trend could be established for increased Osteopathic publication over time as a whole for either first or senior authors ($p=0.347$ and $p=0.795$). Also, no statistical trend could be established for either first or senior osteopathic author publication for any journal. However, a statistical trend was established for increased allopathic first author publications for the journal of Obstetrics and Gynecology ($p=0.01$), The American Journal of Obstetrics and Gynecology ($p=0.04$) and the journal of Menopause ($p=0.02$). There was also a statistical trend for increased allopathic senior author publications for the journal of Obstetrics and Gynecology ($p=0.02$) and the journal of Menopause ($p=0.04$). Conclusion: Over the last 15 years, allopathic physician researchers have out published their osteopathic counterparts. Although and overall statistical trend was not noted for either physician category, specific journals did show a disparity for allopathic publication over time.

A24

Name: Peter Laucks

Affiliation: MCH Resident

Title: Medical Reconciliation at a Small Community Hospital: Whose job is it anyway?

Authors: Peter H Laucks, DO

Affiliations: MCH Resident

Abstract: Medication reconciliation is one of the most important tasks to be completed during a patients inpatient stay in the hospital and research has shown that most hospitals are not accomplishing this very effectively. Though simple in theory, medication reconciliation is a vast undertaking which is complicated and time consuming. While some patients are on straightforward regimens that have gone unchanged for years, some patients visit various doctors on an almost weekly basis and may have constant changes to their medication lists. This issue gets further compounded when these complicated patients have inpatient hospitalizations at alternating facilities whose medical record systems do not communicate with each other. The objective of this research study was to look at Millcreek Community Hospital, a small community hospital in Erie, PA, and assess the institutional ability to complete medication reconciliation using data collected from three acute inpatient units to answer the following

questions: Is there a difference between pharmacists and physicians when it comes to who is completing a medication reconciliation? Is there a location where a patient is more likely to have a medication reconciliation completed? At the community hospital in question, what is the overall likelihood that a medication reconciliation is completed? The results of the study reveal that, in all three units, pharmacists were more likely than physicians to complete a medication reconciliation procedure. The flagship Acute Care for the Elderly (ACE) Unit had the highest medication reconciliation completion rates overall. In the 303 patients studied, 84.2% had reconciliations performed, though physicians in all three units performed medication reconciliation only 45-62% of the time. This study acts as a good springboard for future examinations into the need for a more procedurally regimented medication reconciliation process.

A25

Name: Patrick Fessler, DO

Affiliation: MCH Resident

Title: Analysis of Geographic Location, Resident Salaries, and Fellowships Effect on Orthopaedic Residency Applications

Authors: Patrick Fessler, DO

Affiliations: MCH Resident

Abstract: In this study I contacted all 39 osteopathic orthopaedic residency programs and obtain the number of applicants in the match for the past three years. I inquired for the number orthopaedic residents who have match into a fellowship position in the past three years. In addition, information on the program's cost of living and local population was gathered. With this data I analyzed the number of applicants to a program based upon the following: Population size, net salary, cost of living and percent of residents who matched over the past three years.

A26

Name: Nick Crossman

Affiliation: MCH Resident

Title: Comparing Fellowship Trained Joint Surgeon and General Orthopedic Surgeon Follow-Up Protocols for Total Knee Arthroplasties

Authors: Steven Habusta Nicholas Crossman

Affiliations: MCH Resident

Abstract: This study looks at the post operative protocols for orthopaedic surgeons following total knee arthroplasties. A comparison was made between the protocols from fellowship trained orthopaedic surgeons and general orthopaedic surgeons. The data was collected with IRB approval and no identifiers were collected from respondents via a surveymonkey.com survey. A total of 10 respondents participated. The data was then analyzed. The papers data suggests that while there is no set protocol, surgeons continue to follow a similar post op protocol whether fellowship trained or practicing general orthopedics.

A27

Name: Nicholas Callahan

Affiliation: MCH Resident

Title: Conscious Sedation for Orthopedic Reductions in the Emergency Department: A Comparison of Preferences between ER Physicians and Orthopedic Surgeons

Authors: Nicholas Callahan, DO

Affiliations: MCH Resident

Abstract: Purpose: Orthopedic injuries that require reductions are a very common reason for emergency room visits. Conscious sedation is often necessary in order to adequately and safely reduce such injuries. The choices of agents utilized for this varies and there is no specific agent that is a gold standard. Often the emergency medicine physician and the orthopedic surgeon have differing opinions as to which agent(s) should be utilized. This purpose of this study was to identify what agents are preferred by emergency room physicians as compared to those by orthopedic surgeons. Methods: This study was preformed as an anonymous survey online. There were 12 ER physicians and 11 orthopedic surgeons that responded. The physicians were given the choice between single or multi-agent options and 5 orthopedic clinical scenarios. Results: A clear preference was established by ER physicians with single agent propofol and ketamine being favored. No clear single or multi-agent preference was established for orthopedic surgeons. Conclusion: Emergency medicine physicians in this survey choose single agents propofol and ketamine most frequently for orthopedic reductions. The orthopedic surgeons were more varied and did not have a clear majority towards one particular single or multi-agent option.

A28

Name: sean kelly

Affiliation: MCH Resident

Title: Prevention of Osteoporosis-Related Fractures in Postmenopausal Women

Authors: Sean Kelly, DO, MPH, MS (Med Ed)

Affiliations: MCH Resident

Abstract: Abstract Osteoporosis is a common disorder characterized by the deterioration of bone microarchitecture, skeletal fragility and increased risk of fracture.¹ The prevalence of osteoporosis increases with age, from 6% at 50 years to 50% after the age of 80. An estimated 50% of women and 20% of men over the age of 50 will have an osteoporosis-related fracture. Osteoporosis is responsible for lasting disability, impaired quality of life and increased mortality. Individuals who have an osteoporosis-related fracture are at high risk of recurrent fractures. In this review, we will address the approach to managing osteoporosis and preventing related fractures in postmenopausal women.

