Proceedings - Wright State University Boonshoft School of Medicine Sixth Annual Medical Student Research Symposium: Celebrating Medical Student Scholarship

Wright State University Boonshoft School of Medicine Office of Research Affairs
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RESEARCH LEARNING COMMUNITY

The Six Annual Medical Student Research Symposium culminates another productive year of academic programming sponsored by the Research Learning Community at Wright State University Boonshoft School of Medicine. The Research Learning Community was developed by the Medical Student Research Club and the BSoM Office of Research Affairs to promote research-related educational opportunities for WSU medical students. Programs supported by the Research Learning Community include the Medical Student Research Club, Medical Student Journal Club, Research Learning Community Lecture Series, and research electives for M1 and M2 students (SMD 616 and SMD 617).

Research Learning Community Home Page
med.wright.edu/ra/rlc

Proceedings, 2012 Medical Student Research Symposium
http://core.libraries.wright.edu/handle/2374.WSU/6320

Proceedings, 2011 Medical Student Research Symposium
core.libraries.wright.edu/handle/2374.WSU/5259

Proceedings, 2010 Medical Student Research Symposium
core.libraries.wright.edu/handle/2374.WSU/5257
2014 Distinguished Scholar Awards

The Annual Distinguished Scholar Award is presented to the fourth year student or students who have demonstrated a continued commitment to medical scholarship. Distinguished Scholars are recognized for generating a significant body of scholarly work, for working collaboratively with students and faculty, for demonstrating leadership in the Research Learning Community, and for advancing student research at the Boonshoft School of Medicine. The Medical Student Research Club is proud to announce the 2014 BSOM Distinguished Scholar Award recipients:

Robert A. Beaulieu is an MD candidate at the Wright State University Boonshoft School of Medicine. He has produced a large body of research over a wide variety of topics. He has studied predictive factors and models that can be used in assessing trauma patients, with an emphasis on discharge disposition. He has studied quality improvement in ophthalmologic care, notably investigating intraocular pressure spikes following selective laser trabeculoplasty, and he has been an active medical education researcher, surveying medical school graduates and residency program directors to assess preparation for internship. He has several publications in peer reviewed journals and has presented his work at numerous regional and national conferences, most recently a podium presentation at the Academic Surgical Congress Annual Meeting. Mr. Beaulieu has been actively involved in the Research Learning Community, where he co-chaired the BSoM Journal Club and has presented his work at several Medical Student Research Symposia as well as our Translational Research Lecture Series. He is a member of the Alpha Omega Alpha honor society and the BSoM Opthamology Interest Group. In addition to his scientific work, Mr. Beaulieu co-founded the BSoM Nutrition and Health club, developed the Nutrition in Medicine online elective, serves on the Medical School Student Council, and is Vice President of the fourth year class. He has also participated in several community outreach and volunteer programs, including providing patient care at both Reach Out Montgomery County as well as the Winslow Indian Health Care Center (Winslow, AZ), performing preschool vision screens with the Ohio Optometric Association, organizing an eyeglass collection drive, performing community glaucoma screens, and mentoring local low-income high school students in nutrition, gardening, agriculture, and food production. Mr. Beaulieu will soon begin his residency training in Ophthalmology at University of Texas Southwestern Medical Center in Dallas, Texas after completing a transitional year at the Mount Carmel Health System in Columbus, Ohio.
GABRIELLE M. HORSTMAN is an MD/PhD candidate at the Wright State University Boonshoft School of Medicine. In 2012, she completed her Ph.D. studies in Biomedical Sciences with a concentration in Neuroscience and Physiology in the laboratory of Dr. Timothy Cope. She has produced an extensive body of research on the neural control of movement and the reorganization of spinal circuits following traumatic nerve injury using in vivo physiology and muscle force recordings. Her dissertation, *Limitations Of Functional Recovery Of Stretch Reflex Circuitry After Peripheral Nerve Regeneration*, provides new insight into the profound discoordination of spinal reflexes that occurs following successful peripheral nerve regeneration. Dr. Horstman has presented her work at regional and international conferences and has several manuscripts in preparation. She is a member of the American Academy of Neurology, the Society for Neuroscience, and the American Physician Scientists Association where she served on the Annual Meeting Planning Committee. In addition to her scientific work, Dr. Horstman as participated in several community outreach and volunteer programs, including teaching neuroscience to middle and high school students in Science Olympiad, serving as organizational director of Student-to-Student, mentoring WSU premed students, and working with homeless children at the SVdP Apple Street Gateway Shelter. She has been highly involved in the Student Interest Group in Neurology as well as the Clinical Neuroscience Curriculum Development Committee and the BSoM Admissions Committee. She has also served on the Medical School Student Council and is a founding member of the Medical Student Research Club, where her leadership was instrumental to growth of the Medical Student Research Symposium and the Research Learning Community. She is also a classically trained vocalist and a member of a local dance troupe. Dr. Horstman will soon begin her residency training in Neurology at Case Western Reserve University in Cleveland, Ohio.

ANN N. IMBER is an MD/PhD candidate at the Wright State University Boonshoft School of Medicine. In 2012, she completed her Ph.D. studies in Biomedical Sciences with a concentration in Neuroscience and Physiology in the laboratory of Dr. Robert Putnam. She has produced an extensive body of research on the neural control of breathing using whole cell patch clamp recording and in vitro pharmacology. Her dissertation, *The Role of Ca2+ in Central Respiratory Control Neurons of the Locus Coeruleus: Development of the Chemosensitive Brake*, examined the intracellular signaling pathways of acid sensitive neurons within the brainstem and provides new insight not only into the role of Ca2+ in these cells but also into the pathogenesis of disorders involving altered respiratory drive, including sleep apnea and panic disorder. Dr. Imber has several publications in peer reviewed journals with several more in preparation. She has presented at several regional, national, and international conferences. In 2010 she received a graduate fellowship award from the American Heart Association Great Rivers Affiliate. She has been an active and long time participant in the research Learning Community, where she has presented her work orally and has won numerous scientific poster awards at the Annual Medical Student Research Symposium. In addition to her scientific work, Dr. Imber has extensive teaching experience and has participated in community outreach and volunteer programs, including after school tutoring at the SVdP Apple Street Gateway Shelter, providing patient care at Reach Out Montgomery County, and giving health awareness demonstrations to local grade school through Student to student. Dr. Imber will soon begin her residency training in Internal Medicine at the Florida Atlantic University Charles E. Schmidt College of Medicine in Boca Raton, Florid
Catherine A. Ulman is an MD candidate at the Wright State University Boonshoft School of Medicine. She has generated an extensive body of research in both characterizing various dermatological diseases as well as assessing medical student proficiency in diagnosing and treating these diseases. She is also actively involved in several medical education projects, including studying the effects of medical student personal and academic habits on exam performance and the specific factors that may influence a medical student's choice of specialty. She has several publications in peer-reviewed journals, co-authored a textbook chapter, presented at numerous regional and national conferences. In 2013, her poster on Herpes Zoster in a 2 year old vaccinated against varicella won 3rd place at the Ohio Dermatological Society Meeting. She has been actively involved in the Research Learning Community, where she has presented her work at the Translational Research Lecture Series as well as several Annual Research Symposia, winning a best medical education research poster award. In addition to her scientific work, Ms. Ulman is highly involved in the Dermatology Interest Group, is the founder of the Pathology Interest Group, and is a member of the Alpha Omega Alpha honor society. She has also participated in several community outreach and volunteer programs, including providing nutritional education to local charter schools students, mentoring WSU premedical undergraduate students, and providing AIDS education to local grade school students. She has assisted with the AOA canned food drive, the annual WSU community skin cancer screening, Operation Christmas child, the 5K to cure paralysis, and has spoken on numerous panels for MS1 and MS2 students. Ms. Ulman will soon begin her residency training in Dermatology at the Ohio State University Medicine Center in Columbus, Ohio.
A Chiari I Malformation Presenting as Asymptomatic Papilledema
Brent Aebi; Dawn Light, MD

Presenting Author: Brent Aebi
Faculty Mentor: Dawn Light, MD
Mentor’s Department: Pediatrics
Previous submission: Poster Number: 11

Objective: Can a Chiari type I malformation present solely as papilledema in the absence of headache and visual changes? Background: Herniation of the cerebellar tonsils through the foramen magnum is termed a Chiari type I malformation (CM1). Often this condition is asymptomatic and is estimated to occur in 0.6-0.9% of the general population. In some cases CM1 is associated with significant pathology secondary to compression of the medulla and central canal leading to increased intracranial pressure (ICP). The most common presenting symptom of increased ICP is headache, most frequently occurring in the suboccipital region. Increased ICP can also lead to papilledema which appears within 1-5 days and can be appreciated on fundoscopic exam. Papilledema of longer duration can result in transient visual changes such as blurriness and enlargement of the blind spot. Children may also present with neck pain, motor weakness, or apneic episodes such as near-miss sudden infant death syndrome. Only one other case is documented in the literature with asymptomatic papilledema as the only presenting sign of CM1. Methods: A 10-year-old girl presented for routine eye exam and was found to have bilateral papilledema. She denied history of headache or vision changes. On exam, visual fields were normal. Neuroimaging was ordered to evaluate for possible etiology and MRI showed a CM1. Follow up MRI showed no evidence of syrinx. Results: When diagnosing papilledema, two causes of pseudo-papilledema must be ruled out for definitive diagnosis. Both drusen and a narrow scleral canal can appear very similar to papilledema on fundoscopic exam. Drusen are intrapapillary proteinaceous bodies which lie deep within the tissue of the optic disc and commonly present as pseudo-papilledema in children. Drusen can cause enlargement of the blind spot. Narrowing of the scleral canal causes crowding of the axons as they exit the canal and can appear as a raised optic disc, however the axons themselves are of normal size and no visual deficits are present. Optical coherence tomography (OCT) or a B-scan ultrasound is helpful in determining a definitive diagnosis. Our 10-year-old patient with no complaints of headache or visual changes, could very well have presented in the incipient stage of papilledema secondary to increased intracranial pressure caused by her CM1. However, as no B-scan or OCT was performed it is difficult to make this conclusion. Both the presence of drusen and a narrow scleral canal must be considered in the differential diagnosis with the CM1 simply being an incidental finding. It is notable that Chiari I malformations are sometimes interpreted as a coincidental finding in patients with papilledema; perhaps we are dismissing a potential pathologic link between the two. Given the asymptomatic nature of our patient’s CM1, this patient warrants routine follow up for potential changes in vision and other symptoms of a CM1. An OCT or B-scan could be indicated in the future if papilledema does not resolve in order to make a definitive diagnosis. Conclusion: Some might consider diagnosing a CM1 in asymptomatic individuals to be trivial as the condition is relatively common in the general population. Nevertheless, given potential complications associated with CM1, namely neurologic deficits and risk of sudden death, diagnosing a patient presenting with signs or symptoms of their malformation could be very clinically significant. Not enough cases of CM1 presenting solely as papilledema have been described in the literature to determine if these individuals are at increased risk of more serious manifestations of a CM1. One might assume that by showing some small sign of an underlying CM1, an individual is at greater risk of showing other symptoms at a later date, but this is simply an assumption. The association between
CM1 and papilledema in the absence of other symptoms of increased ICP is worth exploring further.

**Subdural empyema secondary to sinusitis in an adolescent**

Adam Altman; Stefanie K. Horne, MD

*Presenting Author:* Adam Altman  
*Faculty Mentor:* Stefanie K. Horne, MD  
*Mentor’s Department:* Otolaryngology  
*Previous submission:* Poster Number: 21

**Research Question:** What factors may have played a role in the delay of diagnosis and treatment of an adolescent with subdural empyema secondary to sinusitis?  
**Objective:** To demonstrate that a high index of suspicion for severe complications of common diseases is essential to an expedient, accurate diagnosis.  
**Background:** Subdural empyema secondary to sinusitis is a rare complication. Case Presentation: 15 year-old girl with history of distant sinusitis treated 7 weeks prior had persistent severe headaches since the infection. She presented to the emergency room after having a seizure in school. She was diagnosed with subdural empyema and frontotemporal brain abscess which required surgical drainage. The abscess and empyema were suspected to be secondary to dehiscence of the posterior wall of the frontal sinus.  
**Discussion:** Morbidity from subdural empyema in children is high, necessitating early recognition and treatment. This case depicts the importance of maintaining a high index of suspicion for severe complications of common illnesses. Communication between medical professionals and patients is integral to providing optimal care. In this case, the patient was offered MRI but declined due to lack of insurance. Imaging performed sooner could have detected the infection earlier resulting in earlier treatment and potentially fewer complications.  
**Clinical Relevance:** Clinicians must maintain a heightened level of vigilance towards subdural empyema in the setting of persistent headaches after sinusitis. When considering the signs and symptoms of SDE, it may be necessary to expand the timeframe of recent sinusitis of <2 weeks to include distant sinusitis up to 7 weeks prior.

**Cost-Efficacy of Laparoscopic Cholecystectomy Using the Harmonic Scalpel**

C. Anderson; M.S. Walusimbi; A.P. Ekeh; K.M. Hendershot; D. Lebamoff; P. Williams; J.M. Saxe; K.M. Tchorz; M.L. Whitmill; R.J. Woods; M.P. Roelle; L.M. Barney; M.C. McCarthy

*Presenting Author:* Christina Anderson  
*Faculty Mentor:* Mbaga Walusimbi, MD, FACS  
*Mentor’s Department:* Surgery  
*Previous submission:* Poster Number: 7

**Objectives:** Is the use of the Harmonic Scalpel during laparoscopic cholecystectomy more cost effective than using the traditional clips and electrocautery technique?  
**Background:** Clips, endoscopic scissors and electrocautery are used commonly in laparoscopic cholecystectomy (LP), (CLIP-EC technique). Ultrasonic energy (US technique) using the harmonic scalpel is an alternate technique. Few studies comparing the safety, cost and complications of the two techniques exist.  
**Methods:** A pilot study of LP at a community hospital in Ohio over a two-year period was performed. Technique used was at the discretion of the attending surgeon. All were teaching cases with participating residents. Patient demographics, dissection technique, operating room time, cost, postoperative bile leak, readmission and complications were collected.  
**Results:** During the study period, 1,086 LP’s were performed; 148 patients were randomly selected for study, 76% were female. In 109 the CLIP-EC technique was used, and the US technique in 39 patients. The operating room (OR) time was less in the US technique, 109.1 ± 45.0 vs. 86.0 ± 25.8 minutes (p=0.003). There was no difference in age and body mass index (BMI) between the CLIP-EC and US groups, 42.8 ± 17.7 vs. 43.7 ± 18.3 years (p=0.78), and 31.2 ± 6.6 vs. 31.3 ± 7.5 (p=0.96). CLIP-EC technique cost average is $; is $754 if an endoloop is used.  
**Conclusion:** US technique is less expensive than CLIP-EC technique. We found a $2,751 saving in OR charges even when the cost of the instruments used was taken into consideration. For the duration of the two-year study period, this would result in over $ 2.5 million dollars in savings.
An Institution’s Experience with Irreversible Electroporation in the Pancreas
Benjamin Bates; James Ouellette, DO; Shannon Kauffman, MD; Minia Hellan, MD

Presenting Author: Benjamin Bates
Faculty Mentor: James Ouellette, DO
Mentor’s Department: Surgery
Previous submission: Society of Surgical Oncology's Cancer Symposium, Phoenix AZ, March 2014
Poster Number: 14

Objective: To report our initial experience with Irreversible Electroporation (IRE) in a series of unresectable pancreatic cancer. Background: IRE is a technique in which short, high-voltage pulses are applied to tissues to permeabilize the cell membranes. As no thermal energy is created it can be used close to vital structures. Methods: We performed a retrospective data review of all IRE cases performed for pancreatic cancer from July 2011 to September 2013. These patients were evaluated for peri-operative morbidity, mortality and oncologic outcome. A total of 7 open pancreatic cases were performed. Results: 7 patients (4 women and 3 men) underwent IRE with a median age of 68 years (range 51 to 76 years) and median BMI of 32.4. One patient underwent margin accentuation with IRE in combination with a distal pancreactectomy. One patient was treated for a recurrence at the root of the SMA after CHT and CRT followed by 6 months of CHT after IRE. She is without evidence of disease 2 years later. Five other patients were found to be unresectable at the time of surgery and IRE with palliative bypasses was performed. Four of these five patients had received neoadjuvant CHT or CRT. The largest diameter of the masses ranged from 2.0 cm to 4.9 cm. The overall 30-day mortality was 0%. Median blood loss of 100 ml. Median length of stay was 8 days. Postoperative complications included gastric hematoma and gastric outlet obstruction as well as delayed return of bowel function. Conclusion: Our comprehensive early experience suggests that IRE for locally advanced pancreatic cancer is safe and feasible. Other small series have suggested a survival benefit. A randomized trial including IRE in the treatment regimen for pancreatic cancer should strongly be considered to truly understand the possible benefits.

