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

Wright State University Boonshoft School of Medicine Office of Research Affairs

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PROCEEDINGS

**Wright State University
Boonshoft School of Medicine
Seventh Annual Medical Student
Research Symposium**

Celebrating Medical Student Scholarship

**April 8, 2015
Gandhi Medical Education Center
White Hall
5:45 – 8:00 PM**



Symposium Directors: Adam Deardorff, Ahmed Hawash, Jacob Vincent
Associate Symposium Directors: Larrilyn Yelton, Zach Braunstein
Proceedings Editor: Jacob Vincent

RESEARCH LEARNING COMMUNITY

The Seventh 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
medicine.wright.edu/research/research-learning-community

Proceedings, 2014 Medical Student Research Symposium
http://corescholar.libraries.wright.edu/ra_symp/5

Proceedings, 2013 Medical Student Research Symposium
http://corescholar.libraries.wright.edu/ra_symp/4

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

2015 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 Research Learning Community is proud to announce the 2015 BSOM Distinguished Scholar Award recipients:

Amanda Freeman, MD/PhD

Christopher Heid, MD

Kara Joseph, MD

Ryan Schwieterman, MD

ABSTRACTS

(In Alphabetical Order by Presenting Author)

Implementing Patient Safety & Quality Improvement into Residency Curriculum: Challenges and Lessons Learned

Adam Altman; Kelly Rabah, MSW, LISW-S, ACHP, CPHQ; Molly Hall, MD; Al Painter, Psy.D.; Sabrina Neeley, PhD, MPH

Presenting Author: Adam Altman

Faculty Mentor: Sabrina Neeley, PhD, MPH

Mentor's Department: Academic Affairs-SOM

Poster Number: 53

Research Question/Objective: To assess the knowledge, attitudes, and perception of Wright State University residents towards Patient Safety and Quality Improvement (PSQI) education at different times in their training. We hypothesized that a correlated increase in knowledge and attitudes towards PSQI would exist with completion of the curriculum over time.

Background: PSQI have been topics of much discussion recently. The ACGME implemented the Clinical Learning Environment Review Program in 2012, focusing on six main competencies, those being patient safety, medical knowledge, practice-based learning, communication, professionalism, and system-based practice. In order to determine the effect of formal PSQI education on the knowledge, attitudes, perceptions, and experiences of residents in regards to PSQI, a valid and reliable method is essential. **Methods:** 77 Wright State University residents completed 10-question surveys on attitudes towards PSQI using a 5-point Likert scale and 10-question multiple-choice test on baseline knowledge. The repeat survey was cancelled due to difficulty with follow-up. **Results:** 55 (71%) residents indicated they were confident in their ability to apply basic PSQI principles to patient care, while the mean score on the knowledge test was 66.8%. 64 (83%) residents answered that PSQI education is vital to their ability to effectively practice medicine. Comparatively, only 44% and 48% believed that online learning modules and PSQI projects respectively were beneficial to their education. **Conclusion:** Implementing a PSQI curriculum into a residency

program presents numerous obstacles. Lesson learned included: realizing that involving program directors and residents in the curriculum reform process may increase receptiveness and efficacy of PSQI education; residents perceived their PSQI knowledge to be higher than demonstrated; residents indicated the desire for alternate methods of education on PSQI. Cooperation with other residency programs will likely prove essential to the effective implementation of new curriculums and enhancement of those already in use.

Use of Vibrotactile Feedback and Stochastic Resonance for Improving Laparoscopic Surgery Performance

Rob Hoskins, Katherine Babbitt, Jinling Wang, Emily Diller, and Caroline Cao, PhD

Presenting Author: Katherine Babbitt

Faculty Mentor: Caroline Cao, PhD

Mentor's Department: Biomedical, Industrial, & Human Factors Engineering

Poster Number: 10

Objective: The purpose of the present study was to determine if stochastic resonance (SR) could improve performance (accuracy, speed) in a simulated laparoscopic palpation task and to compare it to vibrotactile feedback (VIB). It was hypothesized that both VIB and SR feedback would result in better performance over no feedback. Furthermore, SR feedback was expected to lead to the greatest increase in performance by improving subjects' haptic sensitivity to tissue compliance and consistency. **Background:** Vibrotactile feedback has been utilized in previous research as sensory substitution to improve performance during minimally invasive surgical tasks. Stochastic resonance (SR), introduced into the human control system as white noise at a sub-threshold level, has shown promise to improve the sensitivity of tactile receptors resulting in performance enhancement for sensorimotor tasks. The purpose of this study was to determine if SR could improve performance (accuracy, speed) in a simulated laparoscopic palpation task and to compare it to vibrotactile

feedback (VIB). **Methods:** A total of 16 subjects performed a palpation task using laparoscopic tools to detect the presence of tumors (compacted felt) embedded in simulated tissue samples (silicone gel) using a laparoscopic trainer box. Subjects were randomly assigned to one of four different conditions: (1) Control - SR, (2) Control - VIB, (3) Control - VIB+SR, and (4) Control -Control. The vibrotactile feedback and SR vibrations were administered via two separate haptic actuators attached to the subjects' dominant upper arms and forearms, respectively. Each subject was presented 36 tissue samples under the control condition and then 36 under the randomly assigned vibration condition (SR, VIB, VIB+SR, or Control). The dependent variables of accuracy and time to detection were measured. **Results:** Results show a significant improvement in task accuracy within the Control-SR group as well as increased system sensitivity (d') and decision bias (β) over the control condition. Results also show the mean increase in accuracy for the Control-SR group to be significantly greater than that of the Control-Control and Control-VIB groups. Results for the time variable did not produce any significant effects. **Conclusion:** The results have implications for the design of instruments and methods for increasing accuracy in laparoscopic surgical tasks such as tissue compliance differentiation. This technology could help surgeons better identify tumors located in healthy surrounding tissue.

HIV Prevention in Swaziland: Occurrence of Adverse Events after Voluntary Medical Male Circumcision as a Function of Age, Weight and Seasonal Temperatures

Alison Bales; Jameson Dennis; Robert Siska; Michael Schneider; Echo VanderWal, PA; Harry VanderWal, MD; Mary McCarthy, MD

Presenting Author: Alison Bales

Faculty Mentor: Mary McCarthy M.D., F.A.C.S

Mentor's Department: Surgery

Previous submission: Wright State University Central Research Forum Fall 2014

Poster Number: 26

Research Question/Objective: Determine if the adverse event rate of voluntary medical male circumcision in Swaziland varies with age, weight, HIV status, or season of the year. **Background:**

The Luke Commission (TLC) provides comprehensive mobile healthcare in rural Swaziland, a country with a 26% prevalence of HIV. Voluntary medical male circumcision (VMMC) has been shown to reduce the rate of HIV transmission by 60%. Initial national guidelines recommended circumcision for HIV-negative men ages 15-24. This study evaluated the safety of circumcision in younger boys and those with HIV. **Methods:** Forceps-guided circumcision was performed under a local anesthetic penile block in 1500 male patients in TLC's outreach clinics. The incidence of adverse events (AEs)—infection, bleeding, and wound dehiscence—were examined as a function of patient age, weight, HIV status, and season of the year. AEs were recorded on the day of surgery and postoperatively on days 2 and 7. **Results:** TLC's overall AE rate for VMMC was 2.3%. The boys <12 had 22 AEs in 1022 circumcisions (2.2%) and patients ≥ 13 had 11 of 478 (2.3%; $p=0.66$). Patients ≤ 29 kg had 19 AEs in 662 patients (2.9%) and patients ≥ 30 kg had 13 of 838 (1.6%; $p=0.40$). There were no AEs reported in 75 HIV-positive patients. There were significantly more wound dehisces during summer, 10 of 333 (3.0%) with only 10 of 630 (1.6%) in fall and 0 of 517 (0%; $p=0.001$) in winter. **Conclusion:** Of the variables studied, only season significantly altered the likelihood of incurring an AE. Circumcising younger boys reduces their likelihood of contracting HIV from early sexual exposure and circumcising HIV positive patients will reduce associated stigma. These should be weighted as important factors in future guidelines.

Maintaining Humility in Medical Students: Use of the "I Don't Know" Option in TBLs

Kevin Bree; Jason Hao; Adrienne Stolfi, MSPH

Presenting Author: Kevin Bree

Faculty Mentor: Nicole Borges, PhD

Mentor's Department: Academic Affairs

Previous submission: CGEA Medical Education Conference, Columbus, OH, April 11, 2015

Poster Number: 50

Research Question/ Objective: When given the option of "I Don't Know" (IDK), will first-year medical students be more likely to choose IDK than an incorrect answer since they have not yet been subjected to moral erosion? **Background:** Current

literature suggests that professional values, such as empathy of medical students weaken over time, rather than strengthen, by a process of moral “erosion.” An immense workload and pressure may cause medical students to lose their humility—which for the purposes of the current study is measured by the willingness to admit one does not know. Lack of humility could be a contributor to moral erosion in medical students and could have negative consequences in the real world, such as a misdiagnosis, improper or unethical communication, and the contribution to medical error—a significant economic and social concern in the practice of medicine. On the other hand, using “I don’t know” (IDK) as a response choice in medical education instruction and curriculum could lead to increased discussion in the classroom and perhaps a more humble future physician. **Methods:** During a required Principles of Disease (POD) course, we gave 100 first-year medical students two versions (A and B) of a Team-Based Learning Individual Readiness Assurance Test (IRAT). The tests were given sequentially with no time for discussion in between. Both IRATs consisted of ten questions and IRAT B had identical questions and answer choices to IRAT A except for an additional option of IDK for each question. Students were informed that the quizzes were scored with 1 point for a correct answer, 0 points for an incorrect answer, and 0.5 points for a response of IDK. The total possible score was 10 on each quiz. The highest of the two scores was used as the student’s official POD grade and the students were made aware of this. **Results:** On IRAT B there were a total of 160 wrong answers and 203 IDKs demonstrating that these first-year medical students chose IDK 1.27 (203/160) times more than they chose an incorrect answer. When given the choice of answering “I don’t know,” these students on average got significantly fewer answers wrong (1.6 ± 1.3 on IRAT B vs. 2.8 ± 1.6 on IRAT A, $p < 0.001$). However, the students also got significantly fewer answers right (6.4 ± 1.8 IRAT B vs. 7.2 ± 1.6 IRAT A, $p < 0.001$). The net change in total quiz score was not statistically significant (7.4 ± 1.3 IRAT B vs. 7.2 ± 1.6 IRAT A, $p = 0.096$). For IRAT B, there was no difference in the mean number of wrong answers (1.6 ± 1.3) versus the mean number of IDK answers (2.0 ± 1.6 , $p = 0.073$). In addition, there were 46 students who had a higher score on IRAT B, 31 students with a higher score

on IRAT A, and 23 students with the same score on IRAT A and B. Chi-square analysis showed that a significantly higher proportion of students scored better on IRAT B than would be expected by chance ($p = 0.017$). **Conclusion:** This research suggests that some amount of humility may exist in these first-year medical students, perhaps because they may not have been subjected to moral erosion yet. It is hard to say if these students selected IDK in order to game the system and achieve a better grade or if they selected IDK because they were truly unsure of the answer and willing to admit that. It should also be noted that simple observation during the experiment demonstrated that more communication and peer-to-peer teaching occurred during the Group Readiness Assurance Test (GRAT) when students told their teams that they had selected IDK. More use of the IDK option in TBLs is warranted to determine if this intervention can halt moral erosion and if it will improve misdiagnoses, communication, and medical error.