A29

Name: michael meinhold

Affiliation: MCH Resident

Title: Evaluation of Patients that Underwent a Total Knee Arthroplasty for the Treatment of Osteoarthritis

Authors: Michael Meinhold

Affiliations: MCH Resident

Abstract: Osteoarthritis (OA) of the knee, one of the most common causes of disability, continues to increase in prevalence as the older adult and obese populations grow. By 2030, the number of US adults with arthritis is projected to reach 67 million.¹ In a proportion of individuals, OA progresses toward joint failure requiring total joint replacement (arthroplasty). In the U.S., 200,000 hip joints are replaced every year, and intervention rates for hip and knee OA are between 50 to 130 per 100,000 person-years in most Western countries.² Despite the striking impact of OA, its etiopathogenesis is still poorly defined, with limited experimental insights into disease mechanisms and the underlying risk factors. It is well established, however, that OA shares similarities with type 2 diabetes, including its chronic nature, high prevalence of end-organ failure, and strong association with age and obesity.³ Whether type 2 diabetes represents a causal risk factor for OA remains unclear to date.⁴

A30

Name: Jordan Bonier

Affiliation: MCH Resident

Title: Post-Operative Surgical Site Infection Rates in Orthopedic Procedures Before and After Use of Silver-Impregnated Occlusive Dressing in a Community Hospital Setting

Authors: Jordan Bonier, DO

Affiliations: MCH Resident

Abstract: Surgical site infections (SSIs) are a frequent complication of operative procedures and lead to significant morbidity and mortality. SSIs are a known risk factor for the development of prosthetic joint infections (PJIs), the treatment of which imparts a major financial burden on the healthcare industry. Measures to prevent SSIs have been focused recently on improved local wound care. The use of silver as an antimicrobial agent has been shown to improve local infection rates and wound healing. The objective of this study was to determine if routine post-operative use of silver-impregnated occlusive dressings affects acute SSI rates for orthopedic procedures in a community hospital setting. A retrospective chart review of 1386 orthopedic procedures (total hip arthroplasty [THA], total knee arthroplasty [TKA], hip hemiarthroplasty [HHA], and unicompartmental knee arthroplasty [UKA]) performed over a four year span was compiled. Two groups were determined based on timing of the procedure: a two year period of post-operative standard gauze dressing as standard surgical protocol (n = 719) and a two year period of post-operative silver-impregnated occlusive dressing as standard surgical protocol (n = 667). Acute SSI rates were calculated for both groups. The standard gauze dressing group had a higher overall acute SSI rate (1.39%) when compared to the silver-impregnated occlusive dressing group (1.20%). The most profound reduction in SSI rates was seen in primary TKA (1.72% standard gauze vs. 1.11% silver). SSI rate increased in THA (0.48% standard gauze vs. 1.02% silver). However, all differences in SSI rates observed proved insignificant. This study demonstrates that silver-impregnated occlusive dressings may be a cost-effective measure to reduce SSI rates in orthopedic procedures, especially in total knee arthroplasty, though larger controlled studies are needed to demonstrate significant outcomes.

A31

Name: Stephen Watkins, DO

Affiliation: MCH Resident

Title: Simultaneous MPFL Reconstruction and Hemiepiphysiodesis for Patellar Instability in Genu Valgum

Authors: Stephen Watkins, D.O., Christopher Redman, M.D., Shital Parikh M.D.

Affiliations: MCH Resident

Abstract: Chronic Lateral Patellar Instability is a common pathology in skeletally immature patients and the etiology can often be multifactorial including MPFL (medial patellofemoral ligament) incompetence, trochlear dysplasia, malalignment, patellar tilt and patella alta. When the etiology is multifactorial the patient may benefit from MPFL reconstruction and other associated procedures. We present simultaneous MPFL reconstruction with guided growth for the correction of patellar instability with genu valgum deformity.

A32

Name: Mark Strand

Affiliation: Other Resident

Title: The Effect of Recurrent Pulsed Dye Laser Treatments in Rosacea Patients

Authors: Mark D. Strand, DO, MS; Gunnar E.O. Bergqvist, MD; Shane D. Griffith, DO; Emma C. Bergqvist;

Affiliations: Other Resident

Abstract: Background: Rosacea is common chronic skin condition and is known to have a negative impact on patient's quality of life. The use of pulsed dye laser treatment to improve quality of life is well documented in the literature. Prior work has emphasized a single series of laser treatments but we investigated the effect of recurrent pulsed dye laser treatment on patient's symptomology and quality of life. Methods: We designed an 8 question survey about patients' rosacea symptoms, prior treatments, effectiveness of prior treatments, benefit of the laser treatments, and number of laser treatments. The survey (Figure 1) was offered to all patients over the age of 18 who were beginning or currently undergoing pulsed dye laser treatments who previously failed medical management for their erythemotelangiectatic rosacea. Results: Fifty patients completed the study. Patients had significant improvement in symptoms and show statistically significant benefit of repeated pulse dye laser treatment for rosacea versus a single series of treatments. Conclusion: Our study is unique in that it provides evidence that recurrent pulse dye laser treatments are beneficial to patients by improving quality of life and decreasing symptoms. This finding supports the notion that chronic treatment is needed for this chronic disease.