Irreversible Electroporation: An Institution Experience
Benjamin Bates; Minia Hellan, MD; Shannon Kauffman, MD; James Ouellette, DO

Presenting Author: Benjamin Bates
Faculty Mentor: James Ouellette, DO
Mentor’s Department: Surgery
Previous submission: Society for Surgery of the Alimentary Tract, Chicago IL, May 2014 (Accepted)
Poster Number: 15

Objective: To report our experience with irreversible electroporation in a wide array of anatomic locations and on a diversity of oncologic processes. Background: Irreversible electroporation (IRE) is a tumor ablation technique in which short, high-voltage pulses are applied to tumors to permeabilize the cell membranes. Since no thermal energy is created, it can be used close to vital structures. Methods: We performed a retrospective data review of all IRE cases performed at our institution from September 2010 to September 2013. These patients were evaluated for peri-operative morbidity, mortality, and oncologic outcome. A total of 28 IRE procedures on 27 patients were evaluated. Results: 27 Patients (11 women and 16 men) underwent IRE by either surgeon (16 open operations) or interventional radiologist (12 CT guided percutaneous procedures). The median age was 63 years (range 29 to 82 years) and median BMI of 30.7. IRE procedures were performed in the following anatomic locations: 9 liver, 7 pancreas, 7 pelvis, 2 retroperitoneal, 1 lung, 1 chest wall, and 1 mesentery. The lesion types consisted of 14 metastases, 8 primary tumors, 5 tumor recurrences, and 1 lesion not confirmed malignant. Three open procedures were performed for margin accentuation prior to resection (including a pelvic sarcoma, recurrent bladder cancer, and pancreatic cancer). One treated the IVC margin of a previous radiofrequency ablation treatment site in the liver. The remaining 24 procedures attempted complete ablation of the index lesion. Lesions ranged from 1.0 to 6.0 cm. Patients treated percutaneously had a median hospital stay of 1 day; the median
hospital stay for the surgical (laparotomy) patients was 9 days. The overall 30-day mortality was 0% and IRE related complications occurred in 8 patients. Complications included two patients with muscle weakness, one gastric outlet obstruction, one intragastric hematoma, one pancreatic fistula, one small bowel obstruction, and one episode of urinary retention following pelvic IRE. Another patient experienced complications of obstructive jaundice, portal vein thrombosis, and an IRE site abscess. Six patients developed evidence of disease recurrence at the IRE site. The overall median length of follow-up is 8 months (range 1 to 30 months). Conclusion: Our comprehensive early experience suggests that IRE is safe and feasible for a wide array of oncologic processes and in multiple anatomic locations. Several pitfalls have now been identified to prevent unnecessary morbidity. Our data suggests a local control benefit but we cannot report on possible survival benefit due to the limited number of patients and different malignancies treated. Overall this technology is a promising new tool; however further trials are needed to better understand the possible benefits.

Assessing Humility in Medical Students
Kevin Bree; Jason Hao; Adrienne Stolfie, MSPH; Ashley K. Fernandes, MD, PhD

Presenting Author: Kevin Bree
Faculty Mentor: Ashley K. Fernandes, MD, PhD
Mentor’s Department: Community Health, Pediatrics
Previous submission: Poster Number: 33

Objective: When put into a situation where a medical student does not know the right answer, how likely is he or she to choose “I don’t know” as opposed to an incorrect answer? Background: Several studies have show that optimism and professional values of medical students weaken over time. It is likely that the medical education process contributes to this erosion. In a clinical setting, an inability to admit to knowledge deficits could have potentially fatal consequences such as miscommunication or incorrect diagnoses. In this project, we seek to assess the current level of humility in first year medical students. For the purposes of this study, humility is defined as the ability to admit to a knowledge deficit when the correct answer is unknown. Methods: An anonymous survey consisting of fifteen questions was given to first-year medical students prior to one of their required classes. The survey consisted of questions about literature, history, mathematics, science, and geography. Five of the questions had no correct answer. Every question, however, had five choices, including the option of “I don’t know.” Students were also asked to rate their confidence in their answer to each question on a scale of one to ten. A rating of one was equivalent to a low amount of confidence and a rating of ten signified a high amount of confidence. Demographic information was also collected on the participants of the study. Results: When given a question with no correct answer, students are more likely to answer, “I don’t know,” than to give an incorrect answer. The odds of students answering “I don’t know” greater than 50% of the time rather than choosing an incorrect answer were 2.44 to 1, with p<0.001. Conclusion: Our data suggest that medical students are humble in a knowledge-deficient scenario. However, the survey may not realistically replicate a high-pressure clinical setting. For this reason, more studies that better resemble the stressful environment that a medical student may experience in the clinic are warranted.

The use of indirect video laryngoscopy in difficult airways
Joseph Capichioni; Amol Soin; Omar Kahn; Rahul Mada

Presenting Author: Joseph Capichioni
Faculty Mentor: Amol Soin, MD, MBA
Mentor’s Department: Surgery
Previous submission: WSU BSoM 4th Annual Medical Student Research Symposium, Dayton OH, April 2012; WSU BSoM 5th Annual Medical Student Research Symposium, Dayton OH, April 2013
Poster Number: 40

Objective: What are the proper indications for indirect video laryngoscopy? Background: A vital component in an anesthesiologist’s repertoire is the ability to secure and maintain an airway in any patient requiring mechanical ventilation. This task becomes more difficult in an obese patient, who is
more likely to have a more difficult airway to visualize. A difficult airway can hypothetically be found in any patient. The circumstances of the situation play an important part as well; a patient who is having respiratory failure in an emergent situation is more likely to have a difficult airway at that time. The importance of establishing an airway has been one of the bases of medicine for many years, and it can be surmised that the inability to secure the airway for mechanical ventilation is a large cause of mortality in the field of anesthesia. This problem has been combated in modern medicine by advances in technology. Traditionally, an anesthesiologist would use the laryngoscope in order to visualize both the trachea and esophagus, and subsequently ensure that the endotracheal tube was placed in the trachea. As mentioned before, an obese patient poses a problem; the adipose tissue of the neck makes the trachea much more difficult to visualize. With more and more patients being obese, it becomes critical that the anesthesiologist has a method of securing the airway, regardless of the additional difficulty. With video laryngoscopes, the ability of the anesthesiologist to visualize the airway is greatly increased. The laryngoscope has a camera on its tip, and the camera is attached to a viewing screen for the anesthesiologist. This eliminates much of the uncertainty associated with manual placement of the endotracheal tube, as now the anesthesiologist can visualize all the structures and ensure he or she has placed the tube into the trachea. Another important technological advance is the creation of portable laryngoscopes; the anesthesiologist can have one on hand at all times, and is ready whenever a case with a difficult airway comes up. Methods: This study involves the case reports of 2 patients, both involving the use of video laryngoscopes. The first case involves a 70 year old woman diagnosed with urosepsis, as well as acute respiratory distress syndrome. In lieu of the patient’s inability to properly ventilate herself, an anesthesiologist was called to secure the airway and begin mechanical ventilation. Upon arrival, the anesthesiologist noted the woman to be in clear respiratory distress, as well as confused and combative. The patient also had undergone a total cervical neck fusion in the past. Due to this procedure being done, the woman’s neck was not able to flexed or extended, and therefore it was not possible for the anesthesiologist to perform direct laryngoscopy. The anesthesiologist was carrying a portable video laryngoscope made by King systems. After administering 2mg of midazolam for sedation, the anesthesiologist was able to visualize the patient’s airway and confirm placement of the endotracheal tube. This proved to be a life saving measure, as this patient needed mechanical ventilation. For the second case, it is useful to understand the Mallampati score in anesthesia. The score is used to predict the ease of intubation for a given patient’s airway. It assesses the distance from the roof of the mouth to the base of the tongue, which predicts how much space the anesthesiologist will have when performing the intubation. Relatively easy intubations fall under Class I and II; a difficult intubation would fall under Class III or IV. The second case centers on a routine surgical procedure requiring general anesthesia. The patient was scheduled to undergo gastric bypass surgery via laparoscopy. The patient was morbidly obese, with a body mass index of approximately 60. The anesthesiologist estimated the Mallampati score to be Class II. The anesthesiologist administered propofol and rocuronium for muscle relaxation. After administration, the anesthesiologist noted that it was becoming slightly difficult to mechanically ventilate the patient. To ensure proper ventilation, the anesthesiologist decided to place an endotracheal tube. When inspecting for the trachea, the anesthesiologist noted that the excess soft tissue the patient had was making it very difficult to intubate the patient. The first attempt at endotracheal tube placement resulted in esophageal intubation. While the anesthesiologist was attempting to place the tube, the patient’s SpO2 began to drop to as low as the 70s. Noting this, the anesthesiologist obtained a portable indirect laryngoscope and was able to visual the trachea. Upon insertion of the tube, the patient SpO2 had fallen down to the 60s, but once the anesthesiologist began mechanical ventilation, the SpO2 increased back to the mid 90s. Results: As mentioned before, the video laryngoscopes enabled the anesthesiologist to visualize the airway and properly ventilate the patient. Both cases were able to be completed. An article in PubMed published by Kilicaslan et. al in 2014 analyzed the effectiveness of the C-MAC laryngoscope, another type of video laryngoscope. The study provided evidence that showed the C-
MAC laryngoscope was effective in managing unexpected failed intubations (via the direct Macintosh laryngoscope) in routine anesthesia care (Kilicaslan et al 2014). **Conclusion:** These two cases illustrate the vital importance of being able to obtain an airway and provide mechanical ventilation at a moment’s notice. In both cases, the video laryngoscope allowed the anesthesiologist to do just that. Without the ability to establish an airway for ventilation, the surgical team may have to go emergency measures that may provide long term damage to the patient, such as tracheotomy. As shown by the study of Kilicaslan et al, video laryngoscopes can be an effective tool once the first attempt at intubation has failed. Indirect video laryngoscopes provide an accurate and easy to use tool that can be carried by the anesthesiologist and used in essentially any case. Based on the evidence provided in the two cases above, along with the study results, whenever the anesthesiologist either anticipates or visualizes a difficult airway, indirect video laryngoscopy can be used to secure the airway and provide mechanical ventilation.

**CT scan or physical exam: which is a better diagnostic tool for incarcerated hernia?**

Safoora Choudry; Mbaga Walusimbi, MD, FACS

*Presenting Author:* Safoora Choudry  
*Faculty Mentor:* Mbaga Walusimbi, MD, FACS  
*Mentor’s Department:* Surgery  
*Previous submission:*  
*Poster Number:* 9

**Objective:** This study asks how reliable is the CT scan in diagnosing incarcerated hernias, ischemia, and small bowel obstruction in relation to the physical exam. **Background:** Historically the diagnosis of incarcerated hernia has been clinical relying primarily on the physical exam. With the advent of imaging technology, particularly the multi-detector CT scan, the diagnosis of emergent operative conditions has shifted from that of the physical exam to one of increasing reliance on imaging. This shift, however, also leads to false positive and patients consequently are subject to operative intervention and its complications. **Methods:** Patient data was extracted from post-operative notes, radiologic CT impressions, and physical exam notes by surgery team at time of admission. Additionally, demographic data was collected from patient charts. 40 patients were selected admitted to MVH between 2007-2013. **Results:** Results showed that CT scan as a diagnostic tool for incarcerated hernia, ischemic bowel, and small bowel obstruction had a sensitivity of 55.6%, 33.3%, and 85.7% respectively, and specificity of 73.7%, 97.1%, and 74.2% respectively. Physical exam as a diagnostic tool for incarceration had a sensitivity of 63.2% and specificity of 93.8%. **Conclusion:** Our data demonstrates three basic conclusions. First, physical exam is still more sensitive and specific in diagnosis of incarcerated hernias. Second, CT scan is particularly reliable or sensitive in diagnosis of small bowel obstruction, and third, specific for ischemic bowel.

**Barriers to Successful Prevention and Management of Pediatric Obesity: A Review of the Literature**

Nicole Craker; Rebecca Beesley; Sabrina Neeley, PhD

*Presenting Author:* Nicole Craker  
*Faculty Mentor:* Sabrina Neeley, PhD  
*Mentor’s Department:* Community Health  
*Previous submission:* University of Dayton Healthcare Symposium, Dayton OH, April 2014  
*Poster Number:* 20

**Objective:** To identify the barriers healthcare providers perceive to the prevention and management of pediatric obesity. **Background:** Despite international attention, pediatric obesity continues to burden healthcare. Much research has been done to identify barriers to the successful reduction of childhood overweight and obesity, however, a more condensed and accessible compilation of these barriers was lacking. **Methods:** A review of the literature was performed in Fall of 2013 from following databases: PubMed, PsycINFO, CINAHL, ERIC, and SocIndex. Two independent reviewers selected relevant articles, developed a coding template, and extracted themes. **Results:** Barriers to the prevention and management of pediatric obesity fell into 3 overarching categories with 17 individual themes. The first category addressed external factors that inhibited providers from discussing the topic. Themes included lack of (1)
time; (2) reimbursement; (3) provider education; (4) community resources; (5) access to multidisciplinary care; and (6) role discrepancies. The second category focused on barriers to interpersonal communication. Themes include (1) fear of compromising patient-provider relationship; (2) sensitivity of topic; (3) overcoming cultural beliefs; (4) adverse feeding effects; and (5) conflicting advice. The last category described provider perceptions of the caregiver. Themes include (1) limited resources available to caregiver; (2) use of food as a tool; (3) caregiver denial of problem; and lack of (4) caregiver transparency; (5) caregiver motivation; and (6) caregiver knowledge. Conclusion: Healthcare providers perceive numerous barriers to the effective prevention and management of pediatric obesity. An elemental discrepancy exists in determining roles and responsibilities of providers when addressing pediatric obesity. Moving forward, a discussion amongst key stakeholders is necessary to develop synchronized perceptions, goals, and strategies.

Management of a Patient with Congenital Intracranial Immature Teratoma
Kyle A. Davis; J. Todd Boyd, MD

Presenting Author: Kyle A. Davis
Faculty Mentor: J. Todd Boyd, MD
Mentor’s Department: Pathology, Dayton Children’s Hospital
Previous submission:
Poster Number: 23

Objective: Contribute to the limited body of research describing the diagnosis and management of congenital intracranial immature teratoma.

Abbreviations: DOL = Day of life; DNR-CC = Do not resuscitate – comfort care measures; EEG = electroencephalogram. Background: Teratoma is the primary diagnosis in 1.2-5% of intracranial tumors in children, yet they account for 26-50% of congenital brain tumors. With increasing frequency, teratomas are discovered during routine prenatal ultrasound. Though survival beyond one year of age occurs in less than 10% of those diagnosed with intracranial teratoma, pathologic diagnosis influences medical and surgical management. In addition, prognostic information is provided to the patient’s family. Case: At 20 weeks gestation, the female patient was found to have an intracranial tumor, by routine ultrasound. This was confirmed at 35 weeks gestation by maternal pelvic MRI. The MRI demonstrated a large intrasellar and suprasellar mass, involving the hypothalamus and extending to both hemispheres, left greater than right. A repeat ultrasound 3 days prior to induction showed progression of the mass with midline shift, distortion of the brainstem, downward displacement of the cerebellar tonsils and obstructive hydrocephalus. She was born at 39 weeks gestation via cesarean section with Apgars of 1/9/9 at 1, 5 and 10 minutes, respectively. She weighed 3040 grams (between 10-25%ile), was 47.5 cm in length (between 10-25%ile) and had a head circumference of 39.5 cm (> 97%ile). The effects of her tumor were notable on exam as macrocephaly, full anterior fontanelle, abnormal cranial nerve control, diminished infantile reflexes and decreased spontaneity movement. An external ventricular shunt was placed on her second day of life (DOL) due to obstructive, non-communicating hydrocephalus. The next day, she demonstrated seizure-like activity and was started on Levetiracetam. On DOL 4, a craniotomy with biopsy was performed. Resection was limited due to extensive bleeding by the tumor. Following the procedure, the patient developed hemorrhagic shock, disseminated intravascular coagulopathy, metabolic acidosis, and hypothermia. The following day she was diagnosed with status epilepticus and phenobarbital was added. EEG demonstrated seizures originating from both the right and left hemispheres. Pathologic diagnosis confirmed an immature teratoma composed of neuroectodermal components (differentiated and undifferentiated neuroepithelium), mesodermal component (adipose, muscle, cartilage and bone) and endodermal components (respiratory epithelium). On DOL 14, a ventriculopelvic shunt was placed for continued obstructive hydrocephalus. The next day, the patient started chemotherapy, receiving carboplatin for 1 day, etoposide for 3 days, and decadron for 4 days. Repeat CT of the head on DOL 34 demonstrated interval increase in tumor spread with mass effect and hydrocephalus. Head circumference had grown to 47 cm (>97%ile). Due to disease progression, the family and treatment team decided to discontinue chemotherapy and establish...
DNR-CC status. She was maintained as an inpatient per her parents’ request over the next several weeks. The patient died at the age of 2 months 17 days.

Discussion: The case demonstrates the complexities faced when caring for a patient with congenital intracranial immature teratoma. Despite best efforts to surgically and clinically control tumor progression, the location and increased vascularity significantly limited the physicians’ ability to intervene. This case demonstrates one of the few reported prenatally diagnosed intracranial teratomas. We provide supportive evidence, due to macrocephaly, that cesarean section is often the best mode of delivery. Additionally, we describe the challenges of intraoperative and postoperative management of a patient with a large intracranial teratoma. Ultimately, the most important outcome is the quality of the end-of-life care for the patient and the family. Clinical Relevance: Congenital intracranial immature teratoma is a rare and infrequently described medical condition with minimal research existing beyond that provided by case reports. The knowledge acquired from such complicated cases is paramount in determining treatment recommendations for future patients and families.

Novel identification of hematologic patient distress in a community based oncology practice
Kyle A. Davis; Tosha Cumbee, MSW; Basel Yanes, MD

Presenting Author: Kyle A. Davis
Faculty Mentor: Basel Yanes, MD
Mentor’s Department: Internal Medicine
Previous submission:
Poster Number: 24

Objective: Determine if hematologic patients experience similar levels of distress to oncologic patients, and if so, identify areas for intervention.