A Report of Using Yttrium-90 Radioembolization for the Treatment of Initially Unresectable Hepatic Metastatic Disease

Ryan Chenevey BS, Shannon Kauffman MD, James Ouellette DO

Presenting Author: Ryan Chenevey

Faculty Mentor: Dr. Shannon Kauffman and Dr. James Ouellette

Mentor’s Department: Surgery, Wright State Physicians

Poster Number: 14

Research Question/ Objective:

To report a case using yttrium-90 radioembolization for the treatment of initially unresectable hepatic metastatic disease secondary to colorectal cancer. **Background:** Hepatic resection is limited by the size of the future liver remnant (FLR). Portal vein embolization is a proven technique to hypertrophy the contralateral lobe when the future liver remnant is too small to allow for safe resection [1]. Recently, there has been evidence that yttrium-90 radioembolization leads to contralateral hypertrophy similar to that of portal vein embolization, albeit over a longer time course, while providing the added benefit of local treatment of tumor progression [2]. **Methods:** A 49 year-old female presented with an obstructing

adenocarcinoma of the colon and bilobar hepatic metastasis. The obstructing colon adenocarcinoma was successfully resected and systemic chemotherapy was initiated. The liver disease was right lobe dominant and, after second line chemotherapy, the patient was treated with laproscopic left hepatic (FLR) ablation followed by yttrium-90 microsphere radioembolization of the right lobe and segment 4 for both treatment of the residual disease as well as hypertrophy of the FLR.

Results: Prior to y-90 treatment, the patient's total liver volume was 1604 mL, right lobe volume was 1201 mL, and left lobe volume was 403 mL, yielding a pre-radioembolization predicted FLR of 25%. Follow-up CT scans were done at 1, 3, and 6 months post-radioembolization (Figure 1). These scans showed a progressive atrophy of the diseased right lobe, hypertrophy of the left lobe, and, therefore, a progressive increase of the FLR (Table 1 and Figure 2). Extended right hepatectomy and margin ablation of segment 4 was performed. Distinctive fibrosis was observed along the arterial perfusion margin intraoperatively (Figure 3).

Conclusion: Y-90 radioembolization has the combined capability of providing regional therapy for liver metastases and producing hypertrophy of the FLR. The proposed mechanism of hypertrophy involves fibrosis and resulting portal hypertension of the radiation treated lobe [3]. The combination of tumor treatment with FLR hypertrophy is important given the available evidence showing optimal treatment is dependent on clearing the liver of all metastatic disease while avoiding hepatic failure. Varying recommendations for FLR size are dependent on a patient's liver function, tumor burden, and extent of prior chemotherapy [4-6]. As an alternative to portal vein embolization, y-90 radioembolization has the potential to increase the number of patients able to convert to definitive surgical resection of their hepatic metastases. Further research is needed to determine if it may be a superior approach.

Overview of Trauma Patient Discharge and Planning at a Level I Trauma Center

Ryan Chenevey, BS; Michael Finucan, BS; Pratik J Parikh, PhD; Mary C McCarthy, MD; Priti P Parikh, PhD

Presenting Author: Ryan Chenevey, Michael Finucan

Faculty Mentor: Priti Parikh, PhD

Mentor's Department: Surgery

Poster Number: 4 **Digital Presentation**

Research Question/ Objective:

Hospital length of stay for trauma patients may be prolonged due to multiple social, economic, and administrative factors of discharge planning. While there can be medical reasons associated with increased length of stay, it has been previously described that patients experience delayed discharges due to predictable non-clinical factors. This study aims to examine and describe multiple factors affecting the discharge planning of trauma patients at a Level I Trauma Center. **Background:** In the U.S., a significant proportion of the annual cost of trauma-related disorders (\$80.2 billion) can be attributed to prolonged hospital length of stay [1]. Previous studies have shown that increased length of stay (LOS) not only leads to increased morbidity, but also delays rehabilitation [2]. Moreover, it increases the occupancy of beds that could be used for other seriously ill patients. It is estimated that 30% of LOS may be prevented with proper planning and communication [3]. The Miami Valley Hospital's Level I Trauma Center, therefore, tries to proactively work on patient discharge by providing trauma nurses the estimated date of discharge and location based on the hospital performance and other evidences. This study is designed to determine the discharge planning procedure used at MVH and identify all the factors that could affect this process. **Methods:** The IRB approved study was performed at the Level I Trauma Center where patients were recruited and interviewed prospectively. Discharge location, comorbidities, injuries, discharge disposition, and hospital length-of-stay information were recorded for the study. The data on estimated discharge date and location used by the trauma team were also collected and compared with actual discharge data.

Results: From January 2015 to March 2015, a total of 50 patients were recruited in the study. The

average Injury Severity Score (ISS) and revised trauma score (rTS) were 14.25 and 7.39 respectively. Approximately 24% of the times the discharge disposition that was decided earlier by the trauma staff was altered. Reasons for changes included the following: social worker or PT/OT recommendation, patient preference fluctuations, and not enough home support available to the patient. Insurance hold-ups/precertification and patients' medical conditions were among the top reasons for the delay in discharge and thus increased length of stay. **Conclusion:** There are many non-clinical factors that affect the discharge planning. Developing predictive models that not only take care of the clinical factors, but also non-clinical factors at the point of admission will certainly improve overall discharge planning for trauma patients. Moreover, some interventions, such as patient education and starting the precertification process earlier could help reduce unnecessary length of stay in the hospital and will allow for a smoother patient care transition and significant cost savings for the institution.

Impact of the Affordable Care Act on Trauma Center Financials

Tom Cheslik; Chaitanya Bukkapatnam, BS; Charles H. Dabbs, MD; A. Peter Ekeh, MD; Mary C. McCarthy, MD

Presenting Author: Tom Cheslik
Faculty Mentor: Mary C. McCarthy, MD
Mentor's Department: Surgery
Poster Number: 43

Research Question/ Objective: How has the Affordable Care Act affected trauma center financials? **Background:** Hospital financial pressures and inadequate reimbursement contribute to the closure of trauma centers. Uninsured patients contribute significantly to the burden of trauma center costs. The Affordable Care Act was implemented in April 2014 to provide health care coverage for all Americans. This study analyzes the impact of the recent health care changes on trauma center financials. **Methods:** We conducted an analysis of trauma charges at an Ohio Level 1 trauma center. A three-year trauma patient cohort (2012-2014) was selected and grouped by reimbursement source (Medicare, Medicaid, other government, commercial, and self-pay/charity).

Data was collected and analyzed with the Transition Systems Inc. accounting system. **Results:** Self-pay/charity charges decreased substantially (9.5% to 4% of total charges) Medicaid increased (21.4% to 25.9% of total charges) (see Table 1). Table 2 shows the number of trauma patients and net revenue for 2012-2014.

	2014	2013	2012	
Charges (\$)	%	Charges (\$)	%	Charges (\$)
Commercial	72,553,784	34.5	74,704,875	36
	86,891,198	36.7		
Medicare	62,872,208	29.9	61,996,197	29.9
	62,647,700	26.4		
Medicaid	54,314,109	25.9	37,272,540	18.2
	50,690,091	21.4		
Other Gov.	11,796,195	5.6	12,312,719	5.9
	14,300,437	6		
Self-Pay/	8,597,187	4	21,039,155	10.1
	9.5		22,455,235	
Charity				
Total	210,106,483	100	207,328,486	100
	236,984,661	100		

TABLE 1: Trauma center charges by reimbursement type for 2012-2014.

	Number of Patients (N)	Net Revenue (\$)	[Net Rev (\$)]/N
2014	3,245	58,832,047	18,130
2013	3,276	51,323,791	15,667
2012	3,134	58,101,318	18,539
Total	9,655	168,257,156	17,427

TABLE 2: Total number of patients (N) and net revenue for 2012-2014. **Conclusion:** In the first year following the implementation of the Affordable Care Act, self-pay/charity charges have decreased and Medicaid charges have increased. Although more data collection and analysis need to be done, this is an initial step toward evaluating the beneficial effects of the Affordable Care Act on trauma centers.

Alveolar Rhabdomyosarcoma: a Rarity in Adults?