A33

Name: Olga Stetsyuk

Affiliation: MCH Resident

Title: The Effect of Cataract Surgery on Intraocular Pressure in Glaucoma Patients, Glaucoma Suspects, and Normal Patients

Authors: Olga Stetsyuk, DO; Anthony Sala, II, DO

Affiliations: MCH Resident

Abstract: Purpose. To determine the effect of cataract extraction on intraocular pressure in patients with glaucoma, glaucoma suspects, and non-glaucoma patients. Methods. Retrospective chart review was performed on all patients undergoing cataract surgery at the Erie Eye Clinic between 01/05/2015 and 06/08/2015. Established diagnoses of glaucoma, including primary open angle glaucoma, angle closure glaucoma, pseudoexfoliation/exfoliation syndrome, borderline glaucoma, and ocular hypertension were recorded for all patients. For each patient, the preoperative intraocular pressure (IOP) and 1 month post-operative IOP were recorded if documented in the medical chart. Results. A total of 132 patients and 137 eyes were reviewed during the study period. The mean age was

69.98±9.88. Fourteen eyes were identified with glaucoma (including POAG, ACG, pseudoexfoliation syndrome), 19 eyes were identified as glaucoma suspects (including ocular hypertension and borderline glaucoma), and 104 eyes were identified as normal with no history of glaucoma. The mean difference in postoperative IOP from preoperative IOP for patients with glaucoma, glaucoma suspects, and normal patients was 4.96±8.78, 1.74±4.89, and 0.1±2.4, respectively. There was a statistically significant difference between postoperative and preoperative IOP between groups ($p=0.000072$). A post-hoc Tukey HSD test identified a statistically significant difference between the group of glaucoma patients and normal patients ($p=0.0010053$). There was no statistically significant difference between the glaucoma versus glaucoma suspect patients, and the glaucoma suspect versus normal patients ($p=0.0514$, $p=0.2196$, respectively). Conclusion. Phacoemulsification cataract extraction with intraocular lens implantation has a lowering effect on IOP in patients with glaucoma, glaucoma suspects, and normal patients. The greatest effect is observed in patients with glaucoma versus normal patients.

A34

Name: Jesse Shaw

Affiliation: Other Resident

Title: Utilization of Physical Therapists in Identifying and Treating Musculoskeletal Injuries at “The Tip of The Trident”

Authors: Jesse Shaw, DO Laura Brown, PT Brittany Jansen, PT

Affiliations: Other Resident

Abstract: Musculoskeletal injuries continue to be the most common cause for decreased readiness and loss of productivity in deployed environments. In commands with smaller footprints, such as Naval Special Warfare, every asset is critical for mission success. Multiple studies have proven that early intervention by a medical provider can enhance healing and maintain unit readiness preventing medical evacuations. This article describes the epidemiology and treatment of injuries seen by a physical therapist at level I/II commands embedded with NSW Group 2 Team 4. Over a 4-month period, 286 patients were evaluated and treated by the PT in Southeast Afghanistan. In descending order, the three most common injured body regions were lumbar/sacral spine ($n = 82$), shoulder ($n = 59$) and knee ($n = 28$). Therapy exercises ($n = 461$) were the most frequently performed treatment modality, followed by mobilization/manipulation ($n = 394$), and dry needling ($n = 176$). No patient seen by the physical therapist was medevaced from the area or sent to an advanced medical site. These results support the movement of PT to level I/II commands due to their ability to evaluate injuries and provide treatment modalities that help maintain the integrity of small commands.

A35

Name: Laura Richards

Affiliation: MCH Resident

Title: Limb Salvage: Partial Ray Resection vs Transmetatarsal Amputation

Authors: Laura Richards DPM

Affiliations: MCH Resident

Abstract: There has been debate in podiatry about whether partial ray resections are beneficial or if a patient should go straight to a transmetatarsal amputation when a partial ray resection is required. The goal of my research was to determine the longevity of a partial ray resection versus the longevity of a transmetatarsal amputation procedure in an effort to determine the correct answer to this debate. A

retrospective study was conducted by obtaining data from existing medical charts for patients that underwent either partial ray resections or transmetatarsal amputations. Post-surgery success rates were compared. Both the partial ray resection patients and the transmetatarsal amputation patients had a similar percentage of patients not requiring further surgery, 44.4% and 42.9% respectively. The partial ray patients were more likely to require further incision and drainage procedures but were less likely to require further amputation. The transmetatarsal amputation patients were less likely to require further incision and drainage procedures but more likely to require further amputations. These results support the use of partial ray resections as a valid surgical intervention.

A36

Name: Christopher Hess

Affiliation: MCH Resident

Title: Foot infection with *Fusobacterium necrophorum*

Authors: Christopher D. Hess, Kristen L. Heard, Richard W. Sieber

Affiliations: MCH Resident

Abstract: *Fusobacterium necrophorum* is a rare bacterial infection that has the potential to cause systemic life-threatening disease, known as Lemierre's syndrome. This has become a lost and forgotten disease due to the advent of penicillin antibiotics. Medical practitioners across the board have very limited knowledge of this disease so diagnosis is typically delayed. Due to the high potential for fatality, podiatrists should be aware that this condition exists and can present as pedal abscesses and bullae. A case will be highlighted where Lemierre's syndrome was diagnosed only after culturing pedal bullae.

A37

Name: Bryan Colligan

Affiliation: MCH Resident

Title: Indications for CT Scans Following Mild Head Trauma in Geriatrics

Authors: Bryan Colligan

Affiliations: MCH Resident

Abstract: Falls with head trauma in the geriatric population are a common cause of emergency department visits. CT scans have become a popular and valuable initial diagnostic test for detection of acute intracranial abnormalities in these patients. The result is an increase in use of CT scans, with or without proper indications. The prevalence of falls and high incidence of subsequent traumatic brain injuries would benefit from clear criteria regarding how to initially manage these patients, especially regarding indications for head CT scans. Current evidence based literature suggests risk factors that can be used to evaluate a patient that presents with obvious neurological changes. However, there is lacking evidence indicating proper use of CTs when neurological symptoms are absent after a mild head trauma.