Background: With an increased emphasis on the biopsychosocial model of disease, the National Comprehensive Cancer Network (NCCN) found that approximately 1 in 3 cancer patients has distress and yet only 5% of patients receive help. Sources of patient distress, which include lack of information or skills necessary to manage their cancer; emotional problems, such as anxiety or depression; a lack of transportation; and disruptions to work, school, and family life are believed to contribute to poor adherence to prescribed treatments and a slower return to health. The NCCN Distress Thermometer is a validated tool for identifying distress in oncologic patients. No specific cutoff has been found to optimize accuracy; however, the NCCN recommends a thermometer level of 4 or greater to identify patients with distress. The thermometer provides a number of possible life stressors to aid the patient in identifying areas of their life that are of particular concern. The majority of the investigation has occurred at major cancer centers and has not been conducted in community cancer treatment centers. Though hematologic and oncologic patients often receive their care in the same facility, the thermometer has not yet been evaluated in hematologic patients. We sought to determine if hematologic patients experienced similar distress and were in need of an intervention with a social worker. Methods: As part of a quality improvement project, 364 oncologic and hematologic patients received the NCCN Distress Thermometer when they presented to their regularly scheduled appointment at our community based oncology practice. Completing the survey was voluntary and completion was considered consent for research. 364 surveys were administered, 22 patients declined and 21 were incomplete. Thus, 331 charts were examined further. The patients were divided into hematologic and oncologic groups based on diagnosis. The hematologic diagnoses were anemia, deep vein thrombosis, coagulation defects, thrombocytopenia, myelodysplastic syndromes, pancytopenia and polycythemia. Demographic data were collected and correlated with the patient surveys in order to identify patterns of concern within the patient populations. We used two cutoffs in our analysis. First, we used a cutoff of 4 to compare to the standard data. Second, we report a cutoff of 6, because we sought to increase the specificity of our tool and ensure that patients who were positively identified would not overwhelm our social work resources. We compared the distress level between hematologic and oncology patients with a chi-square test. Demographics between the two groups, as well as demographics of those who screened positive and negative were compared with chi-square and 2
sample t-tests. Data were analyzed with SPSS version 21. P values less than .05 were considered statistically significant. We also compiled the possible life stressors from the distress thermometer and created major categories of concern including practical, family, emotional problems, spiritual concerns, trouble with activities of daily living, gastrointestinal issues, lack of energy, pain issues, memory difficulties, sexual concerns and others concerns. **Results:** In our sample of 331 patients, there were 75 hematology patients (23%) and 256 oncology patients (77.3%). The average age of the patients was 65 (SD 14), 59% were female, 62% were married, 74% were Caucasian, 9% were non-Caucasian, and 17% were of unknown race. Of the patients, 33% had private insurance, 60% were on government insurance, 4% were uninsured and 4% were of unknown insurance status. The mean distress score for all 331 patients was 4. With a cutoff of 6, 20 of 75 (27%) hematology patients were identified as having distress, whereas using a cutoff of 4, 37 of 75 (49%) were considered distressed. For oncologic patients, 92 of 256 (36%) screened positive for distress with a cutoff of 6, while 129 of 256 (50%) screened positive with a cutoff of 4. We found no statistically significant difference between distress scores of hematologic and oncologic patients with either cutoff (P for cutoff of 4= .872, cutoff of 6=.136). When using a cutoff of 6, we found a significantly higher percent of the distressed group were <65 compared to the non-distressed group (56% vs. 42%, p = .014). Additionally, unmarried patients were significantly more likely to screen positive for distress (43% vs. 31%, P=.041). In considering distress level, we found no significant association between sex, race, or insurance status. With a distress cut off of 6, we found that the most commonly cited causes of distress included emotional concerns, lack of energy, memory difficulties and pain. **Conclusion:** Though not previously recognized, we demonstrated that hematologic patients encounter significant distress during the course of their treatment. This patient population should be screened for distress, as those identified have potential for improvement in their clinical outcome with proper intervention. Additionally, we confirmed that a substantial number of oncologic patients in a community based hospital experience distress during their treatment. In considering demographics, we found that being unmarried and less than 65 years of age are risk factors for distress. Knowing that patients’ most common concerns include emotional and physical complaints, practitioners should focus their efforts on addressing these patient concerns. **References:** (1) Managing Stress and Distress. National Comprehensive Cancer Network website. Accessed 3/1/14 (2) Stokowski LA, Forsythe LP. Cancer Survivors Send Distress Call. Published February 6, 2014. (3) Psychosocial Distress. National Cancer Institute website. Published April 4, 2011. [Accessed 5/10/11] (4) Kendall J, Glaze K, Oakland S, Hansen J, Parry C. What do 1281 distress screeners tell us about cancer patients in a community cancer center? Psyccho-oncology. 2011; 20: 594-600. (5) NCCN Clinical Practice Guidelines in Oncology on Distress Management. National Comprehensive Cancer Network website. [Accessed 4/27/11].

**Understanding Parent-Pediatrician Partnerships: The Factor Structure of the Parent Pediatrician Partnership Scale**

Michael Dressing; John Pascoe, MD; Richard C Rapp, PhD

**Presenting Author:** Michael Dressing  
**Faculty Mentor:** John Pascoe, MD  
**Mentor’s Department:** Pediatrics  
**Previous submission:**  
**Poster Number:** 19

**Objective:** What are the latent factors that exist within the concept of partnership as it applies to a parent and their child’s pediatrician?  
**Background:** This study was conducted as the second phase in the development of the Parent Pediatrician Partnership Scale. Our objective was to identify the factor structure among thirty-eight items relating to partnership between parents and pediatricians. These items were retained from a larger pool of items (n=61) after an extensive selection process.  
**Methods:** Thirty-eight items relating to partnership were administered to three-hundred and twenty five parents. The sample population was predominantly White (70.4%), had at least some college education (70.4%), was a guardian living in a married relationship (64.5%), and had a male index child at the appointment
About one-half of the parents were interviewed in a community practice (n=157; 48.3%) and the remainder in sub-specialty clinics located in a children’s hospital (n=168; 51.7%). Six items were eliminated from the 38 item pool based on parents’ uncertainty about what the items meant. The remaining 32 items were entered in a factor analysis that produced five clearly defined factors. **Results:** The factors included Parental Involvement (PI, 4 items), Pediatrician Sensitivity (PS, 7 items), Communication (Co, 4 items), Access (Ac, 2 items) and a broad Comprehensive factor (BC, 13 items). Examples from each of the factors are as follows: Parental Involvement - My pediatrician includes my recommendations about what should be included in a treatment plan; Pediatrician Sensitivity - My pediatrician treats my child and me with dignity; Communication - My pediatrician clearly explains what the treatment is; Access - I have easy access to my pediatrician’s office and Comprehensive - My pediatrician makes sure that I really understand the problem/treatment.

**Conclusion:** Partnership between parents and their children’s pediatrician involves several elements, including a pediatrician’s willingness to provide a parent with the opportunity to be involved and a parent who follows-through on that opportunity. From a parents’ perspective, the affective presentation of the pediatrician must go beyond just being friendly, and include their having a non-judgmental attitude, treating parent and child with dignity, and being sensitive to a parent’s moods. Communication, access, and a somewhat undifferentiated group of qualities complete the view of partnership.

**The Effects of tPA on Whole Blood Using Sonoclot Analysis**

Ronald Erdelyi; Paul Craig; Feras Deek; Mubin Syed, MD

**Presenting Author:** Ronald Erdelyi  
**Faculty Mentor:** Mubin Syed, MD  
**Mentor’s Department:** Radiology, Private Practice  
**Previous submission:**  
**Poster Number:** 28

**Objective:** The main objective of this research project is to develop an in-vitro test to determine if thrombolysis resistance can be predicted in-vitro.

**Background:** Blood clots can be devastating for the human population. One blood clot in the brain can cause death or significant impairment. One blood clot within the heart vasculature can stop the heart from functioning. Clinically, if blood clots are found and treated fast enough, they can be removed chemically by multiple agents (tissue plasminogen activator, streptokinase, or hirudin) or mechanically removed via vascular surgery. Time is a real factor in treatment – the classic medical line is ‘time is tissue,’ because as more time passes and tissue does not get oxygen, it dies. As you can imagine, removing a clot chemically is the ideal method, as it does not involve an invasive procedure. However, humans are resistant to chemical thrombolysis 30% of the time. The goal of this research is to develop a fast in vitro test, which can determine if a patient with a deleterious blood clot will benefit from administration of alteplase. This test would effectively reduce the time it takes to determine if chemical thrombolysis would be successful, or even help us determine how much thrombolytic agent would need to be used in order to help the patient. The hypothesis of this study is that the Sonoclot Coagulation Analyzer will determine if blood clots are successfully thrombolysed, given a sample of human blood. From this data, and the data obtained from the rabbit study, we could determine if this test is actually possible in vitro.

**Methods:** Blood clots were induced in samples of human whole blood. In order to active the clotting cascade in the human whole blood, calcium chloride was administered to each sample. The blood samples were incubated at 37°C for 10 minutes to allow for clot formation, and then the percentage of clot was analyzed by Sonoclot.
For the control group, normal saline was used in place of tPA. In experiment group A, 0.9 mg/kg of tPA was added to the human whole blood before the incubation period, and then measured using Sonoclot analysis. In experiment group B, 1.8 mg/kg of tPA was added to the human whole blood before the incubation period, and then measured using Sonoclot analysis. In experiment group C, 0.9 mg/kg of tPA was added to the human whole blood after the incubation period, and then measured using Sonoclot analysis. **Results:** In the control group, there was no reduction in clotting signal as measured using Sonoclot analysis, as expected. In both experiment group A and group B, there was measured clot dissolution, with expectedly more clot dissolution in experiment group B vs. experiment group A (70% vs. 95%). In experiment group C, the tPA was unsuccessful in dissolving the clot after the clot had formed. **Conclusion:** The in vitro test of tPA did not accurately represent the in vivo results that are seen clinically, most likely due to a lack of mixing between the tPA and the human whole blood once the clot had formed. Clot dissolution was observed in the samples where tPA was added to the human whole blood and incubated, allowing proper mixing between tPA and the human whole blood. Future work for this study includes trials with rabbit blood, which has a known resistance to tPA, in order to develop a standardized curve to which clot dissolution from human blood can be compared against.

**Effect of a backboard on depth of chest compressions on an Emergency Room gurney during Advanced Cardiovascular Life Support**

Eric Fischer; Raymond Ten Eyck MD, MPH, FACEP

**Presenting Author:** Eric Fischer
**Faculty Mentor:** Raymond Ten Eyck MD, MPH, FACEP
**Mentor’s Department:** Emergency Medicine
**Previous submission:** Poster Number: 16

**Objective:** 1. Does placement of a backboard significantly increase the depth of chest compressions compared to those performed without prior backboard placement? 2. Does the use of a backboard increase the proportion of chest compressions meeting the American Heart Association® (AHA) guidelines for mean depth of compressions (>50mm) compared to when a backboard is not used? The Null hypothesis stated that whether chest compressions were performed with or without a backboard, there was no difference in either the depth of compressions or the consistency with which the rescuers complied with AHA guidelines. **Background:** In a scenario requiring cardiopulmonary resuscitation (CPR), time is a critical factor. Any action performed immediately prior to or during CPR that could potentially delay or detract from compressions should be evaluated. The American Heart Association® currently recommends the placement of a backboard between a mattress and a patient before starting chest compressions in a hospital setting, as hospital beds are typically not firm and could mitigate some of the downward force during chest compressions. However, there has been little conclusive evidence for or against this recommendation. Previous studies have mostly addressed CPR performance on patients placed on in-patient beds with or without an air mattress. In our study, we evaluated the impact of backboard use for patients on the standard four-inch foam mattress of an emergency department (ED) stretcher. **Methods:** Using a single blinded study design, we measured and recorded the chest compression data from healthcare trainees completing cardiac arrest resuscitation training. Following IRB approval as an exempt protocol, we recruited participants in high-fidelity simulation training sessions. We informed participants that we were evaluating data automatically recorded by the software used to operate the SimMan Essential TM (Laerdal, Norway) mannequin, but we did not reveal the nature of that data. Each simulation included an arrest scenario that required at least two minutes of CPR per AHA guidelines. The participants were randomized to either a group in which a backboard was placed under the mannequin prior to the simulation, or to a group in which no backboard was used. The backboard was placed on top of the ED gurney mattress, which was covered by a top sheet under the mannequin to obscure it from the view of the participants in the backboard group. The participants were unaware as to whether or not their scenario included a backboard. **Results:** Forty-three trainees (twenty-one with a backboard
Language barriers in local medicine: Interviews with Spanish-speaking patients in the Greater Dayton Area
Danielle Fleissig; Shalini Forbis, MD, MPH

Presenting Author: Danielle Fleissig
Faculty Mentor: Shalini Forbis, MD, MPH
Mentor’s Department: Pediatrics
Previous submission:
Poster Number: 26

Objective: This study will evaluate Spanish-speaking patients’ attitudes and experiences regarding communication, identify language barriers and/or other miscommunication, and suggest possible interventions. Background: Interpretation services have been reportedly successful via patient satisfaction surveys and feedback questionnaires, yet many patients’ needs remain unmet, demonstrating persistent multifactorial disparities in access to resources and physician-patient communication. Many local Spanish-speakers experience barriers to care related to limited English proficiency, but gaps in communication also develop from personal and cultural beliefs about health and healthcare. Methods: Outpatient native Spanish-speakers with limited English proficiency and full decision-making capacity were recruited at the adult walk-in clinic at Reach Out of Montgomery County. Demographics questionnaires were created and administered and semi-structured interviews were conducted by the PI using topics from a pre-approved interview guide. The PI transcribed and translated audio-recorded interviews and analyzed themes recurring in multiple interviews. These themes were then reinforced, citing multiple patients’ quotes, and deficits in data were examined for limitations of the study. Results: Participants interviewed are native Spanish-speakers, 3 men and 7 women, 20-50 years old, from various Latin American countries, with highest levels of education ranging from 5-12 grade, and English proficiency ranging from no proficiency to limited working proficiency in spoken and written English. Themes of barriers, or lack thereof, to effective physician-patient communication include: patient-, physician-, gender-, access-, and language-based barriers. Patients’ personal barriers are observed to relate to their overall health literacy, individual confidence and/or willingness to seek medical advice, and personal access to family or community members as interpreters and/or links to local resources. Patients’ positive perception of their interactions with physicians is compounded by their negative view of experienced time constraints. Patients have divergent opinions of gender-based barriers; some patients feel limited or embarrassed to speak to a doctor and/or interpreter of the opposite sex, while others feel free to discuss any issue regardless of gender. Barriers to effective communication may also originate from patients’ limited access or logistical barriers to healthcare. All patients interviewed describe limited English proficiency as the most prominent and pervasive barrier they face in communicating effectively with their physicians. This is further identified as both language barriers and gaps in communication created by the interpreters themselves. Conclusion: Overall, patients discuss personal and access barriers mainly based on personality and confidence, with varying opinions on physician-and gender-based barriers, and language barriers as limited English proficiency and gaps in communication created by interpreters.

Knee Osteoarthritis: Non-surgical treatment patient outcomes
Antimo Gazzillo; Julie Shott, MD

Presenting Author: Antimo Gazzillo
Faculty Mentor: Julie Shott, MD
Mentor’s Department: Sports Medicine, Orthopedic Associates of Dayton
Poster Number: 22
**Objective:** To demonstrate that a high index of suspicion for severe complications of common diseases is essential to an expedient, accurate diagnosis. **Background:** Background: Subdural empyema secondary to sinusitis is a rare complication. **Methods:** Case Presentation: 15 year-old girl with history of distant sinusitis which was treated 7 weeks prior had persistent headaches since the infection. She presented to the emergency room after having a severe seizure in school. She was diagnosed with subdural empyema and frontotemporal brain abscess secondary to dehiscent left frontal sinus posterior wall and required surgical drainage. **Results:** Discussion: Morbidity from subdural empyema in children is high, necessitating early recognition and treatment. This case depicts the importance of maintaining a high index of suspicion for severe complications of common illnesses. Communication between medical professionals and patients is integral towards providing superior care. In this case, the patient was offered MRI but declined due to lack of insurance. Imaging performed sooner could have detected infection earlier and resulted in potentially fewer complications. **Conclusion:** Clinical Relevance: Clinicians must maintain a heightened level of vigilance towards subdural empyema in the setting of persistent headaches after sinusitis. When considering the signs and symptoms of SDE, it may be necessary to expand the timeframe of recent sinusitis of <2 weeks to include distant sinusitis up to 7 weeks prior.