Claire Christian; Ali Bukhari, MD; Logan Parrott, MD

Presenting Author: Claire Christian

Faculty Mentor: Ali Bukhari, MD

Mentor's Department: Internal Medicine

Poster Number: 57

Research Question/ Objective: This is a rare presentation of an alveolar rhabdomyosarcoma in a 54-year-old male. **Background:** Alveolar rhabdomyosarcoma (ARMS), while common in children, is a remarkably rare tumor in adults >45 years of age. We present a case of a 54-year-old male who was presented to our facility with a paranasal sinus mass that was determined to be an alveolar rhabdomyosarcoma. **Case Presentation:** A 54-year-old male presented with left-sided facial pain and swelling for 2-3 months following a reported viral illness with complaints of sinus pain, congestion, and headache. The patient also complained of progressive shortness of breath, dark nasal discharge, and hematemesis. Physical exam revealed left palatal enlargement without erythema or exudate, bilateral cervical lymphadenopathy, and mildly diminished grip strength in the left hand. Imaging demonstrated an extensive nasopharyngeal, nasal cavity, and ethmoid sinus mass with obstruction of eustachian tube and frontal sinus. The mass extended into the anterior cranial fossa as well as the orbit, and deviated the medial rectus muscle. Pathology was consistent with ARMS. The patient underwent surgical removal of the skull base sarcoma in addition to extensive local dissection. Post-operative PET/CT showed persistent local disease prompting adjuvant chemoradiation. **Discussion:** Soft tissue sarcomas comprise <1% of all adult malignancies, and rhabdomyosarcomas (RMS) account for only 3% of all soft tissue sarcomas in adults. While RMS is a mesenchymal-derived sarcoma characterized by skeletal muscle differentiation, there are histological variances between childhood and adult RMS. Children/adolescents are more likely to have the embryonal and alveolar subtypes while the pleomorphic subtype and unspecified variants are seen more commonly in adult patients. Yasuda et al reported 4 cases of ARMS in the head and neck region of older adults with varying presentations

and confirmed these diagnoses with demonstration of PAX-FOX01 fusion gene expression. Barr et al reported that most ARMS have gene fusions involving the PAX and FOX families. However, whether this will translate to clinical relevance in the future remains to be determined. **Clinical Relevance:** This case shows the importance of including RMS in the differential diagnosis for suspected head and neck cancer irrespective of patient age. Proper histologic examination and immunophenotypic workup, including staining for myogenin, can help differentiate ARMS from more common head and neck tumors in the adult population.

STEPS Towards Better Health Care Delivery: A Student-Led Multidisciplinary Approach

Nicholaus Christian; Maggie Rechel; RJ Sontag; Paige Sutton; Juanita Draime; Amanda Schaad

Presenting Author: Nick Christian; RJ Sontag; Paige Sutton

Faculty Mentor: Paul Hershberger, PhD

Mentor's Department: Family Medicine

Previous submission: IHI National Forum on Quality Improvement in Healthcare, Orlando, FL, Dec 7th-10th, 2014

Poster Number: 41

Research Question/Objective: Build a sustainable, multidisciplinary student team to motivate underserved populations toward positive health improvements. **Background:** STEPS was formed in 2012 as a student-led initiative to address the health concerns of the homeless population of Dayton, OH. Hosted at local homeless shelters, each STEPS Initiative enables students from multiple health programs to assess participants' blood pressure, weight, and BMI. Participants then enter a room with two students to detail their health status and open a dialogue about the participant's current health state. Utilizing motivational interviewing, students log three health goals for each participant, and their progress is noted on future visits. This storyboard highlights how STEPS has sought to improve sustainability, social impact, and professional development.

Methods:

To improve sustainability:

1. Applied for grants
2. Created a sustainable organizational structure

3. Increased volunteer base through integration into school curriculums

To improve social impact:

1. Expanded to additional homeless shelter locations
2. Increased services at current locations

To improve professional development:

1. Increased multidisciplinary involvement
2. Improved clinical skills

Results: For sustainability: STEPS applied for a Social Entrepreneurship Grant offered through WSU Office of Multicultural Affairs. They were awarded \$2,400. First and second year medical students are able to receive Service Learning credit through a Student-Led elective while third year pharmacy students are able to receive Introductory Pharmacy Practice Experience credit, helping lead to the growth of volunteer base highlighted in Figure 2. The group implemented the executive board displayed below in spring of 2014. **For social impact:**

STEPS started with monthly sessions at the men's homeless shelter in the fall of 2012. Bimonthly sessions were started in February of 2014. In fall of 2014, sessions were expanded to the local women's shelter. With the increase of student volunteers, the amount of participants served has increased, as highlighted in Figure 2. STEPS was recognized as the United Way's Volunteers of the Month in May 2013. **For professional development:**

The executive board began with 7 medical students and has increased to 27 students representing four different healthcare professions. 87% of volunteers attend more than one session (see Figure 2 showing growth in volunteer base). All volunteers that attended a training session reported feeling more confident in their interviewing skills post training. Surveyed volunteers also had a significant increase in confidence in taking blood pressure or a blood glucose. 62% of students reported that working on an interdisciplinary team played a great role in why they participate in STEPS. **Conclusion:**

STEPS has grown as a multidisciplinary team to include medicine, nursing, pharmacy and psychology. The initiative capitalizes on the principle that in order to overcome issues related to contextual variables, all specialties need to work together to ensure continuity of care. In order to create social change, we must start with the students in these multiple disciplines. By creating a sustainable multidisciplinary group, STEPS has

enabled students to grow as professionals, and learn the invaluable lesson that each patient must be viewed in the context of their community and accessibility to social resources. STEPS strives to assimilate all aspects of health care as each plays a pivotal role in quality of services provided. **Bottom line:** STEPS has found success in improving sustainability, social impact, and professional development, and believes the value added through the initiative will not only impact current participants and students but also the future of healthcare delivery.

Challenges and Considerations in Optimizing Ovarian Stimulation Protocols in Oncofertility Patients

Katie Coyne; MacKenzie Purdy, MD; Kathleen O'Leary, MD; Jerome L. Yaklic, MD; Steven R. Lindheim, MD, MMM; Leslie Appiah, MD

Presenting Author: Katie Coyne

Faculty Mentor: Steven Lindheim, MD

Mentor's Department: Obstetrics and Gynecology

Poster Number: 16

Research Question/ Objective: This study reviews some of the challenges to consider when using controlled ovarian stimulation (COS) and newer stimulation protocols to minimize risks and optimize outcomes for fertility preservation in oncofertility patients. **Background:** The scope of cancer treatment in women of childbearing age has changed in the last decade. Fertility preservation is no longer an afterthought but central to multidisciplinary cancer treatment planning and should be addressed due to the cytotoxic effects of cancer therapy. However, oncology patients present as a unique treatment challenge as the physician must balance the urgency of fertility preservation with the risks of delaying cancer therapy. **Methods:** Review of primary studies and literature related generally to fertility preservation and specifically to COS protocols for female cancer patients. **Results:** Conventional-start COS is an established method in fertility preservation and random-start COS protocols, such as late follicular and luteal phase starts, are promising methods for retrieval of oocytes in urgent settings. Aromatase inhibitors with gonadotropin are recommended in patients with estrogen-sensitive cancers. **Conclusion:**

COS is routinely applied in assisted reproductive technology but ovarian stimulation protocols must be individualized based on time available prior to cancer treatment and fertility status of the patient. The aim of fertility preservation treatment for female cancer patients should be to maximize the number of oocytes/embryos preserved while avoiding risks.

The Who-What-When-Where OF Nursing Interruptions in A Surgical Intensive Care Unit at a Level 1 Trauma Center

Nicole Craker; Robert A. Myers, MSE; Jessy Enid; Mary C. McCarthy, MD, FACS; Pratik J. Parikh, PhD

Presenting Author: Nicole Craker

Faculty Mentor: Pratik Parikh, Ph.D

Mentor's Department: Surgery

Poster Number: 66

Research Question/ Objective: What are the individual factors that lead to RN interruptions in a Surgical Intensive Care Unit? **Background:**

Registered nurses (RN) often face circumstances that cause interruptions to their tasks in a Surgical Intensive Care Unit (SICU). The inherent who (source), where (RN location), when (task performed by RN), and what (inquiry to RN) that affect the duration of an interruption are not well understood. **Methods:** We observed RNs in a 23-bed SICU at a Level 1 Trauma Center in the Midwest US. Two trained observers shadowed RNs in the unit for 25 sessions totaling over 75 hours. Each session, one RN was shadowed by one observer for no more than 4 hours at a time. A total of 206 interruptions were recorded and analyzed using statistical methods. **Results:** RNs experienced interruptions every 18 minutes with the median duration of each interruption 39 seconds (range 3 seconds-22 minutes). The three primary sources of interruption by a person were another RN (29.6%), other health providers (26.7%), and Residents (6.8%), and by a device were alarm (16.5%), hands-free electronic communication device (5.3%) and desk phones (4.9%). Patient room (57.8%) and hall (32.0%) were the dominant locations and documentation (42.2%), direct care (22.3%), and medication administration (22.3%) were dominant tasks RN were performing when interrupted. Attending physician, resident, family

or support member, alarm, desk phone, nurse station, and receiving and providing information were independent predictors of interruption duration in an adjusted multivariate logistic regression model. **Conclusion:** Identifying individual factors affecting RN interruptions in a SICU are vital in developing a holistic understanding of interruptions. Operational protocols can be devised to avoid such factors, and resulting circumstances, when they are not of benefit to the patient.