A38

Name: Nathan C. Weaver, D.O., PGY-3

Affiliation: MCH Resident

Title: The etiology of pain in osteoarthritis and the role of extra-cellular adenosine receptors in modulating pain progression during osteoarthritis: a systematic review of the literature

Authors: Nathan C. Weaver, D.O., Steven F. Habusta, D.O., M.Ed., Richard M. Raymond, Ph.D.

Affiliations: MCH Resident

Abstract: Objectives: To determine if there is a consensus on the etiology of pain in OA and whether or not the progression of pain during OA is actually related to the modulation of extracellular adenosine receptors, adenosine and adenosine deaminase interactions within the knee itself. Methods: A critical review of the literature was performed using Google Scholar as a database with the help of the following keywords: etiology of pain in osteoarthritis; pain in osteoarthritis; osteoarthritis and pain; adenosine and pain; adenosine receptors. While searching to find a consensus on the etiology of pain in OA, the only consensus which was found was that pain in OA is derived from any number of different structures which seem to be mostly derived from the intra-articular space, as evidenced by the fact that pain relief can be achieved by intra-articular injection of local anesthetic. This is further supported by the fact that pain relief is achieved through the removal of many intra-articular structures during knee replacement (19). This search yielded nearly twenty different potential sources of pain in OA, which are listed in 'Table 1' below and broken down into the following categories: anatomical, physiologic, neurologic, and psychosocial. The remainder of the paper will be divided into the above listed subsections to better discuss the findings from the literature. Results: Review of the literature revealed nearly twenty different potential sources of pain in OA broken down into the following categories: anatomical, of which there were nearly twenty different anatomical structures, physiologic, neurologic, and psychosocial. Conclusions: Through an analysis of a systematic review of the literature, we can determine that there exists no consensus on the true etiology of pain in OA, nor the best way to treat it.

A39

Name: Steven Ward

Affiliation: MCH Resident

Title: Distance of common peroneal nerve from the lateral tibial plateau corner: A cadaveric study

Authors: Steven Ward

Affiliations: MCH Resident

Abstract: Injury to the common peroneal nerve is a rare injury during total knee arthroplasty (TKA) but when it does occur it is a devastating injury that has life-altering effects. The occurrence of injury is fairly low when compared with other complications experienced during TKA. Authors will disagree on the exact number of occurrences but all give estimation around the one percentile. Asp and Rand did a retrospective study that included 8,998 TKA procedures performed and reported a rate of only 0.3%. Schinsky et al study reviewed 1,476 TKA procedures performed and had a higher rate of 1.3%. Other smaller studies have had a larger range of incidence with some reporting rates as low as 0% and other reporting as high as 10%. This wide variability may relate to patient population or system used during the procedure (Nercessian, 2005). There have been no prospective studies regarding peroneal nerve palsy and have all been retrospective case reviews with differing data collection from chart reviews to complication reports. Regardless of the study, the rate of peroneal nerve palsy is relatively low. Although it is rare it still commands the attention of the surgeon due to its devastating results. The peroneal nerve is a sensitive nerve that when damaged has devastating clinical results. It is a rare complication but when it does occur the recovery is elongated and has a drastic affect of the patients recovery. Treatment in the acute setting includes releasing and constricting bandages and flexing the knee, but this has been found to have little benefit. Long term palsy has been treated with

exploration with promising results. Best practice for surgeons is to avoid injury to the nerve by being educated and taking perioperative measures to avoid injury. The distance of the common peroneal nerve is 27mm with knee at full extension with it shortening to approximately 18mm with the knee in 120° of flexion.

A40

Name: Smith Meads

Affiliation: MCH Resident

Title: A Morphological Cadaveric Evaluation of the Greater Tuberosity and the Assessed Implications for Rotator Cuff Repairs

Authors: Smith Meads, DO, MS, Brian Sneck, OMSII

Affiliations: MCH Resident

Abstract: This study is designed to determine if the morphology of the greater tuberosity has any correlation with rotator cuff tears. In our literature search no studies were found which specifically determined a greater tuberosity morphology. Therefore, no studies were found which correlate the morphology of the greater tuberosity with rotator cuff tears. This may provide insight for determining if a person has a predisposition for a rotator cuff tear. Our hypothesis is a difference between the size of the greater tuberosity in shoulders with rotator cuff compared with shoulders that do not have rotator cuff tears in cadaveric dissections. We removed all tissue from the greater tuberosity and measured medial to lateral and anterior to posterior. We compared the results of the shoulders which did have evidence of rotator cuff tears to those shoulders that did not have evidence of rotator cuff tears. The average length from medial to lateral of the greater tuberosity, was 44.2mm in shoulders with no rotator cuff tear and 42.3mm in shoulders with a rotator cuff tear with a standard deviation of 2.74mm and 3.37mm respectively. A 2-tailed T test was performed giving the P-value of 0.18. The average length of the greater tuberosity from anterior to posterior, shown in graph 2, was 39.2mm for those with no rotator cuff tear and 37.6mm for those with a rotator cuff tear with a standard deviation of 5.92mm and 4.77mm respectively. A T test was performed giving a p-value of 0.51. We concluded there was no statistical difference with respect to the morphological changes associated with a rotator cuff tear in the medial to lateral and the anterior to posterior comparison btw rotator cuff tears and non-tears due to our T-test yielding p-values above the 0.05 threshold for statistical significance. These findings indicate there is no association between the morphology of the greater tuberosity and the presence of a rotator cuff tear.