**Targeted alpha particle irradiation as a glioblastoma therapy**

Ahmed Hawash; Katja Behling; David Scheinberg; Michael McDevitt

**Presenting Author:** Ahmed Hawash  
**Faculty Mentor:** Michael McDevitt  
**Mentor’s Department:** Medicine and Radiology, Molecular Pharmacology and Chemistry  
**Previous submission:** Memorial Sloan Kettering Cancer Center Summer Medical Student Research Fellowship Poster Session, August 2013  
**Poster Number:** 30

**Objective:** This study investigated the use of alpha particle irradiation to treat an animal model of glioblastoma multiforme. Glioblastoma is a very aggressive tumor in the brain and its growth is supported by cancer stem cells and an extensive vascular network. A radioimmunoconstruct consisting of the vascular targeting antibody, E4G10, and the alpha particle emitting radionuclide, Ac-225, has been used to target angiogenic tumor vascular endothelium and endothelial progenitor cells in the marrow. When this radioimmunoconstruct was used in a mouse with a glioblastoma, it damaged the neovasculature associated with the tumor tissue. We hypothesize that it can collaterally irradiate and deplete the perivascular stem cell niche and further that endothelial progenitor cells of the bone marrow can be targeted and depleted. **Background:** Alpha particles are charged helium nuclei that can travel up to 80 µm, about the diameter of three or four cells. When an alpha particle traverses a cell’s nucleus, it can induce DNA double-strand damage, making it highly unlikely to be repaired and potentially cytotoxic. Irradiating the tumor neovasculature may also damage the cancer stem cell population located in the perivascular niche. This treatment has also been shown to have an effect on the endothelial progenitor cells (EPC) of the bone marrow. In depleting the EPC population, potential vascular endothelial cells are exhausted. For a glioblastoma multiforme (GBM) to grow, angiogenesis and tumor cell proliferation must occur concurrently. This project focuses on methods of attacking GBM by irradiating angiogenic vascular endothelium (VE). The GBM VE is assembled by the following methods: vasculogenesis or the use of existing normal brain vascular endothelium, angiogenesis, or the recruitment of bone marrow endothelial progenitor cells. The treatment strategy is to target the monomeric-VE-cadherin epitope, which is found only on the endothelial cells of neovasculature. As a vessel matures, the cadherin molecules dimerize to form cell to cell junctions, thus blocking E4G10 antibody from binding to the epitope, sparing resting VE. **Methods:** Transgenic mice were surgically injected with Cre+ cells into the brain tissue. Tumors were measured for progression every week by MRI and luciferase bioluminescence imaging (BLI). Tumors were seen 4-5 weeks after tumor induction. Stem-like cells were harvested from GBM, using normal brain as control. A side population assay using a Hoechst dye was run using brain and bone marrow samples...
to establish a side population. **Results:** 15 tva-receptor positive animals were injected. 33 days post-induction, luciferase testing showed that 2 animals had tumor. 36 days post-induction, luciferase testing showed that eight animals had tumor. 37 days post-induction, MRI imaging showed that the same eight animals had tumor. This gave us a tumor take rate of 8/15 or 53%. Our tumor induction protocol was further optimized, giving us a higher tumor take rate, by injecting the cell suspension 1 mm deeper. MRI and luciferase imaging showed tumor take. **Conclusion:** Our tumor induction technique has been optimized, resulting in a higher tumor take rate. We have established conditions to consistently identify the side population in brain and bone marrow tissue samples. Immunotherapies are under way.

**Treatment of Critical Illness Myopathy**
Elliott Hayden; Qingbo Wang; Mark M. Rich, MD, PhD
*Presenting Author*: Elliott Hayden  
*Faculty Mentor*: Mark M. Rich, MD, PhD  
*Mentor’s Department*: Neuroscience, Cell Biology, & Physiology  
*Previous submission*:  
*Poster Number*: 2

**Research Question:** Can pharmacologic inhibition of neuronal nitric oxide synthase (nNOS) prevent critical illness myopathy (CIM). While we do not know the exact role of nNOS in CIM, we do know that it is associated with Na channels from CIM muscle. Logically, we would like to see what affects inhibition of nNOS has on the excitability, atrophy, and loss of myosin in CIM muscle. **Background:** Severe muscle weakness is a common problem encountered in critically ill patients. While the underlying cause of ICU admission can be treated, the effects of CIM jeopardize successful recovery and prolong hospital stay. It has been shown that weakness in CIM is due electrical inexcitability caused by sodium channel dysfunction. A signaling enzyme, nNOS, has been implicated in CIM. It is our goal to test whether pharmacologic inhibition of nNOS in vivo can be used as a therapy to prevent muscle inexcitability in CIM. **Methods:** A rat model of CIM was created through sciatic nerve denervation and steroid treatment. Animals were treated with L-NAME by dissolving it in their drinking water. The animals were euthanized with carbon dioxide inhalation and the tibialis anterior (TA) was muscle removed. Action potentials and electrical properties of the TA were recorded using a two electrode method. For each animal, weights of the TA were recorded on the denervated and non-denervated side. Actin and myosin content was determined through western blot analysis. **Results:** Administration of L-NAME to denervated and steroid-treated denervated muscles rescues their excitability as shown by an increase in percent excitable fibers and a more hyperpolarized resting potential. Muscle atrophy is significantly reduced in animals treated with L-NAME. Atrophy was calculated by normalizing the weight of the denervated TA to the corresponding non-denervated TA. As expected the myosin/actin (MA) ratio is lowest in steroid-treated denervated muscles. The MA ratio is modestly increased in the steroid denervated animal that received L-NAME. **Conclusion:** Weakness in CIM is caused by electrical and structural dysfunction in muscle. Through pharmacologic inhibition of nNOS, both the electrical and structural problems can be lessened. L-NAME not only reduces structural damage to muscle, but also preserves electrical excitability. Our results have demonstrated that the combination of steroids and denervation represent an accurate model of CIM.

**A rare infection in a patient with advanced AIDS**
Shaina Hecht; Kunal Desai, MD; Hari Polenakovik, MD
*Presenting Author*: Shaina Hecht  
*Faculty Mentor*: Hari Polenakovik, MD  
*Mentor’s Department*: Internal Medicine  
*Previous submission*:  
*Poster Number*: 25

**Objective:** To describe a case of Strongyloides hyperinfection in a patient with advanced AIDS. **Background:** *Strongyloides stercoralis* is an intestinal helminth that infects humans who come in contact with contaminated soil, usually by penetrating the skin on the soles of the feet. *Strongyloides* hyperinfection syndrome refers to an accelerated autoinfection, most commonly found in patients with compromised immunity.
The patient shows signs and symptoms of increased larval migration, including gastrointestinal and pulmonary symptoms and greater numbers of larvae in the stool and sputum, as compared to a chronic, possibly asymptomatic, infection. Typical risk factors for developing hyperinfection syndrome include use of corticosteroids or other immunosuppressive drugs, HTLV-1 infection, hematologic malignancies, and organ transplant. While it was once an AIDS-defining illness, HIV is no longer considered a risk factor for *Strongyloides* hyperinfection syndrome.

To date, there have been less than 50 cases of *Strongyloides* hyperinfection occurring in HIV-infected patients reported in the literature. **Case Presentation:** A 36-year-old Hispanic male with advanced AIDS presented with dull abdominal pain associated with nausea, non-bloody vomiting and multiple episodes of diarrhea for 5 days. He also complained of a pruritic rash covering his trunk for the last 5-7 days, a non-productive cough, and a decreased appetite. He denied recent fever, travel, sick contacts, or hospitalization in the last 3 months. He is originally from Mexico and has been living in the USA for the last 12 years. He had been off anti-retroviral therapy for several months due to non-adherence to medical treatment. His most recent absolute CD4 count was 20/mm³ or 3%. Admission vital signs were unremarkable. Pertinent physical findings included a cachectic looking male in no distress, a faint erythematous macular serpiginous rash in a centripetal distribution, and diffuse abdominal tenderness. Laboratory data was significant for sodium of 128 mEq/L. His chest x-ray was unremarkable, but abdominal x-ray showed mild diffuse small bowel distension. Blood cultures, stool culture, *Clostridium difficile* PCR, stool *Cryptosporidium* exam and *Strongyloides* IgG were negative. Stool for ova and parasites showed numerous *Strongyloides* larvae. When his sputum was examined for parasites, it also revealed *Strongyloides* larvae. Review of past records revealed that he was treated with one dose of ivermectin and 7 days of albendazole for chronic *Strongyloides* infection 2 years ago. The patient was diagnosed with *Strongyloides* hyperinfection syndrome and syndrome of inappropriate antidiuretic hormone secretion (SIADH). During this admission, he was started on daily ivermectin. After 2 weeks of treatment, his symptoms resolved, including resolution of the rash. His repeat stool exam 10 days later showed no parasites. He agreed to restart therapy with HAART and follow up regularly. **Discussion:** This patient with advanced AIDS presented with non-specific symptoms of abdominal pain, nausea, vomiting, diarrhea, rash, and cough. Even though HIV is not a risk factor for *Strongyloides* hyperinfection, this patient’s country of origin and previous infection prompted testing for the parasite. Examination of his stool and sputum revealed numerous *Strongyloides* larvae, and because of his previous treatment failure, a different treatment regimen was used. Immunocompromised patients are at an increased risk of developing *Strongyloides* hyperinfection; yet, HIV-infected patients have not been shown to have this increased risk. It is proposed that type 2 T helper cell (TH2) activity in the HIV host helps to prevent dissemination of the parasite. This idea is based on the theory that in HIV-infected individuals, TH2 activity may be impaired to a lesser degree than type 1 T helper cells (TH1). Thus, a HIV patient’s preservation of TH2 activity could explain the lower risk of hyperinfection syndrome as compared with patients in a more global immunosuppressed state. **Clinical Relevance:** *Strongyloides* hyperinfection syndrome in an HIV-infected patient is considered unusual based on available literature. This patient was diagnosed with this entity based on thorough review of his history, characteristic truncal rash, and findings of *Strongyloides* larvae in sputum. Further studies are required to determine the risk factors in individual HIV patients that may make them susceptible to hyperinfection. **References:**

Continuation of long-term comparison spinal cord stimulation techniques using an Observational Mechanical Gateway
Matt Hiskey; Sarah Chinnapan; Laura DeVita; Omar Khan; Sudarshan Mullapudi; Amol Soin, MD, MBA

Presenting Author: Matt Hiskey
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Previous submission: WSU BSoM 4th Annual Medical Student Research Symposium, Dayton OH, April 2012; WSU BSoM 5th Annual Medical Student Research Symposium, Dayton OH, April 2013
Poster Number: 39

Objective: To determine if a preferred method of spinal cord stimulation exists in patients suffering from chronic pain using Observational Mechanical Gateway. Background: Spinal cord stimulation represents a treatment of last resort for patients who suffer from chronic pain conditions. These patients have typically tried and failed several different modalities of pain management including narcotic pain medications, peripheral nerve blocks, physical therapy, and surgical consultations. There are two different schools of thought in regards to spinal cord stimulation and how the current and voltage is dispersed into the epidural space. Utilizing Ohms law, which states voltage equals current times resistance (V = IR), one can understand how the modalities differ. One modality, propagated by the Medtronic Corporation, is known as constant voltage. In this modality the voltage stays unchanged, but the patient has the ability to change the current exported out of the stimulating lead. The other method from the Boston Scientific Corporation, utilizes constant current but the voltage can be altered. The purpose of this study is to compare these two modalities in selected patients to see if there is difference in outcome. Methods: Twenty-three patients (n=23) received treatment through Observational Mechanical Gateway (OMG) which allows for the transition from a constant voltage and a constant current. All 23 patients’ trialed OMG stimulation for 30 minutes just prior to the previously chosen treatment modality. Results: Twenty-three patients who had successful stimulation trials were selected, with successful defined as those who received consecutive successful spinal cord stimulator trials that also trialed observational mechanical Gateway comparison of different spinal cord stimulation modalities. Fifteen patients reported feeling a “smoother” and “more comfortable” stimulation with the OMG than with their initial trialed device. Of the twenty-three patients, six desired to switch to Boston Scientific, the remaining seventeen patients who did not desire to switch devices cited similar pain relief and comfort with their original device as compared to the other stimulation delivery method. Within in the seventeen patients who did not switch, two cited the positive rapport with the representative of their original device as their reason for not switching. The other fifteen patients reported being comfortable with the current stimulation modality, the interface used, and as a result did not feel a change was warranted. Conclusion: All twenty-three patients went on to receive permanent implantation with the device of their choice. Further study with larger sample sizes is warranted to draw any type of clinically significant conclusions.

The Effect of Early Chemoprophylaxis on Deep Venous Thrombosis and Inferior Vena Cava Filter Rates in Head Injured Patients
P. Hutchinson; P. Parikh; M. Walusimbi; M. Whitmill; A.P. Ekeh

Presenting Author: Paul Hutchinson
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Mentor’s Department: Surgery
Previous submission: European Conference of Trauma and Emergency Surgery, Frankfurt Germany, May 2014
Poster Number: 8

Question: How are the rates of Deep Venous Thrombosis (DVT) and Inferior Vena Cava (IVC) filter placement affected by early chemoprophylaxis with Low Molecular Weight Heparin (LMWH) in patients suffering from Traumatic Brain Injury (TBI)? Background: Victims of TBI are at increased risk of DVTs due to several factors. This risk has often been further
increased via the avoidance of early administration of DVT chemoprophylaxis given concerns of worsening hemorrhage. Several studies arising within the last few years have demonstrated a safety profile of LMWH administered to TBI patients within 24-72 hours following a stable injury on follow-up CT imaging. We evaluated our practice of instituting early DVT chemoprophylaxis via LMWH in TBI patients via analysis of the rates of DVT and prophylactic IVC filter placement at a single institution. Methods: All patients with a diagnosis of TBI admitted to a U.S. Level I Trauma Center between 07/2009 and 06/2013 were identified. Over the first 24-month period (pre-LMWH), early DVT chemoprophylaxis was not implemented in TBI patients, and prophylactic IVC filters were placed in patients who either developed DVT or were deemed to be at increased risk of developing thrombosis. At the start of the second 24-month period, new guidelines were established, which promote early LMWH administration for DVT chemoprophylaxis in TBI patients. Patient records were analyzed to quantify DVTs as well as prophylactic IVC filters. There was a liberal weekly DVT screening protocol during each time period, and both upper and lower extremity DVTs were considered. Comparisons between the two periods were made using Chi-square testing. Results: During the first 24-month period (pre-LMWH) there were a total of 2278 TBI patients (33.9% of total admissions). During the second 24-month period there was a total of 1865 TBI patients (28.8% of total admissions). There were 135 total DVTs (5.9% of TBI patients) during the first period, and 100 total DVTs (5.4% of TBI patients) during the second period (p = 0.68). There were 83 IVC filters placed during the first period (3.6% of TBI patients), and only 10 IVC filters placed during the second period (0.5% of TBI patients), which was found to be statistically significant (p < 0.0001). Conclusions: At our Level I Trauma Center the early administration of LMWH in TBI patients was not associated with a reduction in DVTs, however, it was accompanied by a marked reduction in the placement of prophylactic IVC filters, and likely the potential attendant IVC filter complications. Further research exploring methods to reduce DVTs in high-risk trauma populations such as this is needed.

Is Repeat CT Necessary In Mild Traumatic Brain Injury In the Elderly?
Zachary Il’Giovine; Damon Campbell; Melissa Whitmill; Ronald Markert; Jonathan M. Saxe
Presenting Author: Zachary Il’Giovine
Faculty Mentor: Jonathan M. Saxe, MD
Mentor’s Department: Surgery
Previous submission: International Brain Injury Association Tenth World Congress on Brain Injury; San Francisco CA, March 2014
Poster Number: 5

Introduction: Mild traumatic brain injury (TBI) in elderly patients has increased markedly over the last decade. Primary computed tomography (CT) scanning in head injuries is well established in its ability to identify intracranial hemorrhage and assess the need for emergent surgical intervention. However, the utility of repeat CT scans for every patient, especially in the absence of other clinical markers, has been questioned. The purpose of our study was to determine if repeat CT was consistently necessary in patients with mild TBI. Methods: We did a retrospective review of the trauma registry of our level one trauma center. We identified 2009 patients with TBI admitted over a three-year period. Mild TBI (GCS 12-15) was identified in 1561 patients. Data obtained included Age, Sex, ISS, AIS, BP, serial GCS, Injury Type, CT scan results, operative interventions, and outcomes, which were evaluated for levels of significance. Results: We found that the most common mechanism of injury were falls, and that of the 1415 patients who remained in the mild category, 76% showed no change on their repeat CT and 18% showed worsening repeat CT’s. Of the 18% of patients who showed worsening repeat CT’s despite consistent GCS recordings, almost 95% were discharged without requiring further intervention. Five total patients required surgical intervention despite a consistent GCS. Conclusion: This study supports the notion that repeat CT scanning may not be needed in patients admitted with mild TBI and who’s subsequent GCS recordings do not change. Undue risk to the patient and misallocation of healthcare resources can be avoided by allowing for serial clinical examination to guide the need for additional imaging once
initial assessment is complete in the setting of mild TBI.

**Do All Elderly Patients With Mild Traumatic Brain Injury Require Admission?**
Zachary Il’Giovine; Damon Campbell; Melissa Whitmill; Ronald Markert; Jonathan M. Saxe

*Presenting Author:* Zachary Il’Giovine  
*Faculty Mentor:* Jonathan M. Saxe, MD  
*Mentor’s Department:* Surgery  
*Previous submission:* International Brain Injury Association Tenth World Congress on Brain Injury; San Francisco CA, March 2014  
*Poster Number:* 6

**Introduction:** Strategies to curtail the increasing cost to hospitals while preserving the quality of care has come to the forefront of protocol design. When hospitals appropriately shorten length of stay, vulnerable patient populations such as the elderly avoid unnecessary harm. The purpose of this study was to determine if admission is necessary for a patient who’s GCS remains unchanged for over 6 to 8 hours of observation.

**Methods:** We did a retrospective review of the trauma registry of our level one trauma center. We identified 2009 patients with TBI admitted over a three-year period. Mild TBI (GCS 12-15) was identified in 1561 patients. Data obtained included Age, Sex, ISS, AIS, BP, serial GCS, Injury Type, CT scan results, operative interventions, and outcomes, which were evaluated for levels of significance.