Emergency Department Patient Satisfaction: Factors Associated with Satisfaction with Care

Catherine A. Marco, MD, Michael Harakas, Andy Davis, Sylvia Chang, Jason Pickett, MD, Dennis Mann, MD

Presenting Author: Andy Davis and Sylvia Chang

Faculty Mentor: Catherine A. Marco, MD, FACEP

Mentor's Department: Emergency Medicine

Poster Number: 23

Research Question/ Objective: The purpose of this study was to measure patient satisfaction among Emergency Department (ED) patients and to assess the relationship between patient and physician demographic factors and patient satisfaction. **Background:** Patient satisfaction is important to providing high quality and compassionate emergency medical care. There are numerous factors associated with improved patient satisfaction but there are large variations in satisfaction measures. **Methods:** This study was a prospective, observational study conducted at Miami Valley Hospital, an urban hospital ED. This study was approved by Wright State University's Institutional Review Board. Eligible participants included a convenience sample of adult ED patients age 18 and over from July 2014 through March 2015. Patients who were in distress, were unable to communicate, or chose not to participate were excluded from enrollment. The following data was collected from the ED medical record and from a verbally or written administered patient survey during the ED visit: day of the week, age, gender, race, mode of ED arrival, diagnosis, ED disposition, gender of physician, and race of physician, and self-reported Likert scale responses to 8 previously validated questions about

satisfaction with medical care. **Results:** Among 315 patients who participated in this study, the mean age was 52 (range 18-90+). Approximately half of patients were female (58%). Ethnicity of patients included: white (68%), African American (26%), Hispanic (3%), and other (3%). Most treating physicians were male (67%) and most were white (92%). Of the patients seen by a midlevel provider or resident in addition to an attending physician, 59% were seen by a female resident or midlevel provider, 96% were seen by a white resident or midlevel provider. Most patients arrived by walk-in (64%) and some arrived by ambulance (36%). ED disposition included hospital admission (54%) and discharge to home (46%). The most frequently chosen satisfaction score was 7 (very strongly agree) for overall satisfaction. There were no statistically significant differences in overall satisfaction by patient gender, ethnicity, ED disposition, physician gender, physician ethnicity, or patient-physician gender concordance ($p = \text{NS}$, non-parametric Wilcoxon or Kruskal Wallis tests). A higher percentage of patients who had a female physician selected the highest satisfaction rating for overall satisfaction compared to those who had a male physician ($p\text{-value}=0.04$; Chi square). **Conclusion:** ED patients in this study were highly satisfied with their care. The most frequently chosen satisfaction score for every question on the survey was 7. Patient satisfaction scores did not vary significantly according to patient gender, patient ethnicity, ED disposition, physician gender, physician ethnicity, or patient-physician gender concordance. Patients treated by female physicians were more highly satisfied with ED care.

Pain Assessment in Male Circumcision Patients in Swaziland

David Dennis; Harry VanderWal, M.D., Echo VanderWal, PA, Mary C. McCarthy, M.D., F.A.C.S

Presenting Author: David Dennis

Faculty Mentor: Mary McCarthy M.D., F.A.C.S

Mentor's Department: Surgery

Previous submission: Wright State University Central Research Forum, Wright State, October 2014

Poster Number: 36

Research Question/ Objective: This study

evaluates the use of the Wong-Baker Faces Pain Scale, used in the pediatric setting in United States, to quantitatively assess patients' pain during circumcision and follow-up examinations in Africa.

Background: The Luke Commission (TLC) is a non-governmental organization that operates a mobile hospital outreach model in Swaziland, Africa. Swaziland currently has the highest prevalence of HIV in the world and one of the goals of TLC is to help control the spread of HIV through voluntary medical male circumcision. The majority of patients undergoing circumcisions are young men and boys, therefore pain control is important. Pain is controlled during and after the procedure by several methods. Preoperatively, one paracetamol/codeine tab (500/20 mg) is administered for patients greater than 30 kg, and half a tab for patients less than 30 kg. A local anesthetic combination of 8 mL 1% lignocaine HCl:2 mL100mg/20mL bupivacaine HCl is prepared. Then, three to five minutes before the procedure, a dorsal penile block is performed, with 3 milliliters used on each of the right and left dorsal penile nerves at 10 and 2 o'clock; 2-3 milliliters is then used to perform a ring block. Periodically, additional local infiltration is performed. Following the procedure, ten 500/20 mg paracetamol/codeine tablets are provided for the children to take during the following week. **Methods:** All patients from three different clinic sites were assessed for pain using the Wong-Baker Faces Pain Scale, which has faces expressing different levels of emotion, on a zero through ten scale; zero indicating no pain and ten indicating severe pain. The patients were shown the Faces Scale preoperatively, an explanation provided by a Swazi translator, and then asked the level of their current pain. Their pain level was then assessed using the Faces Scale following the procedure and during follow-up at two and seven days postoperatively. **Results:** A total of 116 male patients were assessed for pain. The patients were grouped by age and the average reported pain level was recorded with statistical comparisons done with ANOVA. The results show that there is no significant difference in pain reported by the different age groups ($p= 0.40, 0.71, 0.73, \text{ and } 0.45$ at each respective data collection period). However, when comparing the total responses from the last three data collection periods, since pain is not expected preoperatively, there was a significant difference in the level of reported pain

($p=0.006$). **Number Mean Pain Preoperative**

≤ 9 Years 29 0.34 ± 0.94

10 - 12 Years 42 0.38 ± 1.19

≥ 13 Years 24 0.83 ± 2.20

Total 95 0.48 ± 1.45

Postoperative

≤ 9 Years 32 2.13 ± 2.78

10 - 12 Years 48 1.71 ± 2.02

≥ 13 Years 25 2.00 ± 2.16

Total 105 1.90 ± 2.29

Two-day Follow-up

≤ 9 Years 19 2.32 ± 3.42

10 - 12 Years 34 2.65 ± 2.82

≥ 13 Years 19 2.00 ± 2.21

Total 72 2.39 ± 2.82

Seven-day Follow-up

≤ 9 Years 32 1.00 ± 1.24

10 - 12 Years 48 0.67 ± 1.19

≥ 13 Years 27 0.96 ± 1.51

Total 107 0.84 ± 1.29

Conclusion: The reported pain levels peaked during the two-day follow-up. This indicates the Wong-Baker Faces Pain Scale can be used effectively in the setting of African medical male circumcision to quantitate the degree of pain and that Day 2 is the most critical time for pain control.

Fascia Iliaca Block Prior to Hip Fracture Repair Surgery as a Method to Decrease Post-operative Narcotic Use and to Facilitate Anesthesia During Repair

Brian Dinh; Amol Soin, MD, MBA; Ravi Grandhi

Presenting Author: Brian Dinh

Faculty Mentor: Amol Soin, MD, MBA

Mentor's Department: Surgery

Poster Number: 56

Research Question/ Objective: Fascia Iliaca Block prior to Hip Fracture Repair Surgery as a method to decrease post-operative narcotic use and to facilitate anesthesia during repair. **Background:** Hip fractures are common occurrences in the elderly population. Oftentimes, these injuries can be very debilitating for the patients, causing difficult recoveries. Depending on the degree of the fracture, emergent surgery is sometimes required if the fracture is determined unstable. When emergent surgery is deemed necessary, several anesthetic methods have been employed prior to surgery. One particular method includes routine Fascia Iliaca

blocks completed upon arrival to the emergency department. Other methods that have been used include spinal anesthetics, local anesthetics, and general anesthetics. **Case Presentation:** A 79 year old female presented to the emergency room with a hip fracture requiring emergent repair. Patient complained of intolerance to anesthetic gas in the past which caused severe nausea and hypotension. Knowing her reaction to anesthetics in the past, we elected to do a combined intravenous anesthetic with fascia block immediately after intubation. The purpose of this was to facilitate not only post-operative pain relief but also the ability to run a lower dose anesthetic, which would be safer for the patient, during the procedure. The patient was intubated using Propofol and maintained on a Propofol drip at approximately 75mcg/kg per hour. The Fascia Iliaca block was completed immediately after intubation using ultrasound guidance to facilitate needle placement. The patient responded well to the Fascia Iliaca block and did not require any intravenous narcotics in the post-anesthesia care unit. **Discussion:** Following an invasive surgery such as this, most patients typically require post-operative narcotics. Because the patient required none following the surgery, this clearly is atypical for someone who suffers from a hip fracture. This may possibly be due to how well the nerve block worked, which mitigated any need for post-operative narcotics. Additionally, while we started out the Propofol infusion at 75 mcg/kg per hour, the patient became hypotensive throughout the case. We had to eventually decrease the Propofol to about 30 mcg/kg per hour. Again, this may be attributed to how effective the nerve block was. The surgeon could operate with minimal pain being felt by the patient. **Clinical Relevance:** Given how well this patient did with a Fascia Iliaca block, there should be new considerations for patients that require hip fracture repair. If a Fascia Iliaca block is completed immediately in the peri-operative time period, it may be possible to facilitate the ability to run a lighter anesthetic during the surgery and decrease the need for post-operative narcotics.

Volumetric Analysis of Focal Epilepsy in Children

Nasser Kashou, Allison Dixon

Presenting Author: Allison Dixon

Faculty Mentor: Dr. Gogi Kumar

Mentor's Department: Dayton Children's Neurology

Previous submission: ACNS, Houston February 6th 2015

Poster Number: 7

Research Question/ Objective: To perform a volumetric analysis of the lobe(s) and hemisphere where the epileptiform abnormalities originated and compare to the other hemisphere and corresponding lobe(s) to identify differences in patients where epileptiform abnormalities are localized to one hemisphere with normal magnetic resonance imaging (MRI). Also, to see any differences in the size of the thalami, gray and/or white matter volume between hemispheres.

Background: A small portion of children with focal epilepsy have spikes localized to one hemisphere with normal MRI. **Methods:** We reviewed charts of children age 0-18 years diagnosed with focal epilepsy and identified patients with normal MRI and focal spikes and seizures originating from one hemisphere, excluding patients meeting criteria for Benign Focal Epilepsy of Childhood based on clinical presentation and EEG. We identified 10 children who met these criteria. 3D spoiled gradient echo (SPGR) MRI datasets acquired from a 1.5T GE scanner were analyzed with image processing techniques. Cortical reconstruction and volumetric segmentation was performed with Freesurfer Software Suite. **Results:** 10 patients met the criteria. Age range was 5-18 years, seizure onset ranged from 1 to 17 years of age. 2 had seizures originating from the frontal lobe, 4 from the temporal region, 2 from the occipital region and 2 from the parietal area. 7 patients had seizures originating from the left hemisphere, while 3 originated from the right. We did not find a statistically significant difference between the symptomatic hemisphere and lobe and the control hemisphere and lobe when hemispheric volume, lobar volume, volume of the thalami, volume of gray or white matter were compared. **Conclusion:**

We will perform further data analysis and enroll more patients in this study to find out whether volumetric analysis could be useful as a marker of focal epilepsy and correlate this with clinical presentation.