Posters at Study Rooms 1-5

S1

Name: MATTHEW L HINTZ

Affiliation: MCH Resident

Title: Evaluation of the Anterior Lateral Ligament of the Knee: A Cadaveric Study

Authors: Matthew Hintz, DO, Mark Pastore OMS4, Alan Goff OMS4

Affiliations: MCH Resident

Abstract: The anterolateral ligament has previously been found to be a distinct structure within the anterolateral portion of the knee linking the lateral femoral condyle to the anterolateral proximal tibia with direct attachment to the lateral meniscus. However, prior studies have found differences among the origin, and distinct radiographic identification from the rest of the lateral collateral ligament complex. Through the dissection of cadaveric knees utilizing the resources at the LECOM anatomy lab, the anterior lateral ligament of the knee was identified in seventeen specimens. The average length in extension and mid-ligament width was 5.5 and 33.8 millimeters respectively. The identified ligamentous origin was consistent with previous literature anterior to the lateral collateral ligament. Dissection identified an average distance of 3.18 millimeters anterior to the lateral collateral ligament origin and 8.76 millimeters from the lateral femoral condyle prominence. The insertion site averaged 23.2 millimeters anterior to the fibular head and 25.4 millimeters posterior to Gerdy's tubercle. It can be concluded that the average origin and insertion of the anterolateral ligament of the knee can be reproduced in the setting of reconstruction by the intersection of the arcs created along these measurements from common landmarks.

S2

Name: David J Carl

Affiliation: MCH Resident

Title: RADIAL TUBEROSITY TO RADIAL HEAD DISTANCE FOR IMPROVED ACCURACY IN DETERMINING RADIAL HEAD ARTHROPLASTY HEIGHT FOR FRACTURE: A CADAVERIC STUDY

Authors: David J Carl

Affiliations: MCH Resident

Abstract: Radial head fractures that not amendable to surgical fixation can be treated by replacing the comminuted radial head with a metal prosthesis. Radial head arthroplasty for fracture presents a unique challenge to the surgeon in correctly sizing the prosthesis in the setting of a comminuted radial head and associated soft tissue injury. Oversizing the radial head height results in overstuffing of the radiocapitellar joint resulting in pain and early degenerative changes. Under sizing the radial head height results in laxity and instability. To this point, there have been no studies that examine the relationship of the radial tuberosity to the radial head height as a potential landmark for sizing radial head arthroplasty height. The radial head to tuberosity and radial styloid to tuberosity height were measured on 20 cadavers in the LECOM anatomy lab. The results showed the mean radial head to tuberosity height of 36.15mm (range of 26mm to 43mm) and mean radial styloid to tuberosity of 212.25mm (range 192mm – 234mm). A Pearson's correlation measurement of 0.44 showed there is no

significant relationship between radial head to tuberosity distance and styloid to tuberosity distance. The conclusion of this study is that the wide (17mm) range of radial head to tuberosity distances makes this an unreliable measurement in determining radial head height which needs to be accurate within 2.5mm.

S3

Name: Andrew Agnew

Affiliation: Other Resident

Title: Facebook's Influence on Perception of Pediatric Vaccines

Authors: Andrew Agnew

Affiliations: Other Resident

Abstract: Misinformation about the safety of pediatric vaccines has been propagated over the years. Since its inception in 2004, Facebook has witnessed remarkable growth to an estimated 1.59 billion monthly users in December of 2015 according to the company. An extensive literature review failed to locate any articles examining Facebook's role in the perception of pediatric vaccines. This project's goal was to determine how many Facebook users have been exposed to a post about pediatric vaccines and if seeing the post influenced users' opinions. Physicians and healthcare agencies have the opportunity to contribute accurate, science based information to Facebook's enormous community of users.

S4

Name: Hayley Goldner

Affiliation: LECOM Student

Title: Impact of Medical Mission Trips on Pre-Clinical Medical Education

Authors: Hayley Goldner OMSII, Samuel Kociola OMSII, Molly Johannessen Ph.D

Affiliations: LECOM Student

Abstract: Intro: Medical mission trips afford preclinical students the opportunity for early exposure to patient care, including the experience of interacting with patients from different cultural, spiritual, and socioeconomic backgrounds. Students who participate in mission trips are more comfortable and skilled seeing patients and performing examinations as a direct result of such trips when compared to peers who have not participated in similar trips. These students develop a greater understanding and deeper appreciation of various patient backgrounds, and develop confidence seeing and interacting with patients. Materials and Methods: Approx. 40 students from LECOM traveled on medical mission trips in the summer of 2016. They completed an online post-trip survey to assess their confidence and comfort seeing patients and performing basic clinical skills, as well as their understanding of various patient backgrounds that could impact patient care. The results were compared to a similar survey from students who did not participate in trips. Results: Participants in mission trips showed increased confidence in all but one category relating to patient interaction and understanding issues that affect patient care. Specifically, 62.9% stated they felt comfortable performing a basic physical exam, compared to 33.3% of non-participants. Similar trends were found for 14 additional questions. Overall, 70.4% of participants felt their medical education benefitted greatly from their trip. Conclusion: These findings emphasize the importance and impact that medical mission trips have on the advancement of pre-clinical students' education. Except for one category, participants of

trips were more comfortable in all skills associated with providing patient care and understanding socioeconomic, cultural, and spiritual factors that affect care. Medical mission trips provide valuable experiences and allow students significant exposure to various clinical scenarios during preclinical years.

S5

Name: David Zupruk

Affiliation: MCH Resident

Title: Survey of osteopathic resident opinions on the merger of the AOA and ACGME

Authors: David Zupruk, D.O. PGY-2

Affiliations: MCH Resident

Abstract: In February 2014 the three governing boards of graduate medical education in the United States; the ACGME, AOA, AACOM; approved a memorandum of understanding (MOU), outlining the framework and time course for development and implementation of a single graduate medical accreditation system. The stated goal of this merger is to create a uniform pathway that ensures the public equal evaluation, accountability, and competency of all residents across all programs through a common set of milestones and competencies. The governing bodies of the ACGME, AOA, and AACOM have all come out in full support of this merger. While the leaders of the governing bodies continue to push forward with the merger, relatively little has been done to assess the opinions of the stake holders who will be most impacted by the merger. That is the osteopathic residents and soon to graduate osteopathic medical students who will be completing their training during this transition period. An anonymous web based survey for residents was created through the website www.suverymonkey.com. Residents were surveyed on their opinions and potential impact of the ACGME merger. Results of the survey were mixed. Overall residents tended to believe that their didactic education would improve, but there would be an impact on osteopathic distinctiveness.