**Results:** We found that the most common mechanism of injury were falls, and that of the 1415 patients who remained in the mild category, 76% showed no change on their repeat CT and 18% showed worsening repeat CT’s. Of the 18% of patients who showed worsening repeat CT’s despite consistent GCS recordings, almost 95% were discharged without requiring further intervention. Five total patients required surgical intervention despite a consistent GCS. The average length of stay for these patients was 5.23 days.

**Conclusion:** This study supports the opinion that admission is not required with mild TBI and unchanged GCS over a 6 to 8 hour period, and that observation followed by discharge with home supervision is appropriate unless clinical examination suggest the need for admission or additional imaging.

**Healthy Way Initiative: A Closer Look at Inpatient Units**
Mira Trivedi; Zenar Tekeste; Jay Ingram; Shalini Forbis, MD; Ranjana Sinha, MD

*Presenting Author:* Jay Ingram  
*Faculty Mentor:* Ranjana Sinha, MD  
*Mentor’s Department:* Pediatrics  
*Previous submission:* University of Dayton Healthcare Symposium, Dayton OH, April 2014  
*Poster Number:* 12

**Objective:** To demonstrate the importance and evaluate the progress of the recently implemented Healthy Way Initiative on Dayton Children’s Hospital inpatient units. **Background:** Childhood obesity is an escalating health concern. Health care providers need to identify children at risk and educate families on healthy lifestyles. **Methods:** In January 2014, Dayton Children’s launched the inpatient Healthy Way Initiative. Families now receive the “5210/MyPlate” handout, growth information and encouragement to obtain healthier lifestyle information from the Family Resource Center (FRC). For patients with BMIs > 95th percentile, providers assess whether to take further action by ordering labs or providing referrals to outpatient clinics. Nurses/dietitians document the handouts were given to families and providers record any weight specific interventions in the patient’s chart. On discharge, the primary care provider receives a discharge summary, which states healthy lifestyles were addressed and suggests recommendations for follow-up treatment. **Results:** A chart review will be utilized to assess the progress of the Healthy Way Initiative. Critical components will include labs ordered, referrals placed, clinicians’ documentation of their actions, and family visits to the resource center and the materials provided. Data will be tracked for both pre and post intervention study periods. **Conclusion:** The end goal is to increase general awareness of childhood obesity and to intervene earlier in order to prevent significant medical problems. Data assessing the inpatient intervention, referrals and utilization of the FRC will provide opportunities for measuring outcomes and the success of the Healthy Way Initiative.
Does Participation in Team-Based Learning Affect Medical Students’ Longer-Term Learning?
Hicham Ismail; Paul Koles, MD; Adrienne Stolfi, MSPH; Adrian Corbett, PhD; Khalid Elased, PhD; Nicole Borges, PhD; Dean Parmelee, MD

Presenting Author: Hicham Ismail
Faculty Mentor: Paul Koles, MD
Mentor’s Department: Pathology
Previous submission: WSU BSoM Central Research Forum, Dayton OH, November 2013; AAMC Central Group on Educational Affairs, Cleveland OH, March 2014
Poster Number: 27

Objective: When tested 2 months after the conclusion of participation in a TBL module, will second-year medical students in a systems-based curriculum demonstrate a greater improvement in score (pre-test vs. post-test) for multiple-choice questions conceptually related to TBL modules? Background: Several previous studies have evaluated students’ short-term learning outcomes associated with team-based learning (TBL). The proposed study examines whether longer-term learning is affected by participation in TBL.

Methods: With institutional board approval, 51 second-year medical students from three successive cohorts at one medical school took a single exam administered as pre-test and post-test. The exam included 100 multiple-choice questions assessing 9 domains: physiology (n=34), pathology (n=34), and pharmacology (n=32) of cardiovascular (n=40), respiratory (n=30), and renal (n=30) systems. Seven TBL instructional modules occurred during a 10-week block of integrated courses in cardiovascular, respiratory, and renal systems. The exam included 50 questions conceptually related (TR) to TBL modules and 50 questions conceptually unrelated (TU) to TBL modules. The pre-test was administered on the first day of the 10-week block; the identical post-test was administered 8 weeks after the end of this 10-week block. The magnitude in change of pre-test vs. post-test scores was compared for TR vs. TU questions.

Results: There was no significant difference in pre-test TR vs. TU scores. There was a significant improvement in scores from pre-test to post-test for both TR (36.4% to 56.2%, p<0.001) and TU (35.9% to 54.9%, p<0.001) questions. The magnitude of improvement of TR scores (19.8%) was not significantly different from the improvement in TU scores (19.0%). Significant differences in improvement were observed for TR vs. TU questions in subgroups of cardiovascular (p = 0.013), respiratory (p = 0.024), and renal (p = 0.001) questions. Conclusion: Similar improvements in scores for TR and TU questions suggest that participation in 7 TBL modules over 10 weeks does not independently affect longer-term learning. Significant differences in scores for TR vs. TU questions for subgroups of cardiovascular, respiratory, and renal questions were noted. This may be explained by differences in difficulty of TR vs. TU questions (cardiovascular, renal) and effects associated with participation in TBL (respiratory). Improvement in scores on TR vs. TU questions for subgroups of physiology, pathology, and pharmacology questions was not significantly different. Findings of this study suggest that longer-term learning is not significantly affected by participation in TBL.

Assessing Attitudes of Medical Students Towards the Poor
Danial Jilani; Ashley K. Fernandes, MD, PhD; Nicole J. Borges, PhD; Karen Kirkham, MD

Presenting Author: Danial Jilani
Faculty Mentor: Nicole J. Borges, PhD
Mentor’s Department: Community Health
Previous submission: Poster Number: 34

Objective: To assess the attitudes of pre-clinical medical students (first and second years) versus clinical medical students (third and fourth years) towards poverty-stricken populations. Background: Many changes occur in the four-year tenure of every medical student in their path to becoming a physician. A well-documented phenomenon is the attitude of medical students toward certain populations as they progress throughout their medical training (Crandall et al, 2007). Specifically, third and fourth year medical students are less inclined to care for the underserved and indolent population than are their first and second year cohorts (Crandall et al, 1993). Further, when comparing medical students to graduate students obtaining a pharmacy degree,
it has been shown that the pharmacy students’ attitudes toward the underserved remain stable overtime whereas medical students’ attitudes decline significantly (Broeseker et al, 2008). With universal health care rapidly approaching, it is essential to analyze medical students’ attitudes toward poverty in hope to prevent decreased level of care to the previously uninsured and underserved population. **Methods:** Study design consists of validated short from of the 37-item Attitude Toward Poverty (ATP) Scale. The shortened study measure employs 21 Likert-type attitude items that reflected both positive and negative attitudes toward poor people. The setting is Wright State University Boonshoft School of Medicine. First years were surveyed during a mandatory lecture and 104 responses were recorded. Second years were recorded during a mandatory lecture as well, and ___ responses were recorded. For third year medical students, each respective clerkship didactic (IM, peds, OB/GYN, surgery) were visited and a total of ____ responses were obtained. For fourth year medical students, a electronic survey was sent via email, and ____ responses were obtained. **Results:** T-test and ANOVA statistical analysis was done on the data. Results to follow. **Conclusion:** Conclusion to follow.

**High-Frequency Electric Nerve Block in Treating Residual Limb Pain**

Danial Jilani; Omar Khan; Amol Soin, MD, MBA; Kyle Leggett; Rahul Madan

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*Mentor’s Department: Surgery*

*Previous submission:* WSU BSoM 4th Annual Medical Student Research Symposium, Dayton OH, April 2012; WSU BSoM 5th Annual Medical Student Research Symposium, Dayton OH, April 2013

*Poster Number: 35*

**Objective:** To determine whether high-frequency electric nerve block is effective in decreasing the frequency and severity of residual limb pain after amputation. **Background:** The origins of residual limb pain can be traced back to the sixteenth century when military patients would complain of severe pain in their amputated limb. The phenomenon has been well documented throughout history and ultimately in 1871 the term “phantom limb” was coined. Today, limb amputations are commonly seen in the setting of trauma, peripheral vascular disease, or less commonly, from neoplasms. Over five-hundred amputations are performed each day (Flor, 2002). It is well discovered that amputees face numerous sensations after an amputation. Generally, non-painful sensations rarely pose a threat. However, treating patients with severe pain in their residual limb can be increasingly difficult. Adding to the difficulty, no clear mechanism or pathophysiology has been discovered for severe residual limb pain (Nikolajsen et al, 2001). Further, current treatments in treating residual limb pain have proved inadequate. They range from pharmacological polytherapy, injectable nerve blocks, implantable pain pumps, peripheral nerve stimulators, spinal cord stimulators, and surgical ablation. Only 30% of these treatment have shown any evidence of being effective in treating residual limb pain (Flor, 2002). Historically, the incidence of residual limb pain has been underreported, but, new studies suggest the incidence is as high as 60-80% (Nikolajsen et al, 2001). A promising therapy in the treatment of residual limb pain is the surgical implantation of an electrode which initiates a high-frequency electric nerve block. The electrode is placed directly on the peripheral nerve proximal to the neuroma that is causing pain in the amputated limb. Previous studies have shown that nerve conduction can be blocked by stimulating a frequency of 10,000 kHz per second, leading to the painful stimuli never been sensed or even processed by the central nervous system. **Methods:** This study consists of multiple observational case studies to assess long-term pain reduction in patients with lower limb amputations suffering from chronic, severe, residual limb pain. It consisted of twenty-four patients who were initially contacted. Of the twenty-four, fifteen passed the initial screen, followed by fourteen who passed the lidocaine injection screening. The secondary screen consisted of temporary, but, significant pain reduction after lidocaine injection. Ten out of the twenty-four patients were implanted with the device. Further, nine of these patients were tested in outpatient clinic (one patient’s pain resolved after receiving a prosthetic leg) and seven of them
reprogrammed for home therapy (two subjects were non-responders). For above the knee amputations, the electrodes were implanted on the sciatic nerve, and for below the knee amputations, the common peroneal nerve was used. The surgically implanted device consisted of a portable, external waveform generator with a percutaneous interface. Patients were given the option of scheduling thirty minute therapy sessions as needed. They were instructed to keep a daily dairy with six time epochs (early morning, late morning, etc.) The primary outcome measure was pain reduction after each therapy session. The criterion was a greater than or equal to fifty percent reduction in pain in greater than or equal to fifty percent of the therapy sessions. Additionally, patients were given a brief pain inventory to assess the impact of pain of their physical and mental status. Seven patients reached the three-month endpoint, four passed the six-month follow-up, and one patient completed the twelve-month follow-up. Results: For the seven patients who reached the three-month endpoint, the average number of therapy sessions was four per week (range of 1-8). All seven subjects were responders. The average pain reduction was six to one (range of 4-8, 0-3). On average, the amount of time it took for pain to be reduced to a minimum level was fifteen to thirty minutes. The relief provided lasted from three hours to several days. The proportion of sessions with greater than or equal to fifty percent pain reduction was 89% (275/310). Narcotic usage was completely discontinued among four of these patients, and cut in half in another patient. The pain reduction measured by the Brief Pain Inventory showed a significant reduction in pain in four patients. Throughout the study, there were no safety issues. Further, the average pain reduction at the three-month primary endpoint was 75%. The average pain reduction at last follow-up of up to twelve months was 73%. In 63% of the sessions, the duration of pain relief lasted longer than nine hours. More importantly, the impact of pain on function was significantly reduced. There were no unanticipated adverse effects, however, one patient suffered cuff dislodgement. Conclusion: In summary, preliminary evidence has been established for long-term efficacy and safety of high-frequency electrodes. The effect of pain reduction was sustained up to twelve month follow-up. Therefore, high-frequency electric nerve block is effective in decreasing the frequency and severity of residual limb pain after an amputation.

**Reduction in Narcotic Usage Following Implantation of a High-Frequency Electric Nerve Block Device in Patients with Lower Extremity Limb Loss**

Nicholas Moore; Omar Khan; Aneesh Chaudhry; Amol Soin, MD, MBA

**Presenting Author:** Nicholas Moore  
**Faculty Mentor:** Amol Soin, MD, MBA  
**Mentor’s Department:** Surgery  
**Previous submission:**  
**Poster Number:** 37

**Objective:** Evaluate the effect of high-frequency nerve blockade on opioid usage in patients with amputated residual limb pain. **Background:** Much effort has been directed at developing treatment strategies to help control phantom and residual limb pain experienced by amputees. Despite our best efforts using narcotics, injectable pain medications, peripheral nerve, spinal cord, and deep brain stimulation to regulate chronic pain in patients with limb loss, few have proven to have a lasting effect. According to a cross sectional survey of patients with amputated limbs, the overall prevalence of phantom pain, defined as pain in the limb that is no longer present, is as high as 85%. Reports on the prevalence of residual limb pain at 2 years post-amputation vary from 10% to 13% and are as high as 55% to 76% in longstanding amputees (1). The pain experienced following an amputation is often so debilitating that it requires prolonged use of high dose narcotics. Pain control is essential because pain frequently interferes with and limits the use of prosthetic devices, and further compromises quality of life. Despite the fact that opioids do provide temporary pain relief, the numerous side effects and significant abuse potential that accompany these medications has prompted investigation into alternative methods of pain regulation. Borghi et al demonstrated significant pain reduction using continuous nerve blockade with local anesthetic injections (2). This concept of continuous nerve blockade has been extrapolated and utilized to develop a nerve-
blocking device using high-frequency electric current. In this device, a stimulating electrode is placed around the peripheral nerve proximal to the amputated limb. It is calibrated to deliver an electrical stimulation of 10,000 kHz per second, which creates a depolarizing nerve block. The primary goal of the nerve stimulation device is to reduce the pain experienced by patients with amputations as a way to improve their overall physical and psychosocial functioning and to reduce their dependence on narcotics and other pain management adjuncts. Methods: A total of ten subjects with chronic and severe residual limb pain were selected based on their pain reduction responses to a local lidocaine injection. This screening tool helped identify the patients who would likely respond to and benefit from peripheral nerve stimulation prior to undergoing surgery. The screening also helped identify the peripheral nerve location where electrodes to the stimulation device would be surgically implanted. These subjects were taken to the operating room and had stimulating nerve electrodes placed around the sciatic nerve for above the knee amputations and around the tibial and common peroneal nerves for below the knee amputations. The electrodes were inserted through a percutaneous interface, and were connected to a stimulating box that delivered 10,000 kHz per second of high-frequency stimulation. The patients were allowed to undergo 30-minute therapy sessions as needed. The primary endpoint of this study was to monitor the change in narcotic usage from 1 month pre-implantation to 3 months post-implantation. Results: Ten subjects received the nerve stimulation implants. Two subjects were excluded secondary to no response to therapy and a third was excluded because they had pain resolution without implementation of the nerve stimulator. Our total sample size after exclusions was seven. Results among the 7 subjects after 3 months of device use was a decrease from approximately 18 total pain pills per week to 1 or 2 (p<.05). Four of the subjects were able to discontinue the pain medications altogether. Conclusion: The purpose of this study was to evaluate the effect of a novel nerve stimulator device on residual limb pain in lower extremity amputees. Implantation and prolonged use of the nerve stimulator reduced narcotic usage in the sample population by 16-17 total pills per week (p<.05). This study is limited by small sample size, and further studies are needed to provide generalizability of results and show long-term effects. Potential positive outcomes from long-term pain reduction without the use of narcotics or other adjuncts include reduction in emergency department visits and hospital admissions, reduced healthcare costs, reduced narcotic dependence, and improved quality of life. For these reasons it is important that further evaluation be done exploring alternative methods for pain regulation in this patient population. Based on this preliminary data, depolarizing nerve stimulation appears to be a promising option.

The Effectiveness of High Frequency Alternating Current Nerve Block in Reducing Residual Limb Pain in Lower Limb Amputees

Lauren Myers; Anna Hardy; Omar Khan; Aneesh Chaudhry; Rahul Madan; Amol Soin, MD, MBA

Presenting Author: Lauren Myers; Anna Hardy
Faculty Mentor: Amol Soin, MD, MBA
Mentor’s Department: Surgery
Previous submission:
Poster Number: 36

Objective: Is high frequency alternating current nerve conduction block effective in long-term reduction of residual limb pain in amputees?