A Profile of Injuries Seen at a Children's Orthopedic

Michael Dressing; Richard Rapp, PhD; John Pascoe, MD; Brittany Drummel-Smith

Presenting Author: Michael Dressing

Faculty Mentor: Richard Rapp, PhD; John Pascoe, MD

Mentor's Department: Pediatrics

Poster Number: 28

Research Question/ Objective: The objective of this research project is two-fold. One, to determine the prevalence of different childhood injuries and their relationships with different demographic categories and two, to determine the effect adult supervision has or does not have on childhood injuries. **Background:** Whether participating in organized sports, school activities, or games around the house, children are the most active age group. While this is extremely helpful for a child's health and development, this level of activity comes with risks. Unintentional injuries are the leading cause of death for children aged 1-18 in the United States, making up 40% of deaths in that age group. Along with the tremendous medical cost of health care, these injuries may affect families, schooling, and a child's psyche. **Methods:** One hundred and forty four (144) parents who had children receiving services in a hospital based orthopedic clinic were asked to participate in a study of childhood injury. One hundred and seventeen (117) parents (81.3%) agreed to participate. Structured interviews focused on collecting basic demographic information about parents and their children and identifying the sources of injuries that children experienced. Details about each type of injury were collected, charted, and analyzed for similarities/differences to previous literature written about the topic. **Results:** The results are based on the sample of 92 parents/children who fit the age criteria and were not dropped from the study because of their rare injury types. Child and parent demographics were put in a table to analyze patterns in gender, ethnicity, income, level of education, etc. Another

table analyzes the data collected about the different injury types in four categories - falls, hit by object, on moving vehicle, and unknown/other. Each type of injury is compared to the age of the child, where the injury occurred, whether adult supervision was present, the type of injury, the treatment needed, where treatment was needed, and the amount of days the child missed routine activities. Of the 92 children eligible for the survey, there were 175 total injuries documented. The average age of the children was 12.1, and there was a relatively even split between the four different categories of injury (see tables for full data). **Conclusion:** Because of the accidental nature of most injuries, there was a relatively even breakdown of the type of injury sustained. The most common age group for injuries was between 9-15, which is not only a very active time in a child's life, but a period of increased growth in both boys and girls. In comparison to other injuries, children hurt by a fall often were more severely injured and missed more days of normal activity (average of 20), even though these injuries often occurred at home (72%). On the contrary, children injured on a bike/atv/skateboard often were not at home when it happened (35.5%), yet their injuries were less severe and could more frequently be treated with just first aid or medications (64.5%). Most injuries still occurred despite adult supervision. This could mean most situations where injuries occurred were not inherently dangerous, but injuries sometimes happen due to mistakes and bad luck.

An Understanding of PCOS from Conception to Menopause

Michelle Durrant; Leah Whigham, PhD, Steven Lindheim, MD; Jerome Yaklic, MD

Presenting Author: Michelle Durrant

Faculty Mentor: Steven Lindheim, MD

Mentor's Department: Obstetrics and Gynecology

Poster Number: 47

Research Question/ Objective:

- To conduct a review of polycystic ovary syndrome from a historical perspective, using prevalence estimates, challenges with adolescent PCOS, and the impact of early treatment.
- To follow the evolution and progression of the definition of polycystic ovary syndrome.

- To compare and contrast the current status on diagnostic methods of PCOS including insulin resistance testing and Anti-Müllerian hormone.

- To review the active areas of PCOS investigation.

Background: Polycystic ovary syndrome (PCOS), a disorder marked by androgen excess, chronic anovulation, and cystic ovarian morphology, is part of a lifelong continuum starting in utero and largely presenting itself in the reproductive-aged female. It is estimated that 1 in 15, or approximately 6-7% of reproductive aged women are affected by PCOS. Quality of life becomes an important issue as PCOS individuals often face social and mental health dysfunction, including depression, anxiety, distorted body image, and fertility issues. The views of PCOS have evolved drastically surrounding the classification and characterization of the syndrome. In the search of further defining the condition, PCOS has been categorized as an anatomic, endocrine, and metabolic dysfunction. In particular, the roles of glucose intolerance, insulin resistance and Anti-Müllerian hormone have been investigated as potential influences in the development of PCOS as well. Further, studies are exploring whether there is any influence from the developing fetus on the progression to adult PCOS. Future treatment modalities will hopefully be more targeted and focused as the etiology of PCOS is more clearly understood. **Methods:** Data sources: Systematic searches of electronic databases (e.g. MEDLINE, PUBMED). Study selection: Reports pertaining to insulin resistance, prevalence estimates, challenges in diagnosis, and early treatment options of PCOS were included. Articles were chosen for their relevance and significance to the fields listed above. Screening, Data Extraction and Synthesis: Citations and full-text articles were chosen and data abstraction was conducted. **Results:** Data on the prevalence of PCOS is difficult to estimate, in part, because PCOS is a heterogeneous condition manifesting itself with various forms of clinical evidence. The exact cause of PCOS remains largely unknown and the diagnosis remains essentially one of exclusion. However, insulin resistance remains an important component in the discussion of the PCOS patient, as 50-65% of PCOS women are overweight. Obesity is associated with an increase in insulin resistance and hyperinsulinemia, which can synergize with abnormally high secretion of luteinizing hormone (LH) to promote excess

androgen production by intraovarian theca cells and an arrest of follicular development resulting in chronic anovulation. Such a significant correlation exists that the AE-PCOS Society agreed to screen for impaired glucose tolerance in all PCOS women, at least every two years. **Conclusion:**

In summary, PCOS is an evolving condition. Defining PCOS has been the greatest challenge, as the etiology still remains unclear. Historically, anovulation and infertility have been the central focus. However, research is now expanding, focusing on the impact of early exposure in utero to health in the post-reproductive years. If environmental factors or genetic alterations can be further elucidated, more targeted therapeutic interventions may one day be available to help prevent and treat PCOS. PCOS requires early diagnosis to maximize both fertility and long-standing health. Obesity, insulin resistance, dyslipidemia, diabetes, and increased risk of cardiovascular disease likely affect the PCOS individual starting from an early age. Therefore, when considering the lifespan of women with this condition, these longstanding risk factors must be identified and addressed in a timely manner to maximize patient health. Continuous refinement in both the diagnostic realm and treatment entities will help us to enhance future care for those with PCOS.

Altered Mental Status Among Geriatric Trauma Patients

Ashlee Edgell, Catherine Eggers, Christopher Fagan, James Olson, PhD, Catherine A. Marco, MD

Presenting Author: Ashlee Edgell

Faculty Mentor: Catherine A. Marco, MD, FACEP

Mentor's Department: Emergency Medicine

Poster Number: 22

Research Question/ Objective: The purpose of this study was to identify etiologies of altered mental status among geriatric trauma patients.

Background: Geriatric patients age 65 and older represent a large and growing segment of the population. Although the elderly are less likely to be involved in trauma as compared with other age groups, they are more likely to have fatal outcomes when they are injured. Falls are the most common mechanism of injury in patients >65 years of age. Co-morbid diseases are common and are associated with increased mortality rates. A recent study

identified significant drug and alcohol use among geriatric trauma patients, although less prevalent than among younger patients. The purpose of this study was to identify etiologies of altered mental status among geriatric trauma patients. **Methods:** This study was a retrospective chart review conducted at the Emergency Department of Miami Valley Hospital (MVH), an urban hospital with an annual patient census of 95,000 visits. This study was approved by the Wright State University Institutional Review Board (IRB) and MVH Human Investigation and Research Committee (HIRC). Eligible participants included all trauma patients, age 65 and older, with a Glasgow Coma Score of 14 or less who visited the MVH Emergency Department between November 2013 and December 2014. By reviewing the MVH Trauma Registry and electronic medical records, the following data were collected: age, gender, ethnicity, mode of arrival, transfer status, pain score, vitals, co-morbid medical conditions, laboratory results, computed tomography (CT) results, ED diagnosis, and ED disposition. **Results:** The study protocol was completed for 144 patients. 54% (N = 78) of patients were male, 88% (N = 127) were Caucasian, 70% (N = 101) arrived via ambulance, and 42% (N = 60) were transferred from other institutions. The most common mechanisms of injury were fall (74%; N = 106) and motor vehicle collision (18%; N = 26). Only 42% (N = 61) of patients were tested for alcohol (ETOH). Of those who were tested, 20% (N = 12) were above 0.08, the Ohio legal limit for operating a vehicle under the influence. A minority of patients were tested for drugs of abuse (22%; N = 31). Of those tested, 23% (N = 7) were positive for opiates, benzodiazepines, or a combination. The most common co-morbid medical conditions were heart disease (49%) and hypertension (55%). There was no association between alcohol intoxication and gender (OR=1.333) or ethnicity (OR=3.911). The most common CT scan results were: subdural hemorrhage (38%), subarachnoid hemorrhage (31%), intraparenchymal hemorrhage (16%), while 37% of patients had a normal CT scan. There were no significant associations between abnormal CT scans and age, gender, or ethnicity (p>0.05). The most common diagnostic test abnormalities associated with altered mental status in this study included hyperglycemia (84%; N = 121), abnormal CT results (63%; N = 91), anemia (49% N = 71),

and alcohol intoxication (8%; N = 12). **Conclusion:** Our study confirmed that falls are the most common mechanism of injury in geriatric trauma patients presenting to the ED with altered mental status. The most common diagnostic test abnormalities associated with altered mental status in this study included hyperglycemia, abnormal CT results, anemia, and alcohol intoxication.