Presentation preference: Poster Only

S6

Name: Taghreed Mahmoud

Affiliation: Pharmacy Student

Title: Lab on a Chip: A promising technology for drug discovery/delivery

Authors: Taghreed Mahmoud, Sabiruddin Mirza PhD

Affiliations: School of Pharmacy, Lake Erie College of Osteopathic Medicine, Erie, PA, USA
School of Engineering and Applied Sciences, Harvard University, USA

Abstract: Microfluidics, nanotechnology and lab on a chip are three concepts that allow studying drug delivery without using animals. Chips are designed and fabricated in a way that mimics the human organ function by producing arrays of chemically distinct droplets using channels and microvalves. Drug delivery devices can be studied at different levels, cellular, tissue and organism levels. This process is conducted through four steps: Design and fabrication of chips, drug delivery, organ on a chip, and cell-drug interaction.

S7

Name: Bhavesh Joshi

Affiliation: Other (please specify)

Title: TARSAL DYSOSTOSIS IN THE ADOLESCENT ATHLETE

Authors: Bhavesh Joshi, DO, Primary Care Sports Medicine Fellow Patrick Leary, DO, Director
Primary Care Sports Medicine Fellowship

Affiliations: Other (please specify)

Abstract: Tarsal Dysostosis is a condition of an abnormal bridging of two bones by cartilage, bone, or fibrous tissue. This abnormality changes the intrinsic physiologic motion of those two bones and surrounding structures. The most common site is between the talus and the calcaneus bones. The condition has been linked to a gene mutation that can affect both feet in fifty percent of cases. As such, we are presenting a case of Tarsal Dysostosis in a adolescent athlete. The presenting symptom was pain in both feet after running, playing or strenuous exercise. The athlete was an avid runner, but also participated in moderate-high level scholastic athletics. Initially the working diagnosis involved pathology of the talus bone and surrounding joints, however were unable to explain the patient's presenting pain without history of trauma to the joint. With additional radiographic imaging of both feet, we hypothesize the patient's pathology was due to an abnormal junction involving the talus and calcaneus bones. Current literature indicates that Tarsal Dysostosis affects up to 13% of the population. It is a diagnosis found primarily in children and young adolescents during the ages of 8-16 when the ossification process of bones initiates. There is also a bi-modal distribution of where the pathology is commonly found: in ages 8-12 the calcaneonavicular bones are commonly ossified; while in the 12-16 years are found with talocalcaneal bones. The CT scan is the diagnostic test of choice, however many clinicians use xray and ultrasound imagery to formulate a diagnosis. The goal of the case presentation is to provide the medical community with information and treatment options of this disease.

S8

Name: Farzad Pourarian

Affiliation: Other (please specify)

Title: Tibial Stress Fractures in an Adolescent Female Runner

Authors: Farzad Pourarian, DO, MS M.Ed Patrick Leary, DO, FAOASM

Affiliations: Other (please specify)

Abstract: 14 year-old female high school freshman cross country athlete and tap dancer with dark complexion and with insufficient nutrition and amenorrhea presented with left medial shin pain. The pain onset was three weeks prior and increased with impact loading. There was no history of trauma or sentinel event to cause the pain. Her running mileage was 15-20 miles/week and she danced three times per week. The pain was exacerbated during running and affected gait during and after running. She used NSAIDs and pain improved with rest. Plain films demonstrated periosteal reaction and possible stress injury along medial midshaft tibia. She was instructed relative rest without weight bearing and to decrease activity load and pick only one sport. She continued her same activity load and developed more pain. She was at risk for second stress reaction on the same location as the first one, and was confirmed again on plain films. This case highlights the importance of proper nutrition and modifying risk factors in regards to prevalence of stress fractures in adolescent females. An important question to keep in mind is did the patient exert increased stress on good bone or a normal amount of stress on mineral deficient bone. She has multiple sources of energy depletion, including growth during puberty, exertion during activity, as well as limited energy to distribute due to anorexia. It is very interesting to see how many different factors can be involved in causing stress factors and how important it is as a sports physician to address all of them properly.

S9

Name: Meredith Marcincin

Affiliation: MCH Resident

Title: Isolated Progressive Ophthalmoplegia: A Rare Presentation of Guillain-Barre Syndrome

Authors: Meredith Marcincin, DO & Anthony Sala II, DO

Affiliations: MCH Resident

Abstract: The association of ophthalmoplegia with Guillain-Barre Syndrome has been established in the literature, and the clinical entity of ophthalmoplegia presenting with areflexia and ataxia was been described as the Miller Fisher variant of the syndrome. This case study serves to report a rare presentation of isolated, progressive bilateral ophthalmoplegia in a patient with a confirmed Miller Fisher variant of Guillain-Barre Syndrome. The aim of this study is to expand upon the differential diagnosis of ophthalmoplegia and aid clinicians in the evaluation of motility disorders with complex presentations.

S10

Name: Mark Strand

Affiliation: Other Resident

Title: Case Series Experience with Laryngocele Management

Authors: Kirk Steehler, DO1; Mark Strand, DO1,2

Affiliations: Other Resident

Abstract: Laryngoceles are abnormal dilation of the laryngeal saccule filled with air. They are uncommon entities but exist in three forms; internal, external, and mixed. The clinical manifestations range from hoarseness, a lateral neck mass, or airway obstruction. Laryngeal pathology must always be ruled out, as there is a known association between laryngoceles and squamous cell carcinoma of the larynx. The treatment for laryngocele is surgical excision, either by an external lateral thyrotomy approach in most cases or endoscopic excision with marsupialization in selected cases. We present our experience with three cases of laryngoceles.