Background: Over two millions patients in the United States have undergone lower limb amputation, one million of whom have residual pain that is resistant to current therapy options. Current treatment options include pharmacological polytherapy, injectable pain medication, pain pumps, peripheral nerve stimulation, spinal cord stimulation, and surgical ablation. Collectively, these therapies are 30% effective in reducing residual limb pain. A previous short-term study showed that severe neuroma pain in amputees can be reduced via high-frequency alternating current nerve block. This study investigates the long-term effect (≥ 12 weeks) of the same therapy in a larger patient population. Methods: Inclusion criteria for this study were, chronic and severe lower limb pain after amputation, and temporary pain reduction after lidocaine injection. Nine lower-limb amputees who met these criteria received an implant to deliver high frequency electric nerve
Conduction block. A spiral-type nerve cuff electrode was placed on the sciatic nerve in above-knee amputees, or the tibial and common peroneal nerves in below-knee amputees. This was done during a 30-minute surgery under general anesthesia. The nerve cuff electrode was connected to an external waveform generator via a percutaneous interface. Patients self-administered 30-minute therapy sessions as needed. Clinic visits were not required for patients to conduct these sessions. A daily diary was used to record pain intensities before and after each session, which were quantified using the 0-10 Numerical Rating Scale. Additionally, the Brief Pain Inventory (BPI) was administered at each clinic visit to assess the impact of pain on physical and mental status. Results: Of the nine patients who were implanted, six were programmed for home therapy. The first subject completed 215 therapy sessions in 39 weeks and achieved a 78% reduction in pain levels. The second completed 38 sessions in 12 weeks, with a reduction of 98%. The third completed 27 sessions in 10 weeks with a reduction of 46%. The fourth completed 26 sessions in four weeks with a reduction of 70%. The fifth completed 16 sessions in 13 weeks with a reduction of 99%. The sixth completed nine sessions in four weeks with a reduction of 56%. Pain level was consistently reduced to a minimum after 20 minutes and relief was sustained anywhere from three hours to multiple days. Analysis of impact of pain on physical and mental status using the BPI in clinic showed a significant reduction in five of the six patients. One of the six subjects experienced dislodgement of the cuff electrode, but it was reinstalled and functionally restored. Otherwise, there were no unanticipated adverse events. Conclusion: Results showed that high frequency alternating current nerve blocks are effective in long-term reduction of residual limb pain in lower-limb amputees. The rate of effectiveness of this therapy significantly exceeds that of other modalities used in the past. In the future, subjects will continue to be followed, and will receive a permanent waveform generator implant in place of the percutaneous unit. This therapy is a novel option that should be explored more in the future. Limitations of this study include small sample size and limited long-term follow up.

**Inherited polymorphisms in the mTOR pathway, obesity, and colorectal adenomas**

Minh-Tri Nguyen; Cheryl L. Thompson; Zhengyi Chen; Graham Casey; Li Li

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**Previous submission:**  
**Poster Number:** 29

**Objective:** We hypothesize that SNPs in the mTOR pathway are associated with the risk of colorectal adenomas. We further hypothesize, given the relationship of both the mTOR pathway and colorectal cancer with obesity, that the effect of these SNPs on colorectal adenoma risk is modified by obesity. **Background:** It is estimated that 1 in 20 people will be diagnosed with cancer of the colon or rectum in their lifetime. Colorectal cancer (CRC) is also recognized as the second leading cause of cancer-related deaths in the US, and the third most common cancer in men and women. Carcinogenesis of the colon and rectum frequently starts with the formation of adenomatous polyps and, therefore, the goal of screening for CRC is to identify and remove colorectal polyps before they progress into cancer. Therefore, it is important to understand the genetic and environmental risk factors for the development of colorectal adenomas. Mounting evidence supports obesity as an important lifestyle risk factor for a number of cancers. There is a well-known correlation between insulin resistance and colorectal cancer. The mammalian target of rapamycin (mTOR) pathway has been recognized as an important component of regulating obesity, diabetes, and cancer. Little is known about how genetic variations in the mTOR pathway are associated with the development of colorectal adenomas. **Methods:** We hypothesize that SNPs in the mTOR pathway are associated with the risk of colorectal adenomas. We further hypothesize, given the relationship of both the mTOR pathway and colorectal cancer with obesity, that the effect of these SNPs on colorectal adenoma risk is modified by obesity. Here, we present the results of a prospective study of 1574 patients undergoing screening colonoscopy, of which 312 were
diagnosed with colorectal adenomas. We genotyped 51 SNPs in 9 genes in the mTOR pathway and tested for association with colorectal adenomas, and further stratified these results by obesity. **Results:** Lifestyle inventories and fasting blood samples were prospectively collected from 1574 patients enrolled in an ongoing screening colonoscopy-based cross sectional study. Of these, 433 were subsequently diagnosed with colorectal adenomas at their colonoscopy. 51 haploype tagging single nucleotide polymorphisms (SNPs) within genes in the mTOR pathway were genotyped and tested for association with colorectal adenoma risk using logistic regression models. Of these, four SNPs (rs6972955 (RHEB), rs2299965 (RHEB), rs2250057 (TSC1), rs1076160 (TSC1)) were statistically significantly associated with risk of adenomas. When stratified by obese (BMI > 30) and non-obese (BMI < 30), one SNP (rs2289765 (RPTOR)) reported having a 24% increased risk in the non-obese group (OR = 1.24, 95% CI = 0.87 – 1.77) but also conferred a 25% reduced risk in the obese group (OR = 0.48, Pinteraction = 0.05).

**Conclusion:** In conclusion, we found four SNPs that were associated with the risk in development adenomas, but further research will be needed to replicate our findings as well as further evaluate whether these tagSNPs are representative of the causative variant.

**Continuous Local Anesthetic Use for Pain Control after Cesarean Section and the Effects on Narcotic Use: Preliminary Results of an Ongoing Randomized Control Trail**

Daniel Noble; Keira Urschel, MD; Marilyn Dearmond, MD; Jerome Yaklic, MD

**Presenting Author:** Daniel Noble

**Faculty Mentor:** Jerome Yaklic, MD

**Mentor’s Department:** Obstetrics and Gynecology

**Previous submission:** Poster Number: 31

**Objective:** To investigate the efficacy of continuous abdominal wall and intraperitoneal wound infusion of local anesthetic with a dual catheter elastomer pump to reduce post-operative pain and narcotic use after cesarean section.

**Background:** Pain control in the post-operative patients is constant balance between decreasing pain and avoiding side effects. In the obstetrical patient there is the added desire of patients wanting to bond with their child immediately post-operatively. Localized pain control attempts to decrease the need for narcotic medications and thus avoiding the adverse effects and the use of a catheter delivery system allows for constant delivery of medication. Use of local anesthesia via continuous catheter infusion has been described in obstetrical surgery however there has been no consistency regarding catheter placement. No study to this point has approached pain control using a dual catheter system irrigating both the sub-fascial plane and the uterine incision.

**Methods:** This is a prospective, randomized, placebo controlled, double blind study with preliminary analysis of 30 patients requiring cesarean section were recruited from the obstetric staff service. A double catheter elastomer pump system was placed with catheters in the peritoneal cavity and between the fascia and rectus muscles. Patients received wound instillation with either bupivacaine or normal saline. Measured outcomes were pain scale and cumulative narcotic requirement. **Results:** A total of 30 patients were enrolled in the study with 26 included in the preliminary analysis. There were no differences between the study population demographics. There were no differences cumulative pain medications at 6 hours, 12 hours, 24 hours or 48 hours. There was no difference in patient reported pain scale at 6 hours, 12 hours, or 24 hours. There was a significant decrease in patient reported pain at 48 hours (p =0.011) with the bupivacaine instillation. **Conclusion:** The dual catheter with local anesthetic infusion of bupivacaine has potential to decrease post-operative narcotic use as well as improve pain following cesarean section as seen in previous studies investigating local infusion with single catheter system. Though there were no differences in narcotic requirements over the study period or in pain scales except the 48 hour time point, the variability between patients was extremely large. This in combination with low number of total patients and the need to remove patients from the final analysis suggests the need for continued study of this modality.
Understanding Perspectives on Partnership: The Parent-Pediatrician Partnership Survey
Michael Perry; John Pascoe, MD; Richard Rapp, PhD, Meredith Pesce, BS

Presenting Author: Michael Perry
Faculty Mentor: John Pascoe, MD
Mentor’s Department: Pediatrics
Previous submission: Poster Number: 18

Objective: This paper reports on parents' and pediatricians' perspectives regarding characteristics of successful partnerships between parents and pediatricians. The putative difference regarding these concepts between higher and lower income parents was also examined.

Background: The pediatric literature includes many papers devoted to "evidence based pediatrics", but much less attention has been directed to the concept of "partnership" between parents and pediatricians despite the obvious importance of "partnership" in the continuity of care of children within their families. This study describes the creation of a 38 item (concept) "Parent-Pediatrician Partnership Survey" (PPPS).

Methods: 61 concepts compiled from the literature on partnerships between human service providers and receivers were adapted to be relevant to the parent-pediatrician partnership. The concepts were rated using a three point Likert scale from "not important" to "very important" by 24 general pediatricians and 191 parents from either an higher income private pediatric practice (N=90) or a lower income "universal access" clinic (N=101). A cumulative distribution function was calculated for each of the three subgroups to determine the overall probability that the aggregated score for each item was within one standard deviation (SD) of the means of all the items. This study was approved by the local IRB.

Results: Parents from the universal access clinic reported lower education level and more domestic violence The "mutually endorsed" group of concepts endorsed by all three study subgroups consisted of 26 items (e.g., protect family's privacy), 5 concepts were endorsed by parents, but not pediatricians (e.g., being available any time of night or day) and 7 concepts were endorsed by pediatricians and higher income parents (e.g., involving parents in defining the problem). The 38 items or concepts included in the final survey had "face validity" for the investigators as well as agreement between at least two of the three study subgroups. Conclusion: 26 items retained in the final version of the PPPS were endorsed by all three study subgroups, 12 items were either endorsed by parents, but not pediatricians or endorsed by higher income parents and pediatricians, but not lower income parents. The next step is to administer the PPPS to parents of children being seen in hospital subspecialty clinics as well as parents of children being seen in their primary care pediatricians' offices.

Yelling will not make me learn better!
Natalie Pyatka; Jeff Flinn; Amie Miller; Jacob Brewer; Jinling Wang; Yiman Lou; Caroline G.L. Cao

Presenting Author: Natalie Pyatka
Faculty Mentor: Caroline G.L. Cao
Mentor’s Department: Biomedical, Industrial and Human Factors Engineering
Previous submission: WSU BSoM Central Research Forum, Dayton OH, November 2013
Poster Number: 4

Objective: This research examined the effects of different types of interaction in the attending-learner relationship on the acquisition and performance of laparoscopic skills. Background: Clinical faculty, especially on surgical rotations, are perceived as significant sources of stress for medical learners. 50-85% of medical students claim to have endured some sort of “abuse,” with verbal abuse being the most common.

Methods: 43 1st-4th year medical students learned to perform a pattern cutting task using laparoscopic tools. They were divided into 4 groups: Control – no surgeon present; Present – silent surgeon observer; Encouraging – surgeon provided positive feedback; Stressed – surgeon provided harsh critique. HR, BP, skin conductance, eye blink rate, cortisol, abbreviated STAI test (subjective stress) were the physiological measurements taken. To grade performance, time to task completion and pattern cutting error were measured.

Results: The stressed group had higher perceived level of stress, cortisol levels, BP, skin conductance, eye blink rate, cortisol, abbreviated STAI test (subjective stress) were the physiological measurements taken. To grade performance, time to task completion and pattern cutting error were measured. Results: The stressed group had higher perceived level of stress, cortisol levels, BP, and HR that also remained higher. The stressed group also had the lowest error, but slowest task times. Encouraging group’s perceived level of stress was
Conclusion: In this study, stress led to slower, but more accurate performance. Positive feedback led to faster performance times and faster learning. These results will provide awareness to surgical programs to improve training and patient safety in the operating room.

Elucidating BRG1 mediated epigenetic modifications in lung cancer, and their resultant effect on DNA repair gene expression levels

Udit Singhal; Jinwei Hu; Erica Hlavin Bell, PhD; Arnab Chakravarti, MD

Presenting Author: Udit Singhal
Faculty Mentor: Arnab Chakravarti, MD; Erica Hlavin Bell, PhD

Mentor’s Department: Radiation Oncology, The Ohio State University Wexner Medical Center, Arthur G James Cancer Hospital and Richard J Solove Research Institute

Poster Number: 13

Objective: To assess whether a common mutation in the SWI/SNF chromatin remodeling complex in lung cancer leads to altered gene expression of specific DNA repair proteins. Background: Lung cancer is the third most common malignancy and the leading cause of cancer related mortality in the US. Despite recent developments in the understanding of tumor pathogenesis and therapy, the 5-year overall survival for patients with non-small cell lung cancer (NSCLC) is just 15%. Thus, a clearer understanding of the molecular biology that drives oncogenesis is essential to develop a more comprehensive approach to treatment. Moreover, a better understanding of tumor characteristics at the genetic level could help establish the basis for predicting cancer behavior, prognosis, and treatment response. The SWI/SNF complex, a multi-subunit chromatin remodeling complex composed of either the Brahma (BRM) or Brahma-Related Gene 1 (BRG1) ATP-dependent subunit and its associated proteins known as BAFs (BRG1-BRM associated factors), plays a key role in the epigenetic control of gene expression by physically catalyzing the redistribution and arrangement of nucleosomes on DNA. In addition to its role in DNA repair, DNA replication, and transcriptional regulation, SWI/SNF has been shown to have significant tumor suppressor functionality, and loss of SWI/SNF function predisposes to cancer development and progression, including cancers of the lung. Previous studies have shown that the BRG1 component of SWI/SNF is altered in ~10-20% of primary NSCLC, and patients with BRG1 deficient tumors have decreased survivability when compared to those with sufficient BRG1 expression, likely due to increased genomic instability. Despite its role in tumor surveillance, and its apparent function in nucleotide excision repair (NER) and DNA double-strand break (DSB) repair, few comprehensive studies have analyzed the transcriptional landscape of DNA repair and related pathways that are associated with SWI/SNF alterations. Thus, we sought to bridge this gap in knowledge, and hypothesized that BRG1 mutations cause defects in the epigenetic control of DNA repair pathways, which lead to varied levels of gene expression of enzymes involved in DNA repair, DNA damage signaling, and chromatin remodeling.

Methods: In this investigation, we used a targeted approach to identify changes in gene expression patterns of various DNA repair, DNA damage signaling, and cell cycle processes. To determine if DNA repair related proteins were differentially expressed in BRG1 inactivated and activated cells, we used specific RT-PCR arrays to resolve the mRNA expression profile of genes related to DNA repair, cell cycle regulation, chromatin remodeling, and apoptosis in a panel of 14 BRG1+ and BRG1-lung cancer cell lines, as well as one pair of control and BRG1 knockdown cell lines.

Results: We found that loss of BRG1 leads to widespread, statistically significant dysregulation of genes involved in chromatin remodeling (SMARCA1, SMARCB1, and INO80) and DNA repair (XRCC4, MLH1, RAD23B). This suggests that loss of BRG1 leads to limitations in the transcriptional regulation and control of these genes.

Conclusion: BRG1 plays an important role as a predictive, prognostic biomarker in lung cancer and patients harboring BRG1 deficient lung cancers may be good candidates for DNA-damaging treatment modalities, due to dysregulated expression of enzymes involved in
DNA repair mechanisms. Further investigating the impact of BRG1 alterations in lung cancer will help elucidate the mechanisms by which NSCLC cells proliferate, and could potentially lead to the development of targeted therapeutic techniques and increased patient survival.

**Minimally Invasive Lumbar Decompression via Fluoroscopic Guidance to Treat Spinal Stenosis**
Charley Spear; Brian Dinh; Sindhu Samba; Omar Khan, Rahul Madan; Amol Soin, MD, MBA

*Presenting Author:* Charley Spear; Brian Dinh; Sindhu Samba  
*Faculty Mentor:* Amol Soin, MD, MBA  
*Mentor’s Department:* Surgery  
*Previous submission:* WSU BSoM 4th Annual Medical Student Research Symposium, Dayton OH, April 2012; WSU BSoM 5th Annual Medical Student Research Symposium, Dayton OH, April 2013  
*Poster Number:* 38

**Objective:** Can minimally invasive lumbar decompression be implemented as an acceptable alternative to reduce pain and improve functional status of those with lumbar spinal stenosis?  
**Background:** Lumbar spinal stenosis (LSS) is a common cause of lower back and leg pain associated with vertebral degeneration due to aging. The debilitating nature of LSS has forced millions of individuals living with this condition to seek various options in managing their pain and maintaining acceptable activities of daily life. Standard treatments for LSS include physical therapy, medical management, epidural steroid injections, and laminectomy. Yet, for those patients who have failed conservative treatments and are not qualified surgical candidates, the question arises as to what other options are available to alleviate this pain. Minimally invasive lumbar decompression (MILD) is a technique aimed to benefit such individuals by reducing symptoms of LSS via lumbar decompression without surgical intervention. Under fluoroscopic X-ray guidance, the MILD procedure can successfully perform a laminectomy and percutaneous debulking of the ligamentum flavum, utilizing far less invasive techniques.  

**Methods:** The inclusion criteria for those patients in this case series were the following: symptomatic lumbar spinal stenosis caused primarily by hypertrophy of the ligamentum flavum, failed outcomes of conservative therapy, MRI-confirmed central spinal canal cross-sectional area less than 100mm^2, MRI-confirmed ligamentum flavum thickness greater than or equal to 2.5mm, anterior spondylolisthesis less than 5mm, and the ability to ambulate at least 10 feet without aid before being limited by pain. Ten patients fit these criteria. These patients were first asked to complete a preoperative Visual Analog Scale (VAS) pain score before undergoing the MILD procedure as performed by Dr. Amol Soin. Intraoperative epidurography was performed in the pre-op and post-op periods to assess the degree of decompression of the stenotic area. Follow-up occurred at 2 and 6 weeks postoperatively at which times patients again filled out VAS pain surveys. Patients reported their pain score through out their pre and post-op course utilizing the VAS pain score from 0 to 10. At 2 and 6 weeks post-op patients reported perceived percentage improvement in physical function.  

**Results:** Pain scores from the 10 subjects were recorded and numerical averages were obtained resulting in the following: pre-op VAS score = 8.4, post-op VAS score at 2 weeks = 3.6, post-op VAS score at 6 weeks = 3.8, perceived percentage of functional improvement at 2 weeks = 76%, perceived percentage of functional improvement at 6 weeks = 82%. Radiographic visual evidence of epidurography performed pre and post-op showed a relative increase in flow within the epidural space postoperatively and an increased spread of contrast in the cephalic and caudal locations.  