Nutrition and Medical Education: The Application of 5 Servings of Fruits and Vegetables in a Clinical Setting

Mai El Gasim; Ranjana Sinha, MD

Presenting Author: Mai El Gasim

Faculty Mentor: Ranjana Sinha, MD

Mentor's Department: Pediatrics

Poster Number: 35

Research Question/Objective:

What interventions are effective in motivating patients to eat 5 servings of fruits and vegetables daily? **Background:** In Dayton Children's Hospital a Healthy Way Initiative was launched to combat childhood obesity in Dayton Ohio. The program is in Phase 2 of this initiative. Phase 2 focuses on interventions that can help patients live a healthier lifestyle such as eating 5 servings of fruits and vegetables daily. **Methods:** A literature review was conducted that investigated research papers that successful increased patients' serving size of fruit and vegetables. Pub Med was used as the database with the MeSH terms fruit and vegetables and intervention. In addition, a survey was given to first and second year medical students at the Boonshoft SOM at Wright State University. It consisted of a pretest and a posttest after the completion of a nutrition lecture on 5 servings of fruits and vegetables. The surveys were done online using Survey Monkey. **Results:** The literature review showed that the medical practitioners' knowledge on fruit and vegetables serving sizes and motivational interviewing were key in helping patients increase their fruit and vegetable servings. The pretest survey showed 80.77% students knew how many servings of fruits and vegetables are recommended daily. 26.92% knew that one large banana was equal to 1 serving of fruit. 92.31% knew that a cup is equal to one serving of fruit. 92.31% knew that a cup is equal to one serving of vegetables. When asked how comfortable students

were in counseling patients on their nutrition 30.77% were not comfortable, 65.38% were moderately, and 3.85% were very confident. When asked how confident they felt in motivating patients to change their health behavior 26.92% said not at all, 50% said moderate, and 23.08% said very confident. When asked how well they felt their medical school has helped them in counseling patients on their diet 53.85% responded not at all, 46.15% responded moderate, and 0% responded excellent. After watching a nutrition lecture on 5 servings of fruits and vegetables and motivational interviewing, the students took a posttest. The posttest showed 100% responded correctly to how many fruits and vegetables are recommended daily. 91.67% responded correctly to how many servings of fruits are in a large banana. 95.83% responded correctly to how many cups are in 1 serving of fruits. 91.67% responded correctly to how many cups are in 1 serving of vegetables. 95.83% responded yes to finding the information presented in the presentation as being helpful. 66.67% responded yes to being more confident in counseling patients on diet after reviewing the lecture. 95.83% responded yes to having lectures on nutrition a valuable addition to medical education. 95.83% responded yes to having more lectures on motivational interviewing. **Conclusion:** In order to effectively help patients increase their fruits and vegetable servings to the recommended daily amount, nutrition education and motivational interviewing should be added to the medical school curriculum.

Prediction of Disease Severity Among Emergency Department Patients with Abdominal Pain

Christopher Fagan; Catherine A. Marco, MD, FACEP; Dennis Mann, MD, PhD; Jason R. Pickett, MD; James Olson, PhD; Catherine Eggers; William Trautman; April Daubenspeck; Sara Birdsong, MD

Presenting Author: Christopher Fagan

Faculty Mentor: Catherine Marco, MD

Mentor's Department: Emergency Medicine

Poster Number: 27

Research Question/ Objective: The purpose of this study was to measure self-reported degree of hunger among ED patients with abdominal pain, and to identify any association between self-

reported hunger and severity of disease. **Background:** Abdominal pain is one of the most common chief complaints among Emergency Department (ED) patients, accounting for 6% of ED visits annually. Abdominal pain can be a symptom of pathophysiologic processes ranging from benign to life-threatening. Emergency physicians use many clinical and diagnostic features to diagnose and initiate treatment for patients with abdominal pain. **Methods:** This study was a verbally administered patient survey conducted at the Miami Valley Hospital (MVH) Emergency Department, an urban hospital ED with an annual patient census of 90,000. This study was approved by the Wright State University Institutional Review Board (IRB) and MVH Human Investigation and Research Committee (HIRC). Eligible patients included a convenience sample of all ED patients age 18 and over who were not in distress, could communicate, spoke English, and consented to participate. By verbally administered survey, the following data were collected: day of the week, age, gender, ethnicity, mode of arrival, insurance status, triage pain score, hunger score, and hours since last meal. By electronic medical record review, the following data were collected: ED diagnosis, ED disposition, and final diagnosis. **Results:** The study protocol was completed on 304 patients. Age of participants ranged from 18-90 with a mean of 40 years. The majority of patients were female (71%) and Caucasian (67%). The median triage pain score was 8/10. Most (72%) patients were discharged from the ED. The most commonly reported final diagnosis categories were abdominal pain (32.7%), gynecological diagnoses (15.8%), and genitourinary diagnoses (14.5%). Hunger score was collected using a self-reported 0-10 scale. The median hunger score was 2 with a mode of 0. There were no significant differences among diagnosis categories with respect to hunger score (Kruskal Wallis p-value=0.27). African American patients had a significantly higher hunger score compared to Caucasian patients, with median scores of 5 and 2, respectively (Mann Whitney Wilcoxon p-value<0.001). Hunger score and age were inversely correlated (Spearman correlation coefficient -.15, p-value 0.01). There was no significant difference in hunger scores with respect to gender (p-value=0.68), insurance status (p-value=0.76), pain score, ED disposition ((Mann Whitney Wilcoxon two-tailed p-value=0.46), or final diagnosis

(Kruskal Wallis p-value=0.27). **Conclusion:** ED patients with abdominal pain report a wide variety of hunger scores. African American race was associated with higher hunger scores. There was no significant difference in hunger scores with respect to gender, insurance status, pain score, ED disposition, or final diagnosis. The value of self-reported hunger scores among ED patients with abdominal pain is limited.

Treatment of a Headache Following Endovascular Coiling for a Leaking Basilar Artery Aneurysm

Eric Fischer; Glen Solomon MD; Drew Triplett, DO

Presenting Author: Eric Fischer

Faculty Mentor: Glen Solomon, MD

Mentor's Department: Internal Medicine

Poster Number: 63

Research Question/ Objective: To determine the presentation and treatment of a headache in an adult male after an endovascular coiling procedure for a leaking basilar artery aneurysm. **Background:** Headache following endovascular procedures is commonly reported and often leads to repeated diagnostic studies. The headache literature does not offer definitive guidance on the treatment of post-procedure headache. We report a case of post aneurysm coiling headache successfully treated with indomethacin after failure to respond to other medications. **Case Presentation:** A 35 year old male with a history of leaking basilar artery tip aneurysm treated with endovascular coiling one month previously, presented to the emergency department complaining of a severe headache. This headache was described as coming on suddenly, was located in the parietal areas, described as a severe pressure rated 8-10/10, and was associated with nausea, photophobia and phonophobia. This headache was described as being very similar to his original presentation when the leaking aneurysm was discovered, with the only difference being the lack of a "popping" sensation on this presentation. On detailed history, the patient revealed that he had had a low intensity pressure headache 3-5/10 since the coiling procedure, which he treated with acetaminophen. On physical exam he appeared uncomfortable, holding the top of his head. His blood pressure was 161/79, but otherwise vital

signs and examination were within normal limits. He had a CT of the head, CT and MR angiography, which showed only post embolization of the basilar tip saccular aneurysm. Two lumbar punctures did not reveal evidence of intracranial bleed. He was treated for headache with acetaminophen and ibuprofen without significant relief. Opiates and anti-emetics were used with minimal effect. Prednisone was initiated and was abandoned after 2 days of ineffectiveness. Sumatriptan was given twice, but this too did not provide relief. Indomethacin 50 mg three times daily was initiated with significant relief coming after the third dose, with headache pain being rated 0-2/10. He remained headache-free while taking indomethacin at his one-week follow-up visit. **Discussion:** Headache after endovascular intervention is commonly reported. We report this single case of post endovascular coiling associated headache that was successfully treated with indomethacin, after numerous other attempted pharmacotherapies failed to alleviate his headache. Post procedure headache following endovascular coiling is commonly reported in the few available studies on this topic. Treatment with sumatriptan and dihydroergotamine are mentioned in case series, but there are no reports of their efficacy or alternative therapies. We present a patient who did not respond to sumatriptan, opiates, or prednisone but was able to achieve complete resolution of his headache pain with indomethacin. **Clinical Relevance:** Once a rebleed has been effectively ruled-out when a patient presents with a headache after endovascular coiling, attempts must be made to improve the patient's headache. While certain medications, such as triptans and ergot alkaloids have been described, this patient's headache was successfully treated with indomethacin, which has not been previously described as a successful abortive method for post-coiling headaches.

A Repertoire of Micro-RNAs That Target PLD-3'UTR and Change the Cell-Invasion Phenotype of Basal Breast Cancer Cells

Kristen Fite; Lobna Elkhadragey; Julian Gomez-Cambronero, PhD

Presenting Author: Kristen Fite

Faculty Mentor: Julian Gomez-Cambronero, PhD

Mentor's Department: Biochemistry and Molecular Biology

Poster Number: 49

Research Question/ Objective:

To determine the role of micro-RNA regulation of Phospholipase D (PLD) protein expression in healthy breast cells compared to breast cancer cells.

Background: Breast cancer is a leading cause of morbidity and mortality among women. Metastasis is a complex process that is initiated by cellular invasion into surrounding tissue, followed by entering and exiting the vascular system, and establishing a novel tumor in a secondary site. The signaling enzyme phospholipase D (PLD) plays a role in metastasis but post-transcriptional regulatory mechanisms are not well known. We have found that in luminal MCF-7/BT-474 breast cancer cells (low aggressive), micro-RNAs (miRs) that target PLD2 such as miR-203, miR-887, miR-3619, and a miR that targets PLD1, miR-182 are found at high level of expression. Conversely, basal MDA-MB-231/BT-549 breast cancer cells (highly aggressive), those same miRs are found at low levels of expression. **Methods:**

Knowing the 3'-UTR sequences of both PLD isoforms, PLD1 and PLD2, we found 6 putative miRs that align with specific regions, by using bioinformatics analysis (TargetScan Human). We synthesized DNA plasmids with the miRs sequences cloned in, as well as RNA "mimics". Additionally, we cloned the 3'-UTR sequence of PLD2 downstream a luciferase ORF, and co-transfected mammalian cells with this construct and the putative miRs, looking for a potential decreased luciferase activity if the miR-3'UTR match occurred in living cells. To demonstrate that specific miRs mediate PLD-driven cell invasion aggressive phenotype (characterized as high endogenous PLD enzymatic activity and high capability of cell invasion of tissues) we designed experiments aimed at reversing the phenotype by ectopically transfecting them in basal cells.