S11

Name: TRAVIS J SMALL

Affiliation: MCH Resident

Title: A Case Report: Open Ligamentous Radiocarpal Fracture Dislocation

Authors: Travis Small, D.O.1; Alex Lu, B.S.2; Steven Habusta, D.O.1 & Scott Ciaccia D.O.3

Affiliations: MCH Resident

Abstract: Introduction: Radiocarpal fracture dislocations are rare and devastating injuries that often require multiple surgeries and have a prolonged course of recovery due to postoperative stiffness, pain, recurrent instability and traumatic degenerative joint disease. Case: A 33 year-old male who sustained an open radiocarpal dislocation from a motor vehicle accident. His wound was open and had global extrinsic wrist instability. Surgical management consisted of an irrigation and debridement, soft tissue fixation, with decompression of neurovascular structures, and removal of hardware with repeat reconstruction of extrinsic radiocarpal ligaments. Discussion: The management of these injuries remains controversial and difficult to obtain satisfactory results. Assess the injury through intraoperative

examination and dynamic fluoroscopic imaging intra-operatively prior to definitive fixation. Conclusion: Perform a comprehensive approach and evaluation to ensure there is no mid-carpal instability, or associated fractures. Examine all injuries and repair anatomic to minimize the need for return to OR.

S12

Name: Tran Diep

Affiliation: Pharmacy Faculty

Title: The incorporation of the top 300 prescribed drugs into the first year basic science courses for Pharmacy students. Creation of PowerPoint slides and identification of curriculum map sites for the inclusion of new slide.

Authors: Tran Diep, Khaled Ghandour, Abby L Gallagher, Heidi Frynkewicz, Sirih M Akoh PharmD, Love N Che PharmD, Tracy Nicks PharmD, Thomas D Corso PhD,

Affiliations: School of Pharmacy, Lake Erie College of Osteopathic Medicine, Erie, PA

Abstract: Current literature, particularly in medical and pharmacy education, recognizes the need to integrate clinical sciences and drug information into basic sciences and vice-versa. We propose to integrate drug information from the top 300 drugs, as supplemental material into the basic science courses. The top 300 prescribed drugs from the 2014, 2015 and 2016 Drug Cards were used to create our list. Many common or traditional drugs, such as penicillin, which are not in the current top 300 were also included. Power point slides were created for all drugs individually as well as additional slides for drug classes. The syllabi of Biochemistry, Physiology, Microbiology and Immunology were examined to identify which drugs will be added to which specific lectures.

S13

Name: Nicholas Thompson

Affiliation: Other

Title: Shoulder Injury- Football

Authors: Nicholas Thompson and Patrick Leary

Affiliations: Other

Abstract: **HISTORY:** A 21-year-old, right hand dominant, senior, Division II college football player sustained a left shoulder injury while being tackled. During the 1st quarter of a midseason game, after successfully passing the ball, he was wrapped up by a defensive lineman and slammed to the ground directly on his left shoulder. He had instant onset of pain and inability to move his arm and was removed from the playing field. Athlete did have history of questionable scapular fracture one year prior. **PHYSICAL EXAMINATION:** Examination on the sidelines revealed tenderness to palpitation on posterior scapula, clavicle and acromioclavicular joint on the left. No obvious deformity of AC joint, no step off noted along clavicle. Pt had difficulty actively abducting and flexing shoulder past 30 degrees in each plane. Grip strength was diminished on the left. Sensation was intact bilaterally. No signs of neurovascular impairment. Unable to perform any further special testing secondary to his pain. He denied any shortness of breath, chest pain, or spinal pain. **DIFFERENTIAL DIAGNOSIS:** 1.AC Separation; 2.Clavicle Fracture; 3.Rotator Cuff Tear; 4.Labral tear; 5.Scapula Fracture. **TEST AND RESULTS:** Left shoulder anterior-posterior, lateral, and scapular-y radiographs, Low grade AC joint separation, Left Clavicle anterior-posterior, cephalad, and caudad radiographs, Questionable fracture line noted through body of scapula, signs of remodeling left clavicle, Computed Tomography of left shoulder and scapula, Presumed re-fracture scapular body without significant displacement. **FINAL WORKING DIAGNOSIS:**

Scapular Body Fracture at lateral scapular margin. **TREATMENT AND OUTCOMES:** 1.Immobilization with arm sling for 2 weeks; 2.Early motion after 2 weeks; 3.Union should occur at 6 weeks; 4.Metabolic work up to include CBC, CMP, Magnesium, Vitamin D; 5.Will repeat radiographs in 3-4 weeks to assess callous formation.