**Conclusion:** Analysis of the subjective patient surveys showed that MILD indeed represents a potentially acceptable alternative for trained physicians to manage pain of nonsurgical LSS candidates. Not only does this novel outpatient technique benefit patients in lowering pain scores and perceived improvement in functional status, but its limited invasiveness, sedation, hospital stay, and expense shows increasing promise. In light of this data, the current process in the management of patients with LSS may be reconsidered. Future cost and risk analysis must be performed before the use of MILD can be considered a first line treatment of spinal stenosis in nonsurgical candidates. Additional research into this procedure must be undertaken as this study
was limited by the number of subjects and the use of subjective patient surveys in place of objective measurements for physical performance.

Iliopsoas Syndrome in Dancers
Catherine Laible, MD; David Swanson, MS; Garret Garofolo, BS; Donald Rose, MD

Presenting Author: David Swanson
Faculty Mentor: Donald Rose, MD
Mentor’s Department: Orthopedic Surgery, NYU Hospital for Joint Diseases
Previous submission:
Poster Number: 17

Objective: To report the incidence, clinical findings, treatment protocol, and results of treatment for iliopsoas syndrome in a population of dancers. Background: Coxa saltans refers to a constellation of diagnoses that cause snapping of the hip and is a major cause of anterior hip pain in dancers. When the internal type is accompanied by weakness or pain, it is referred to as iliopsoas syndrome. Iliopsoas syndrome is the result of repetitive active hip flexion in abduction and can be confused with other hip pathology, most commonly of labral etiology. Methods: A retrospective database review of 653 consecutive patients evaluated for musculoskeletal complaints over a 3-year period was completed. The diagnosis of iliopsoas syndrome was made based on anterior hip or groin pain, weakness with resisted hip flexion in abduction, or symptomatic clicking or snapping with a positive iliopsoas test. Patients identified with iliopsoas syndrome were further stratified according to age at time of onset, insidious versus acute onset, duration of symptoms, side of injury, presence of rest pain, pain with activities of daily living, and associated lower back pain. All patients diagnosed with iliopsoas syndrome underwent physical therapy, including hip flexor stretching and strengthening, pelvic mobilization, and modification of dance technique or exposure as required. Results: A total of 49 dancers were diagnosed and treated for iliopsoas syndrome. Within this injured population of 653 patients, the incidence in female dancers was 9.2%, significantly higher than that in male dancers (3.2%). The mean age at the time of injury was 24.6 years. The incidence of iliopsoas syndrome in dancers younger than 18 years was 12.8%, compared with 7% in dancers older than 18 years. Student dancers had the highest incidence (14%), followed by amateur dancers (7.5%), while professional dancers had the lowest incidence (4.6%). All patients responded to conservative treatment, and no patients required corticosteroid injections or surgical intervention. Conclusion: This is the largest series reported to date of iliopsoas syndrome in the dance population, treated noninvasively. This study supports that conservative treatment with nonsteroidal anti-inflammatory medication, activity modification, and a physical therapy regimen specific to the iliopsoas should be the primary treatment for patients with iliopsoas syndrome.

Subdiaphragmatic Extralobar Pulmonary Sequestration: A Case Report
David To; Dawn Light

Presenting Author: David To
Faculty Mentor: Dawn Light, MD
Mentor’s Department: Pediatrics
Previous submission:
Poster Number: 10

Objective: This is a presentation of a rare subtype of pulmonary sequestration that is extralobar and subdiaphragmatic. Background: Pulmonary sequestration is the separation of lung parenchyma from the tracheobronchial tree with concomitant separation of blood supply from the pulmonary arteries; blood is then typically derived from the aorta (1). There are two types of pulmonary sequestration intralobar and extralobar. Intralobar accounts for 75-85% of cases and its typical pathology involves: chronic inflammation, fibrosis, and cystic changes (2). Extralobar sequestration comprises the other 15-25% of patients and its pathology involves: diffuse dilation of bronchioles, alveoli, and subpleural lymphatic vessels with occasional cystic areas. Arterial supply from the aorta is typical and is useful in distinguishing the lesion from a congenital cystic adenomatoid malformation or bronchial atresia; venous drainage is usually through the azygos vein or inferior vena cava (2). Methods: Patient is a 38-week term male with a left-sided peri-adrenal mass that was discovered at 32 weeks gestation and was stable over multiple
ultrasounds. Ultrasound showed the mass was 3 cm in its greatest diameter and was mostly echogenic with sonolucent areas resembling cysts or necrosis. Doppler showed the presence of blood flow. CT showed a triangular mass that was 2.2 x 1.4 x 2.9 cm and failed to enhance post-contrast. Differential diagnosis included neuroblastoma and pulmonary sequestration. The mass was resected and found to contain pulmonary tissue confirming the diagnosis of subdiaphragmatic extralobar pulmonary sequestration. Results: Extralobar sequestration is more common in males by 4:1 ratio and most often detected on ultrasound, as early as week 16, as a left-sided solid triangular hyperechoic mass with 90% located supradiaphragmatic and 10% subdiaphragmatic (2,3). Neuroblastoma is usually right sided, cystic, and identified in the third trimester while subdiaphragmatic extrapulmonary sequestration is echogenic, left-sided, and can be detected in the second trimester (4). The patient presented was male and had a left-sided mass with blood flow and possible cystic areas. Given the possible risk of neuroblastoma, the mass was resected in order to confirm diagnosis. Conclusion: The diagnosis of pulmonary sequestration typically has a good prognosis as compared with the more concerning alternative, neuroblastoma, but the prognosis is dependent upon associated anomalies. The incidence of concomitant anomalies is 58% in extralobar sequestrations (3). Anomalies include: diaphragmatic hernia, tracheoesophageal fistula, bronchogenic cysts, cardiac defects, polyhydramnios, and nonimmune hydrops (3). Recognizing the possibility of subdiaphragmatic extralobar pulmonary sequestration in a differential allows for preemptive or optimal management of these anomalies with possible advance planning for surgical correction.

Meeting People Where They Are: A Pilot Project to Improve Health Communication in the Dayton Vietnamese Community
H. Tran; H. Phuoc; A.E. Nguyen; A.K. Fernandes, MD, PhD

Presenting Author: Huong-Thao Tran
Faculty Mentor: Ashley K. Fernandes, MD, PhD

Objective: Our project sought to improve health literacy and communication in the Vietnamese community of Dayton by first embedding an educator who could receive feedback regarding the community’s needs. An adaptive health education program was then created using multi-media formats to encourage healthy lifestyles; expand cultural competency; and promote health professions in the Vietnamese community. Our hypothesis was that knowledge and confidence about community-specific health needs would be significantly different between groups who attended the health discussion sessions and those who did not. We also felt that parents would encourage their children to attend the health professions panel and tour of the medical school.

Background: The Vietnamese community in the US is growing. The health of Vietnamese persons, however, lags behind other Asian groups. Vietnamese have higher rates of cardiovascular disease and hypertension, while having lower reporting and treatment of other serious conditions. Vietnamese people are also underrepresented in the health professions.

Methods: In 2013, the author held weekly interactive health communication sessions, in the Vietnamese language, at a local church. In the first session, participants were asked what they wanted to learn regarding their health. The next seven weeks were devoted to answering these learner-generated questions through interactive discussions, bilingual handouts, YouTube instructional videos, and hands-on healthy cooking sessions. The final event was a tour of the medical school and Q&A panel on careers in science. All participants were given pre-session and identical post-session assessments of their confidence in caring for theirs and their family’s health. Participants were also given a cognitive assessment of the selected health topics discussed one month after completion of the program, and scores were compared to those who did not attend sessions. Results: Participants scored significantly higher (61.22%) in the health knowledge assessment compared to those who did not attend any sessions (45.88%, p=0.0006). The level of
confidence participants had about their health competence, and knowledge about specific health problems within the Vietnamese community, were significantly higher in the post-session surveys. The tour of medical school and the panel discussion were also well-received. **Conclusion:** Interactive health discussions significantly increased health literacy and confidence within the Dayton Vietnamese community, while expanding the cultural competency and knowledge of medical students. This pilot showed an inexpensive, reproducible format could be used in other underrepresented populations, here and abroad, to increase literacy, confidence in health, and promote health professions.

**Assessment of Medical Students’ Proficiency in Dermatology: Are Medical Students Adequately Prepared to Diagnose and Treat Common Dermatologic Conditions?**

Catherine Ulman; S. Bruce Binder, MD,PhD; Nicole J. Borges, PhD

**Presenting Author:** Catherine Ulman

**Faculty Mentor:** S. Bruce Binder, MD,PhD; Nicole J. Borges, PhD

**Mentor’s Department:** Family Medicine; Community Health

**Previous submission:** AAMC Central Group on Educational Affairs, Cleveland OH, March 2014; WSU BSoM Research Learning Community Seminar Series, Dayton OH, February 2014

**Poster Number:** 3

**Objective:** Are fourth-year medical students adequately prepared to diagnose and treat common dermatologic conditions? **Background:** Numerous studies have concluded that medical students receive insufficient training in dermatology. One study found that half of the medical schools surveyed provided 10 or fewer hours of instruction in dermatology, and 8% of the schools required no instruction in dermatology. The limited curriculum hours allotted to dermatology in medical school runs counter to the increasing prevalence of dermatologic conditions in the primary care outpatient setting. Additionally, many primary care residents receive no additional training in dermatology. However, PCPs are often the initial contact for patients with dermatologic conditions. These studies raise the question of whether medical schools adequately prepare medical students to diagnose and treat common dermatologic conditions. **Methods:** With institutional review board approval, a 15-question anonymous multiple choice quiz covering fifteen diseases was developed to test student’s ability to diagnose and treat common dermatologic conditions. The quiz also contained five questions that assessed students’ confidence in their ability to diagnose common dermatologic conditions, their perception of whether they were receiving adequate training in dermatology, and their preferences for additional training in dermatology. All fourth-year students in the Class of 2014 (N = 107) at one United States medical school were invited to take the quiz, and 85 students completed it (79% response rate). To increase the response rate, the survey was completed after an academic exercise at which attendance was required. The five additional questions were completed in 81 surveys and the dermatology diagnosis and treatment questions were entirely filled out in 74 surveys. Incomplete quizzes were not included in the final average score calculations. **Results:** In general we found that students do not feel confident in their ability to diagnose or treat common dermatologic conditions. Additionally, 88% of students believe that they received inadequate training in dermatology during medical school, and students almost unanimously (95%) agreed that there should be a general dermatology lecture during third year. On average, students scored 47% on the diagnostic questions and an average score of 43% on the treatment questions. Examination of responses to individual questions based on content being tested revealed that students were proficient in the diagnosis of only psoriasis, tinea versicolor, and melanoma, and students were proficient in the treatment of only verruca vulgaris and melanoma. **Conclusion:** Since half of medical schools provide 10 or fewer hours of instruction in dermatology, our medical school already provides more hours than the majority of medical schools, and yet the students are still not proficient in dermatology. This finding suggests that the majority of U.S. medical students, if tested, would
be found inadequate in their ability to diagnose and treat common dermatologic conditions. This study further supports the hypothesis that most medical students are being inadequately trained in dermatology. If possible, schools should test their students and assess whether they are being adequately trained in dermatology, and whether additional curriculum hours should be assigned for dermatologic training. Such assessment is especially important considering that medical students who match into primary care residencies often receive no additional dermatology training in residency.

Channelopathy contributes to proprioceptive deficits following chemotherapy
Jacob Vincent; Paul Nardelli; Krystyna Wieczerak; Mark Rich, MD, PhD; Timothy C Cope, PhD

Presenting Author: Jacob Vincent
Faculty Mentor: Timothy C. Cope, PhD
Mentor’s Department: Neuroscience, Cell Biology, & Physiology
Previous submission: Society for Neuroscience, San Diego CA, October 2013
Poster Number: 1

Objective: We speculate that the loss of sustained firing observed in primary muscle spindle afferents following Oxaliplatin (OX) treatment is related to some effect of OX on persistent inward currents (PICs) involved in either transduction or encoding. Further, we hypothesize that the observed loss of sustained firing will contribute to motor behavior deficits. Background: Among the neurotoxic effects of OX, recent in vivo studies (Bullinger et al., J. Neurophysiol. 2011) of rat demonstrated abnormalities in sensory encoding by muscle proprioceptors. For many weeks following IP OX injection, primary muscle spindle afferents (IA) lost their ability to fire during sustained muscle stretch, i.e. they became rapidly adapting. Methods: In the present study, we tested the effects of PICs on muscle spindle firing by pharmacologically blocking PICs in terminal experiments performed on isoflurane-anesthetized normal adult wistar rats. Action potentials were recorded intra-axonally from muscle proprioceptors in response to muscle stretch. After sampling several afferents under these conditions we injected (ip) one of two anti-epileptic agents (riluzole or phenytoin), which are known to block PICs among other effects. In separate studies, we have begun to examine motor behaviors, which may be expected to be altered by the impairment described above for proprioceptors. Rats were treated as described above with OX and a variety of measures were made to assess the systemic effects of OX together with the animal’s ability to walk on a balance beam. Results: Each of the above mentioned agents (riluzole or phenytoin) reproduced the previously described effects of OX. Specifically, firing during the hold phase of stretch was significantly shortened. Action potential encoding during the ramp phase of stretch and during vibration was unaltered as it was during OX treatment. In motor behavior studies, OX treated rats exhibited distinctive failure in walking on the balance beam, whereas untreated rats exhibited virtually 100% success in foot placement on the balance beam, OX -treated rats showed 50% slips and missed steps. Treated rats also exhibited errors in achieving support as the hindlimb reached for the balance beam after a slip. This disability did not seem to be explained by a loss of touch sensation. Conclusion: Riluzole and phenytoin reproduced the previously described effects of OX. Specifically, the firing during the hold phase of stretch was significantly shortened. Action potential encoding during the ramp phase of stretch and during vibration was unaltered as it was during OX treatment. Further, OX treated animals displayed difficulty with limb placement and an increased number of slips on balance beam walking. These combined observations suggest that OX neurotoxicity targets specific ion channels and encoding features, producing a proprioceptive defect.
1. **Channelopathy contributes to proprioceptive deficits following chemotherapy**
   Jacob Vincent; Paul Nardelli; Krystyna Wieczerak; Mark Rich, MD, PhD; Timothy C Cope, PhD
   
   **Presenting Author:** Jacob Vincent
   **Faculty Mentor:** Timothy C. Cope, PhD
   **Mentor’s Department:** Neuroscience, Cell Biology, & Physiology
   **Previous submission:** Society for Neuroscience, San Diego CA, October 2013

2. **Treatment of Critical Illness Myopathy**
   Elliott Hayden; Qingbo Wang; Mark M. Rich, MD, PhD
   
   **Presenting Author:** Elliott Hayden
   **Faculty Mentor:** Mark M. Rich, MD, PhD
   **Mentor’s Department:** Neuroscience, Cell Biology, & Physiology
   **Previous submission:**

3. **Assessment of Medical Students’ Proficiency in Dermatology: Are Medical Students Adequately Prepared to Diagnose and Treat Common Dermatologic Conditions?**
   Catherine Ulman; S. Bruce Binder, MD,PhD; Nicole J. Borges, PhD
   
   **Presenting Author:** Catherine Ulman
   **Faculty Mentor:** S. Bruce Binder, MD,PhD; Nicole J. Borges, PhD
   **Mentor’s Department:** Family Medicine; Community Health
   **Previous submission:** AAMC Central Group on Educational Affairs, Cleveland OH, March 2014; WSU BSoM Research Learning Community Seminar Series, Dayton OH, February 2014

4. **Yelling will not make me learn better!**
   Natalie Pyatka; Jeff Flinn; Amie Miller; Jacob Brewer; Jinling Wang; Yiman Lou; Caroline G.L. Cao
   
   **Presenting Author:** Natalie Pyatka
   **Faculty Mentor:** Caroline G.L. Cao
   **Mentor’s Department:** Biomedical, Industrial and Human Factors Engineering
   **Previous submission:** WSU BSoM Central Research Forum, Dayton OH, November 2013

5. **Is Repeat CT Necessary In Mild Traumatic Brain Injury In the Elderly?**
   Zachary Il’Giovine; Damon Campbell; Melissa Whitmill; Ronald Markert; Jonathan M. Saxe
   
   **Presenting Author:** Zachary Il’Giovine
   **Faculty Mentor:** Jonathan M. Saxe, MD
   **Mentor’s Department:** Surgery
   **Previous submission:** International Brain Injury Association Tenth World Congress on Brain Injury; San Francisco CA, March 2014
6. Do All Elderly Patients With Mild Traumatic Brain Injury Require Admission?
Zachary Il’Giovine; Damon Campbell; Melissa Whitmill; Ronald Markert; Jonathan M. Saxe

Presenting Author: Zachary Il’Giovine
Faculty Mentor: Jonathan M. Saxe, MD
Mentor’s Department: Surgery
Previous submission: International Brain Injury Association Tenth World Congress on Brain Injury; San Francisco CA, March 2014

7. Cost-Efficacy of Laparoscopic Cholecystectomy Using the Harmonic Scalpel
C. Anderson; M.S. Walusimbi; A.P. Ekeh; K.M. Hendershot; D. Lebamoff; P. Williams; J.M. Saxe; K.M. Tchorz; M.L. Whitmill; R.J. Woods; M.P. Roelle; L.M. Barney; M.C. McCarthy