Controls for transfection were mRNA expression (by qPCR), activity of 3'-UTR (by luciferase activity) and protein expression (by Western blots and fluorescence microscopy). The read-outs for "aggressive" phenotype, were high PLD enzymatic activity and high cancer cell invasion in Matrigel. **Results:** With these experiments, we report that the "tumor suppressor"-like miR-203, miR-887, miR-3619 and miR-182 are able to diminish the extracellular-matrix invasive aggressiveness properties of MDA-MB-231 cells. We propose a mechanism after inhibition of PLD2 translation that negate the well-known effects in PA-mediated cell migration, as well as protein-protein interactions of PLD and proteins of the cell motility machinery (namely, Grb2, Wasp, Arp3 and actin). **Conclusion:** We report for the first time specific miRNAs that play a major role in breast cell cancer biological activity mediated by PLD activation.

Pediatricians' Referral and Treatment Patterns for Children with Behavioral Health Care Needs

Nicoletta Frankenstein; Tiffany Hunter; Marguerite Sullivan; Ashley Gillmor; John Pascoe, MD

Presenting Author: Marguerite Sullivan

Faculty Mentor: Richard Rapp, PhD

Mentor's Department: Pediatrics

Poster Number: 21

Research Question/ Objective: Identify the specific role pediatricians and parents play in the diagnosis, treatment and referral process for children with behavioral health care needs.

Background: Prior studies have found 10% to 25% of pediatric patients experience mental health disorders, but many of these children remain undiagnosed and untreated. Due to the increasing prevalence, diagnosis and care of these patients is falling to the pediatrician. With this shift, pediatricians have reported the increased need for advice and input from mental health care specialists, especially for more complex psychiatric conditions and administration of psychotropic medication. Parent discussion with their pediatrician has shown to have a threefold increase in the likelihood of seeing a mental health care specialist. Following an extensive literature review, we developed the Mental Health Referral Survey to investigate both pediatricians' and parents' roles in the diagnosis, treatment and referral processes for children with

behavioral health care needs (BHCN). Given the background research, we are addressing how pediatricians treat patients if behavioral concerns are brought to their attention, and how pediatricians refer patients to further specialty care. **Methods:** Study participants were patients at two pediatric practices in Southwest Ohio. Sample demographics are referenced in Table 1. The initial sample consisted of 419 participants. Parents were asked screening questions including if their child exhibited specific behaviors such as: hyperactivity, trouble sleeping, anger, loss of interest, inability to finish tasks, and defiance. Of the initial sample, 125 were eligible and completed the survey in its entirety.

Survey questions were divided into initial behavior recognition and diagnosis, pediatrician awareness of behavior concerns with subsequent treatment and referral practices, parent self-referral including barriers experienced, and sociodemographic.

Results: Of the 125 eligible participants, 57 children have received a formal diagnosis. Not excluding the possibility of more than one diagnosis, a resounding majority of patients, 77.6%, received the diagnosis of ADHD. Other common diagnosis included: mood or anxiety disorder (17/57), conduct disorder (6/57), autism (5/57), and other (9/57). 87/125 (69.6%) of parents discussed their BHCN concerns with their pediatrician. Compared to those who did not talk to their pediatrician, these parents were younger (mean age 38.0 versus 41.6), 63.2% had at least one formal diagnosis, 59.8% were covered by private health insurance, and 97.5% of parents reported they were the first to have recognized the BHCN. These patients saw fewer pediatricians at their group practice (mean 2.8 versus 3.4). 38/125 participants did not seek care from their pediatrician. Of these, 94.7% did not have a formal diagnosis and 7.89% sought specialty help on their own. Of the 87 participants who discussed their concerns with their pediatrician, 21 (30%) were referred to an outside mental health service. Again parents (41.7%) were more likely than professionals (23.2%) to have first recognized the BHCN. At the time of the study, children were older (mean 11.2 years) compared to children who were not referred (9.4%). **Conclusion:** A majority of parents concerned about their child having a behavioral health care need voice their concerns to their pediatrician. Pediatricians are taking it upon

themselves to treat some of the more basic behavioral health care needs with medication and patient counseling and education. Those children with a specific diagnosis have a greater tendency of being referred out to a specialist. Of the parents who did not discuss their concerns with their pediatrician, very few sought specialist help on their own, and even fewer followed through with appointments.

Efficacy of Spinal Cord Stimulation in Cervical and Lumbar Radiculopathy

Michael Gemma; Amol Soin, MD, MBA; Ravi Grandhi; Mitchell R D'aloia

Presenting Author: Michael Gemma

Faculty Mentor: Amol Soin, MD, MBA

Mentor's Department: Surgery

Poster Number: 62

Research Question/ Objective: The objective of this case study was to determine the effectiveness of spinal cord stimulation in treating a patient with refractory cervical and lumbar radiculopathy when other medical management has failed.

Background: Spinal cord stimulation is often used as a modality of last resort for patients who suffer from spinal pathology, such as herniated disk, post-operative pain and degenerative disc disease.

It is only after the pain has been deemed refractory to current treatment options that spinal cord stimulation is considered. Approved by the FDA in 1989, spinal cord stimulation has become the most common mode of neuromodulation used in managing chronic back pain. When compared to nerve ablation, spinal cord stimulation is minimally invasive and reversible, making it a valid treatment modality. Spinal Cord Stimulation originated from the Gate Control Theory postulated by Melzack and Wall. In this theory, peripheral nerves carrying painful stimuli and nerves carrying light touch and vibratory stimuli both terminate in the dorsal horn of the spinal cord. It was hypothesized that by modulating (increasing) the input from the light touch/vibration nerve pathways, one could decrease the receptiveness (close the gate) of afferent pain stimuli. **Case Presentation:** This is a case report of a single patient suffering from chronic cervical and lumbar radiculopathy. The patient received a spinal cord stimulator with leads placed both in the cervical and thoracic region. This study used

Infineon™ leads, which as opposed to the traditional 4:8 electrode contact lead, have 16 contact points. This allowed for the product to cover a larger geographical area within the spinal canal, at hopes of providing broader pain coverage. The patient underwent a test trial for seven days with the spinal cord stimulator wire advanced to C2 as well as one advanced to approximately T8 in the operating room. Prior to the procedure the patient had complained of chronic pain in the right neck as well as the right upper and lower extremities. Test stimulation was carried out and found to cover the patient's pain areas appropriately in both the cervical and lumbar regions. Leads were placed so that the testing was completed by narrowing the midpoint of the lead. This was done in the event that the leads migrated cephalateral or caudal, we should still be able to obtain coverage. **Discussion:** The patient noted an 80% improvement in pain and an 80% improvement in activity as determined by a personal pain diary and follow up pain survey. The pain scores went down from an average of 8 to 2 and based on this, the patient elected to proceed to have the spinal cord stimulator wire advanced in both the cervical and lumbar region. **Clinical Relevance:** One of the objectives of the study was to determine the efficacy of managing radiculopathy in multiple anatomic areas. As the results show, it is certainly possible to use spinal cord stimulation with multiple (16 in this case) when attempting to manage multi-focal radiculopathic pain. What can pose to be a challenge is to place two leads appropriately so that they have enough area to cover the spinal segments even in the event of lead migration, while also only mandating one internal pulse generator to drive both cervical and lumbar areas. In summary, we present a case report of a patient showing the efficacy of Infineon 16 Percutaneous Lead™ in the management of cervical and lumbar radiculopathy.

Unusual Presentation of Hashimoto's Thyroiditis

Sibel Gokce BA; Ankur Gupta MD

Presenting Author: Sibel Gokce

Faculty Mentor: Ankur Gupta MD

Mentor's Department: Internal Medicine

Poster Number: 65

Objective: We report a case of Hashimoto's Thyroiditis with asymmetric thyroid involvement and an unusual sonographic appearance.

Background: Hashimoto's thyroiditis (HT) is the most common etiology of hypothyroidism in iodine-sufficient regions; it is a benign disease treated medically with an excellent prognosis. Diffuse sclerosing thyroid papillary carcinoma (DSTPC), in contrast, is a highly malignant disease with a dismal prognosis. HT and DSTPC can be similar in clinical presentation and pathology, and may present concurrently making the diagnosis of either HT or DSTPC difficult. **Case Presentation:**

A 40-year-old Caucasian man with a history of pituitary tumor, status post resection resulting in panhypopituitarism on hormone replacement therapy (thyroxine, hydrocortisone, and testosterone) presented with one month history of persistent right upper neck lymph node enlargement. Physical exam was unremarkable except for a palpable enlarged right submandibular lymph node. The patient underwent a neck sonogram (US) that revealed an unusual appearing left thyroid with diffusely abnormal echotexture consisting of diffuse microcalcifications with a starry sky appearance. The majority of the right lobe was unremarkable and the isthmus was diminutive. US also showed an enlarged 3.2cm right submandibular lymph node. Fine needle aspiration (FNA) biopsy cytology of the left thyroid showed benign thyroid epithelial cells, hurthle cells, and lymphocytic infiltration consistent with HT. FNA of right submandibular lymph node showed benign lymph node hyperplasia. Patient's serum anti-thyroid peroxidase (TPO) antibody was 11 IU/mL (normal <34). Even though normal TPO autoantibodies can be seen in cytologically diagnosed HT and the FNA was benign, DSTPC could not be ruled out with the starry sky appearance of left lobe. The patient was recommended to have repeat FNA biopsy of left lobe but chose total thyroidectomy. On pathology,

chronic lymphocytic thyroiditis with interstitial fibrosis and scattered calcifications involving the left lobe and isthmus confirmed diagnosis of HT. Incidental occult follicular variant micropapillary carcinoma (0.4X0.4 cm) was noted in the left thyroid. **Discussion:** This case shows that Hashimoto's Thyroiditis may present in confusing and masquerading circumstances. Diffuse microcalcifications with a starry sky appearance are characteristic of DSPTC, which unlike HT has a dismal prognosis. The differentiation of DSPTC in the face of a starry sky appearance on ultrasound, absent TPO antibodies and asymmetry, a diagnosis of thyroid carcinoma would seem most likely, however the final surgical pathology showed HT. The asymmetric presentation of HT further complicated diagnosis. Papillary thyroid microcarcinoma was an incidental finding, which is not uncommon as shown in autopsy studies of the thyroid. HT and DSTPC are also similar in clinical presentation and pathology, and may present concurrently. This case of HT was particularly unusual because the US features were primarily confined to the left lobe and anti-TPO antibodies were negative leading one to consider cancer more strongly. The Papillary microcarcinoma was an incidental finding, which is not uncommon with surgical resection of the thyroid. **Clinical Relevance:** This case demonstrates an unusual, asymmetric presentation of HT that highlights the diagnostic challenge of differentiating between HT and DSTPC and emphasizes to clinicians the potential limitations of using US and FNA biopsy for the diagnosis of HT or DSPTC.