S14

Name: Francis P. Foti, II

Affiliation: Other

Title: Noncontact Knee Injury-Football

Authors: Francis P. Foti and Patrick Leary

Affiliations: Other

Abstract: **HISTORY:** 18-year-old Division-II football defensive back who sustained an injury after jumping into the air to catch a ball and then reportedly hyperextended his knee when he landed. He developed immediate onset of left knee pain and inability to bear weight. He had complaints of paresthesias along the dorsal aspect of his left foot and was unable to dorsiflex his left foot. He was sent to the emergency room by ambulance after brief evaluation by athletic training staff for further evaluation. **PHYSICAL EXAMINATION:** Initial exam revealed positive Lachman test and Varus stress test at 0° and 30°. Evaluation in the emergency room revealed moderate effusion, tenderness to palpation over lateral joint line and tibial plateau, decreased sensation to light touch over dorsum of foot and inability to dorsiflex foot. Sensation was otherwise intact. Dorsalis pedis and posterior tibial pulses were 2+. Thigh and leg compartments were soft. **DIFFERENTIAL DIAGNOSIS:** 1. Single or Multi Ligamentous Injury; 2. Fracture (Femur, Patella Tibia, Fibula); 3. Dislocation (knee or patella); 4. Neurovascular Injury. **TESTS AND RESULTS:** Xray; Suprapatellar effusion; no acute fracture; Computerized Tomography; Angiography of Lower Extremities; normal three vessel run-off; Magnetic Resonance -Tear of ACL, PCL and LCL, nondisplaced fracture tibial plateau. **FINAL DIAGNOSES:** Knee Dislocation III L (ACL, PCL, LCL, PLC, Lateral Meniscus); Biceps Tendon Disruption; Tibial Plateau Fracture; Fibular Nerve Contusion; **TREATMENT AND OUTCOMES:** 1. Imaging performed (Xray, CTA, MRI); 2. Placed in a Knee immobilizer. 3. Admitted for observation of neurovascular status and pain control. 4. Heparin was used for thrombosis prophylaxis during admission. 5. Transitioned to a Total Range of Motion brace locked at 20°, fitted for an Ankle Foot, Orthosis and ordered a wheel chair. 6. Discharged on Xarelto and Percocet with plans for further evaluation at Allegheny General Hospital in Pittsburgh for surgical repair. 7. Arthroscopically assisted ACL reconstruction with allograft, PCL reconstruction, LCL reconstruction with hamstring tendon autograft, left biceps tendon repair, lateral meniscus open repair and major synovectomy. 8. Physical therapy was initiated 2 weeks postoperatively. 9. Discussion in regards to possible return to sports is pending.

S15

Name: Eric Brewer

Title: Isolated Trapezium Dislocation: A Case Study

Authors: Eric Brewer

Affiliations: Other

Abstract: **HISTORY:** A 35 yr old male presented to the emergency department in a local community hospital after a fall on an outstretched right hand. The patient stated that he was walking his dog when he tripped and fell. Therefore, this injury was likely one that occurred with wrist dorsiflexion and radial deviation. Upon arrival, his only complaint was right hand pain without obvious deformity. Initial

radiographs were read as normal by the emergency room physician and the patient was sent home with pain medication and a cock up wrist splint. The next morning the radiologist read the study as a trapezium dislocation without fracture and the patient was immediately called back to the emergency department for further treatment. The on call orthopedic resident was called in to evaluate the patient. His only complaint was mild volar and radial hand pain that was worse when he tried to use his hand after his fall. He denied any numbness or tingling in any of his digits on his right hand. He denied any radiation of pain into his digits or proximally into his forearm. **PHYSICAL EXAMINATION:** There were no open areas or abrasions noted, nor was there any obvious deformity. The patient was able to fully flex and extend all his digits, but did complain of pain with any motion of his thumb. His two point discrimination was 4mm in all dermatomes of the right upper extremity. He had 2/4 distal pulses and capillary refill was brisk. There was significant tenderness to palpation over the 1st CMC joint in particular, but also over the radial aspect of the hand. **DIFFERENTIAL DIAGNOSIS:** 1. Trapezium dislocation 2. Scaphoid Fracture; 3. Perilunate dislocation 4. 1st CMC arthritis 5. DRUJ Sprain 6. Metacarpal Fracture. **TEST AND RESULTS:** After evaluation of his xrays, a CT scan with 3D reconstruction was obtained showing no fracture, but a volarly dislocated trapezium. After further discussion with the attending, it was decided that the patient needed to be shipped to a tertiary care center with hand specialists on call. **FINAL WORKING DIAGNOSIS:** Isolated Trapezium Dislocation. **TREATMENT AND OUTCOMES:** The patient was transferred, and upon looking at his records, the patient underwent an open reduction with anatomic ligament repair and pinning of the trapezium. At 14 weeks postoperatively, Follow-up examination revealed very good range of motion with wrist flexion 55°, wrist extension 30°, pronation at 75°, supination 80°, and thumb radial abduction at 55 degrees. The patients function continued to improved with post operative physical therapy

S16

Name: Shane R Sergent

Affiliation: Other Resident

Title: Streptococcal Serotypes in Puno, Peru

Authors: Lim L, Briceño K, Phelps K, Sergent SR, Keaner B, Prokurat K, Punke R, Willyerd G, Gorz J, Ashurst J

Abstract: Pneumonia is the leading global infectious cause of death among children under five years of age. With 90 different serotypes, streptococcus is the leading cause of pneumonia in this population. In pediatric patients across Peru, streptococcal pneumonia is isolated in high frequency. One of the highest rates of streptococcal pneumonia associated morbidity and mortality can be found in the Puno region of Peru. As a prevenative measure, the Peruvian government sponsors a vaccination program which provides immunity up to 7 of the streptococcal serotypes (Pevnar 7). Despite this program, there is a high prevalence and incidence of infection. The aim of this study was to discover the prevalence of the varying streptococcal serotypes among the pediatric population of Puno, Peru. Over a 6 month period, we collected 286 samples from vaccinated children who presented with symptoms of pneumonia and pharyngitis. These samples were then sent to the CDC for serotyping. Of the 286 samples, 24 (or 8.39%) were seropositive. Of these seropositive samples, there were none that would have been covered by the Pevnar 7. Additionally, only one sample would have been fully immunized with Pevnar 13. The remainder of the streptococcal pneumonia serotypes are not covered by either vaccine. This data shows that Pevnar 7 is effective at covering some of the streptococcal pneumonia serotypes found in the Puno region. It also shows that Pevnar 13 would have only covered one additional patient. Given the high cost of providing vaccination campaigns, the relative ineffectiveness of the Pevnar 13 in the area is cost prohibitive. It is also our opinion that sanitation campaigns and

patient education on the prevention of infection spreading may be more effective than implementing Prevnar 13 and will allow the government to focus their resources elsewhere.