Presenting Author: Christina Anderson
Faculty Mentor: Mbaga Walusimbi, MD, FACS
Mentor’s Department: Surgery
Previous submission:

8. The Effect of Early Chemoprophylaxis on Deep Venous Thrombosis and Inferior Vena Cava Filter Rates in Head Injured Patients
P. Hutchinson; P. Parikh; M. Walusimbi; M. Whitmill; A.P. Ekeh

Presenting Author: Paul Hutchinson
Faculty Mentor: Peter Ekeh, MD
Mentor’s Department: Surgery
Previous submission: European Conference of Trauma and Emergency Surgery, Frankfurt Germany, May 2014

9. CT scan or physical exam: which is a better diagnostic tool for incarcerated hernia?
Safoora Choudry; Mbaga Walusimbi, MD, FACS

Presenting Author: Safoora Choudry
Faculty Mentor: Mbaga Walusimbi, MD, FACS
Mentor’s Department: Surgery
Previous submission:

10. Subdiaphragmatic Extralobar Pulmonary Sequestration: A Case Report
David To; Dawn Light

Presenting Author: David To
Faculty Mentor: Dawn Light, MD
Mentor’s Department: Pediatrics
Previous submission:

11. A Chiari I Malformation Presenting as Asymptomatic Papilledema
Brent Aebi; Dawn Light, MD

Presenting Author: Brent Aebi
Faculty Mentor: Dawn Light, MD
Mentor’s Department: Pediatrics
Previous submission:
12. Healthy Way Initiative: A Closer Look at Inpatient Units
   Mira Trivedi; Zenar Tekeste; Jay Ingram; Shalini Forbis, MD; Ranjana Sinha, MD
   
   Presenting Author: Jay Ingram
   Faculty Mentor: Ranjana Sinha, MD
   Mentor’s Department: Pediatrics
   Previous submission: University of Dayton Healthcare Symposium, Dayton OH, April 2014

13. Elucidating BRG1 mediated epigenetic modifications in lung cancer, and their resultant effect on DNA repair gene expression levels
   Udit Singhal; Jinwei Hu; Erica Hlavin Bell, PhD; Arnab Chakravarti, MD
   
   Presenting Author: Udit Singhal
   Faculty Mentor: Arnab Chakravarti, MD; Erica Hlavin Bell, PhD
   Mentor’s Department: Radiation Oncology, The Ohio State University Wexner Medical Center, Arthur G James Cancer Hospital and Richard J Solove Research Institute

14. An Institution’s Experience with Irreversible Electroporation in the Pancreas
   Benjamin Bates; James Ouellette, DO; Shannon Kauffman, MD; Minia Hellan, MD
   
   Presenting Author: Benjamin Bates
   Faculty Mentor: James Ouellette, DO
   Mentor’s Department: Surgery
   Previous submission: Society of Surgical Oncology's Cancer Symposium, Phoenix AZ, March 2014

15. Irreversible Electroporation: An Institution Experience
   Benjamin Bates; Minia Hellan, MD; Shannon Kauffman, MD; James Ouellette, DO
   
   Presenting Author: Benjamin Bates
   Faculty Mentor: James Ouellette, DO
   Mentor’s Department: Surgery
   Previous submission: Society for Surgery of the Alimentary Tract, Chicago IL, May 2014 (Accepted)

16. Effect of a backboard on depth of chest compressions on an Emergency Room gurney during Advanced Cardiovascular Life Support
   Eric Fischer; Raymond Ten Eyck MD, MPH, FACEP
   
   Presenting Author: Eric Fischer
   Faculty Mentor: Raymond Ten Eyck MD, MPH, FACEP
   Mentor’s Department: Emergency Medicine
   Previous submission:

17. Iliopsoas Syndrome in Dancers
   David Swanson, MS; Catherine Laible, MD; Garret Garofolo, BS; Donald Rose, MD
   
   Presenting Author: David Swanson
   Faculty Mentor: Donald Rose, MD
   Mentor’s Department: Orthopedic Surgery, NYU Hospital for Joint Diseases
   Previous submission:
18. **Understanding Perspectives on Partnership: The Parent-Pediatrician Partnership Survey**
   Michael Perry; John Pascoe, MD; Richard C Rapp, PhD, Meredith Pesce, BS
   
   **Presenting Author:** Michael Perry  
   **Faculty Mentor:** John Pascoe, MD  
   **Mentor’s Department:** Pediatrics  
   **Previous submission:**

19. **Understanding Parent-Pediatrician Partnerships: The Factor Structure of the Parent Pediatrician Partnership Scale**
   Michael Dressing; John Pascoe, MD; Richard C Rapp, PhD  
   
   **Presenting Author:** Michael Dressing  
   **Faculty Mentor:** John Pascoe, MD  
   **Mentor’s Department:** Pediatrics  
   **Previous submission:**

20. **Barriers to Successful Prevention and Management of Pediatric Obesity: A Review of the Literature**
   Nicole Craker; Rebecca Beesley; Sabrina Neeley, PhD  
   
   **Presenting Author:** Nicole Craker  
   **Faculty Mentor:** Sabrina Neeley, PhD  
   **Mentor’s Department:** Community Health  
   **Previous submission:** University of Dayton Healthcare Symposium, Dayton OH, April 2014

21. **Subdural empyema secondary to sinusitis in an adolescent**
   Adam Altman; Stefanie K. Horne, MD  
   
   **Presenting Author:** Adam Altman  
   **Faculty Mentor:** Stefanie K. Horne, MD  
   **Mentor’s Department:** Otolaryngology  
   **Previous submission:**

22. **Knee Osteoarthritis: Non-surgical treatment patient outcomes**
   Antimo Gazzillo; Julie Shott, MD  
   
   **Presenting Author:** Antimo Gazzillo  
   **Faculty Mentor:** Julie Shott, MD  
   **Mentor’s Department:** Sports Medicine, Orthopedic Associates of Dayton  
   **Previous submission:**

23. **Management of a Patient with Congenital Intracranial Immature Teratoma**
   Kyle A. Davis; J. Todd Boyd, MD  
   
   **Presenting Author:** Kyle A. Davis  
   **Faculty Mentor:** J. Todd Boyd, MD  
   **Mentor’s Department:** Pathology, Dayton Children’s Hospital  
   **Previous submission:**
Kyle A. Davis; Tosha Cumbee, MSW; Basel Yanes, MD

Presenting Author: Kyle A. Davis  
Faculty Mentor: Basel Yanes, MD  
Mentor’s Department: Internal Medicine  
Previous submission:

25. A rare infection in a patient with advanced AIDS
Shaina Hecht; Kunal Desai, MD; Hari Polenakovik, MD

Presenting Author: Shaina Hecht  
Faculty Mentor: Hari Polenakovik, MD  
Mentor’s Department: Internal Medicine  
Previous submission:

26. Language barriers in local medicine: Interviews with Spanish-speaking patients in the Greater Dayton Area
Danielle Fleissig; Shalini Forbis, MD, MPH

Presenting Author: Danielle Fleissig  
Faculty Mentor: Shalini Forbis, MD, MPH  
Mentor’s Department: Pediatrics  
Previous submission:

27. Does Participation in Team-Based Learning Affect Medical Students’ Longer-Term Learning?
Hicham Ismail; Paul Koles, MD; Adrienne Stolfi, MSPH; Adrian Corbett, PhD; Khalid Elased, PhD; Nicole Borges, PhD; Dean Parmelee, MD

Presenting Author: Hicham Ismail  
Faculty Mentor: Paul Koles, MD  
Mentor’s Department: Pathology  
Previous submission: WSU BSoM Central Research Forum, Dayton OH, November 2013; AAMC Central Group on Educational Affairs, Cleveland OH, March 2014

28. The Effects of tPA on Whole Blood Using Sonoclot Analysis
Ronald Erdelyi; Paul Craig; Feras Deek; Mubin Syed, MD

Presenting Author: Ronald Erdelyi  
Faculty Mentor: Mubin Syed, MD  
Mentor’s Department: Radiology, Private Practice  
Previous submission:

29. Inherited polymorphisms in the mTOR pathway, obesity, and colorectal adenomas
Minh-Tri Nguyen; Cheryl L. Thompson; Zhengyi Chen; Graham Casey; Li Li

Presenting Author: Minh-Tri Nguyen  
Faculty Mentor: Li Li, MD, PhD; Cheryl L. Thompson, PhD  
Mentor’s Department: Family Medicine, Case Western Reserve University  
Previous submission:
30. Targeted alpha particle irradiation as a glioblastoma therapy
Ahmed Hawash; Katja Behling; David Scheinberg; Michael McDevitt

Presenting Author: Ahmed Hawash
Faculty Mentor: Michael McDevitt
Mentor’s Department: Medicine and Radiology, Molecular Pharmacology and Chemistry
Previous submission: Memorial Sloan Kettering Cancer Center Summer Medical Student Research Fellowship Poster Session, August 2013

31. Continuous Local Anesthetic Use for Pain Control after Cesarean Section and the Effects on Narcotic Use: Preliminary Results of an On Going Randomized Control Trail
Daniel Noble; Keira Urschel, MD; Marilyn Dearmond, MD; Jerome Yaklic, MD

Presenting Author: Daniel Noble
Faculty Mentor: Jerome Yaklic, MD
Mentor’s Department: Obstetrics and Gynecology
Previous submission:

32. Meeting People Where They Are: A Pilot Project to Improve Health Communication in the Dayton Vietnamese Community
H. Tran; H. Phuoc; A.E. Nguyen; A.K. Fernandes, MD, PhD

Presenting Author: Huong-Thao Tran
Faculty Mentor: Ashley K. Fernandes, MD, PhD
Mentor’s Department: Community Health, Pediatrics
Previous submission:

33. Assessing Humility in Medical Students
Kevin Bree; Jason Hao; Adrienne Stolfie, MSPH; Ashley K. Fernandes, MD, PhD

Presenting Author: Kevin Bree
Faculty Mentor: Ashley K. Fernandes, MD, PhD
Mentor’s Department: Community Health, Pediatrics
Previous submission:

34. Assessing Attitudes of Medical Students Towards the Poor
Danial Jilani; Ashley K. Fernandes, MD, PhD; Nicole J. Borges, PhD; Karen Kirkham, MD

Presenting Author: Danial Jilani
Faculty Mentor: Nicole J. Borges, PhD
Mentor’s Department: Community Health
Previous submission:

35. High-Frequency Electric Nerve Block in Treating Residual Limb Pain
Danial Jilani; Omar Khan; Amol Soin, MD, MBA; Kyle Leggett; Rahul Madan

Presenting Author: Kyle Leggett
Faculty Mentor: Amol Soin, MD, MBA
Mentor’s Department: Surgery
Previous submission: WSU BSoM 4th Annual Medical Student Research Symposium, Dayton OH, April 2012; WSU BSoM 5th Annual Medical Student Research Symposium, Dayton OH, April 2013
36. The Effectiveness of High Frequency Alternating Current Nerve Block in Reducing Residual Limb Pain in Lower Limb Amputees
Lauren Myers; Anna Hardy; Omar Khan; Aneesh Chaudhry; Rahul Madan; Amol Soin, MD, MBA

Presenting Author: Lauren Myers; Anna Hardy
Faculty Mentor: Amol Soin, MD, MBA
Mentor’s Department: Surgery
Previous submission:

37. Reduction in Narcotic Usage Following Implantation of a High-Frequency Electric Nerve Block Device in Patients with Lower Extremity Limb Loss
Nicholas Moore; Omar Khan; Aneesh Chaudhry; Amol Soin, MD, MBA

Presenting Author: Nicholas Moore
Faculty Mentor: Amol Soin, MD, MBA
Mentor’s Department: Surgery
Previous submission:

38. Minimally Invasive Lumbar Decompression via Fluoroscopic Guidance to Treat Spinal Stenosis
Charley Spear; Brian Dinh; Sindhu Samba; Omar Khan, Rahul Madan; Amol Soin, MD, MBA

Presenting Author: Charley Spear; Brian Dinh; Sindhu Samba
Faculty Mentor: Amol Soin, MD, MBA
Mentor’s Department: Surgery
Previous submission: WSU BSoM 4th Annual Medical Student Research Symposium, Dayton OH, April 2012; WSU BSoM 5th Annual Medical Student Research Symposium, Dayton OH, April 2013

39. Continuation of long-term comparison spinal cord stimulation techniques using an Observational Mechanical Gateway
Matt Hiskey; Sarah Chinnapan; Laura DeVita; Omar Khan; Sudarshan Mullapudi; Amol Soin, MD, MBA

Presenting Author: Matt Hiskey
Faculty Mentor: Amol Soin, MD, MBA
Mentor’s Department: Surgery
Previous submission: WSU BSoM 4th Annual Medical Student Research Symposium, Dayton OH, April 2012; WSU BSoM 5th Annual Medical Student Research Symposium, Dayton OH, April 2013

40. The use of indirect video laryngoscopy in difficult airways
Joseph Capichioni; Amol Soin; Omar Kahn; Rahul Madan

Presenting Author: Joseph Capichioni
Faculty Mentor: Amol Soin, MD, MBA
Mentor’s Department: Surgery
Previous submission: WSU BSoM 4th Annual Medical Student Research Symposium, Dayton OH, April 2012; WSU BSoM 5th Annual Medical Student Research Symposium, Dayton OH, April 2013
Medical Student Research Grants

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Kara Joseph (Class of 2015)
Medical Student Research Grant - $2500
Project: “Surgical Repair of Aortic Transections: Long Term Implications and Outcomes.”
Faculty Mentor: Priti Parikh, Ph.D.; Department of Surgery

Robert Beaulieu (Class of 2014)
Medical Student Research Travel Award - $800
Presentation: “Early Prediction of Trauma Patient Discharge Disposition”
Conference: Academic Surgical Congress National Conference, February 4-6, 2014; San Diego, CA
Faculty Mentor: Priti Parikh, Ph.D.; Department of Surgery

Paul Craig (Class of 2014)
Medical Student Research Travel Award - $800
Presentation: “Hernia Repairs and Outcomes: Does Gender Matter?”
Conference: 2014 Scientific Meeting of the Southeastern Surgical Conference, February 22-25, 2014; Savannah, GA
Faculty Mentor: Jonathan Saxe, M.D.; Department of Surgery

Meaghan Ebetino (Class 2013)
Medical Student Research Travel Award - $800
Presentation: “Evaluating The Impact Of A Finding Meaning In Medicine© Group For Medical Students In The Clerkship Years”
Conference: Research in Medical Education (RIME) Conference at AAMC Annual Meeting, Nov 1-6, 2013; Philadelphia, PA
Faculty Mentors: Evangeline Andarsio, M.D., and Karen Kirkham, M.D.; Department of Internal Medicine

Elizabeth Shanika Esparaz (Class 2013)
Medical Student Research Travel Award - $600
Presentation: “4th Year Medical Students: How Prepared Are They To Diagnose And Manage Common Ocular Conditions?”
Conference: Research in Medical Education (RIME) Conference at AAMC Annual Meeting, Nov 1-6, 2013; Philadelphia, PA
Faculty Mentor: Bruce Binder, M.D. Ph.D.; Department of Family Medicine

Christopher Heid (Class of 2015)
Medical Student Research Travel Award - $800
Presentation: “Motorcycles Versus All-Terrain Vehicles: A Comparison Of Injuries”
Conference: Academic Surgical Congress National Conference, February 4-6, 2014; San
Faculty Mentor: A. Peter Ekeh, M.D., M.P.H.; Department of Surgery
Paul Hutchinson (Class of 2015)
Medical Student Research Travel Award - $800
Presentation: “The Effect of Early Chemoprophylaxis on Deep Venous Thrombosis and Inferior Vena Cava Rates in Head Injured Patients”
Conference: 15th European Congress of Trauma and Emergency Surgery, May 24-27 2014; Frankfurt, Germany
Faculty Mentor: A. Peter Ekeh, M.D., M.P.H.; Department of Surgery

Zachary Il’Giovine (Class of 2015)
Medical Student Research Travel Award - $800
Presentation: “Platelet Function In Traumatic Brain Injury; Does The Type Of Test Matter?”
Conference: 15th European Congress of Trauma and Emergency Surgery, May 24-27 2014; Frankfurt, Germany
Faculty Mentor: Jonathan Saxe, M.D.; Department of Surgery

Michael Perry (Class of 2014)
Medical Student Research Travel Award - $800
Presentation: “Mothers’ Depressive Symptoms and Their Communities’ Social Capital”
Conference: Pediatric Academic Societies Annual Meeting, May 3-6 2014; Vancouver, BC
Faculty Mentor: John Pascoe, M.D., M.P.H.; Department of Pediatrics

Meredith Pesce (Class of 2014)
Medical Student Research Travel Award - $800
Presentation: “Understanding Perspectives on Partnership: The Parent-Pediatrician Partnership Survey”
Conference: Pediatric Academic Societies Annual Meeting, May 3-6 2014; Vancouver, BC
Faculty Mentor: John Pascoe, M.D., M.P.H.; Department of Pediatrics

Catherine Ulman (Class of 2014)
Medical Student Research Travel Award - $800
Presentation: “Assessment of Medical Students’ Proficiency in Dermatology: Are Medical Students Adequately Prepared to Diagnose and Treat Common Dermatologic Conditions?”
Conference: AAMC Central Group on Educational Affairs (CGEA) Annual Meeting, March 27-29, 2014; Cleveland Clinic, Cleveland, OH
Faculty Mentor: Bruce Binder, M.D. Ph.D.; Department of Family Medicine
ACKNOWLEDGEMENTS

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