Substance Abuse and Perioperative Pain Management in Trauma Patients

Jason Hehr; Ronald Markert PhD; Priti Parikh PhD; Jonathan Saxe, MD

Presenting Author: Jason Hehr

Faculty Mentor: Jonathan Saxe, MD

Mentor's Department: Surgery

Poster Number: 33

Research Question/ Objective: When considering perioperative trauma patients, what effect does substance abuse have on in-patient pain management? **Background:** When pain is poorly controlled in the perioperative trauma setting, patients may suffer needlessly and develop

untoward health effects. In managing the pain of a patient with substance abuse, providers must be prepared to deviate from standard narcotic management. Patients with substance abuse histories may not only be experiencing a hyperalgesic state but increased tolerance must also be taken into account. **Methods:** Appropriate IRB approval was obtained and retrospective analysis of over 200 patient charts was completed. **Results:** When comparing patients with prior alcohol use and those without, no significant differences were found among: BMI, ISS, patient-reported pain scores, and total ME's (morphine equivalent) administered. When comparing patients presenting with positive vs negative urine drug screens (UDS), both groups were similar in: BMI, ISS, length-of-stay, and non-verbal days. However, a significant difference was found in total ME's administered. The most common medications administered were Morphine, Oxycodone, Fentanyl, Norco, and Hydromorphone. **Conclusion:** Although alcohol is a common denominator in a large percentage of traumatic injuries, a history of alcohol use does not appear to alter a patient's perception of pain or their response to narcotic pain medication. In patients presenting with a positive UDS, their average ISS and self-reported pain scores did not differ from those without recent illicit drug use. However, patients with positive drug screens required a great deal more of narcotic pain medication to achieve similar pain management. Additionally, when Fentanyl was used in any patient, regardless of admission UDS status, those patients required greater ME's than the average patient in their cohort.

A Review of the Effectiveness of Sacral Neuromodulation Using a Permanent Implantable Device for the Treatment of Pain Associated with Recalcitrant Interstitial Cystitis/Bladder Pain Syndrome
Spencer Hill

Presenting Author: Spencer Hill

Faculty Mentor: Jerome Yaklic, MD

Mentor's Department: Obstetrics & Gynecology

Poster Number: 31

Research Question/ Objective: A review of the effectiveness of sacral neuromodulation using a permanent implantable neuroprosthetic device for

the treatment of pain associated with recalcitrant interstitial cystitis/bladder pain syndrome. **Background:** Interstitial cystitis and bladder pain syndrome are multifaceted conditions with three cardinal symptoms: urgency, frequency, and pelvic pain. While multimodality treatment is often successful in treating these conditions, a subset of refractory patients will not respond. The Food and Drug Administration has approved sacral neuromodulation for urinary urgency-frequency, urgency incontinence, fecal incontinence and nonobstructive urinary retention but has not approved it for the treatment of pain. This review examines the efficacy of sacral neuromodulation for the treatment of pain in patients with recalcitrant interstitial cystitis/bladder pain syndrome. **Methods:** A PubMed, Web of Science, and Cochrane Library search was performed to identify articles in English from 1990 to March 2015 reporting treatment of pain associated with interstitial cystitis/bladder pain syndrome (IC/BPS) with sacral neuromodulation (SNM) using a permanent implantable device. **Results:** A total of 6 relevant articles were identified. The efficacy of SNM using a permanent implantable device in treating pain due to IC/BPS was reported for 127 patients using various methods for quantifying pain outcomes including pain analog scale, visual analog pain scale, seven point pain scale, and the morphine dose equivalent (MDE) usage. The visual analog pain scale (VAPS) was used in 3/6 studies, with a mean VAPS improvement of 58.5% after device placement. The remaining 3 studies showed a significant reduction in pain post-operatively vs pre-operatively. The duration of follow-up ranged between 5.6 and 86 months with a mean of 25.8 months. **Conclusion:** The data from these studies imply that permanent sacral neuromodulation can be an effective treatment for the pain associated with recalcitrant interstitial cystitis/bladder pain syndrome. Future studies with larger cohorts and standardized pain quantification measurements are needed to determine the long-term effectiveness.

Air Transport for Out of Hospital Stroke Patients: An Analysis of Helicopter Use

Matthew Huang; Eugene Yoon; Andrew Hawk, MD; Catherine A. Marco, MD, FACEP

Presenting Author: Matthew Huang

Faculty Mentor: Catherine A. Marco, MD FACEP

Mentor's Department: Emergency Medicine

Poster Number: 12

Research Question/ Objective: This study was undertaken to analyze the use of EMS-activated helicopter transport for out of hospital stroke alerts.

Background: According to data published by the American Heart Association, stroke causes 1 of every 19 deaths in the United States. This accounts for about \$36.5 billion in total annual costs. There is a need for more accessible, reliable, and cost effective means to identify, transport, and treat stroke patients. In 2011, Miami Valley Hospital began innovative 24/7 neurointerventional availability for treatment of acute stroke. CareFlight, the helicopter transportation service of Miami Valley Hospital, developed transport guidelines to facilitate and utilize these emergent services for out-of-hospital stroke patients. If used appropriately, helicopter-based transportation may have a large impact on stroke patients in the community. **Methods:** This is a retrospective chart review study of out of hospital stroke alerts transported via the CareFlight air service to Miami Valley Hospital in the years 2011-2014. EMS guidelines for consideration of CareFlight response for acute stroke included a significantly positive Cincinnati Stroke Scale, symptoms less than 3 hours or awoke abnormal (expanded in 2013 from previous symptoms less than 2 hours only), and absence of hypoglycemia. Each chart was independently reviewed by investigators. Primary endpoints included final diagnosis and hospital interventions. **Results:** A total of 117 patients met study inclusion criteria. Of the total EMS-activated out of hospital stroke alerts transported via Careflight in 2011, 29% received tPA and/or neurointervention procedures. In 2012, 2013, and 2014 27%, 18%, and 28% received tPA and/or neurointervention procedures respectively. Excluding those which did not meet EMS criteria, 50% received tPA and/or neurointervention procedures in 2011, 35% in 2012, and 25% in 2013. From 2011-2013, 70% of patients had a discharge

diagnosis of stroke. In 2014, the year when telemedicine was broadly implemented in the region, the number of in-field stroke alerts decreased 34% (from 44 in 2013 to 29 in 2014).

Conclusion: An average of one in four (25.5%) in-field stroke alerts transported via CareFlight from 2011-2014 received tPA and/or a neurointerventional procedure. In addition, strict stroke guideline adherence by EMS increased this rate significantly. From 2011-2013, 70% of patients had a discharge diagnosis of stroke. This data suggests that prehospital providers have a high diagnostic accuracy for EMS-activated helicopter-transported stroke alerts. With the implementation of telemedicine, the number of air transported in-field stroke alerts has declined.

Opiates in Gastroparesis: Help or Hindrance?

Ross Humes; Ronald J. Markert, PhD

Presenting Author: Ross Humes

Faculty Mentor: Dean Bricker, MD

Mentor's Department: Internal Medicine

Poster Number: 25

Research Question/ Objective: Does the use of opiates in patients with gastroparesis contribute to increased lengths of stay, readmission rates, ED visits, and/or redundant diagnostic testing?

Background: Gastroparesis is defined by impaired gastric emptying. Common symptoms include nausea, vomiting, postprandial fullness, and abdominal pain. The most common causes are idiopathic (36%), diabetic (29%), and post-surgical (13%) among other diverse causes. The prevalence has been increasing over the past 2 decades. Hospitalizations increased 158%; hospital days increased from 29,187 to 62,296 days; healthcare spending increased from \$48 million to \$208 million. Simultaneously, opioid use has also been increasing. The sale of opiates quadrupled from 1999 to 2010. Hydrocodone use has increased by 280%, methadone by 1293%, and oxycodone by 866% from 1997-2007. We hypothesized that opiates may be confounding optimal treatment of gastroparetic patients. The study aims to assess if there are potential associations between the use of opiates and hospital lengths of stay, re-admission or return to emergency department rates, and/or redundant diagnostic testing. **Methods:** A retrospective chart review was performed on all

patients admitted with the diagnosis of gastroparesis between January 1, 2012 and December 31, 2013. Inclusion criteria: Age >18; admission/ED visit to Miami Valley Hospital with diagnosis of gastroparesis. Exclusion Criteria: Age <18, or only outpatient visits and no admissions/ED visits. 110 records were reviewed; 99 met criteria and were included in the study. We analyzed these variables: age, gender, comorbid diabetes, GI disorders other than GERD, psychiatric disorders, use of illicit drugs and/or alcohol, opiate pain medications before, during, or after the index admission, gastric emptying study within the 2 years prior to the index admission, CT, gastric emptying study, EGD, and/or abdominal ultrasound during the index admission, all-cause 30-day readmissions, 30-day ED return visits, length of stay, and total number of admissions within the two-year period. Data was analyzed using Chi-Squared test and T-test for Equality of Means. **Results:** Gastroparesis patients taking opiates at admission, or at discharge, were more likely to have a 30-day return visit to the ED ($p=0.027$, $p=0.005$) as well as a 30-day readmission to the hospital ($p=0.024$, $p=0.017$), than patients not taking chronic opiates. However, patients given opiates during admission were not more likely to return to the ED in 30 days ($p=0.51$) nor were they more likely to be readmitted in 30 days ($p=0.49$). Substantial diagnostic testing was common among all gastroparesis patients. There were no statistical differences between patients taking opiates and those who were not, with regards to utilization of CT, abdominal US, EGD, or gastric emptying scintigraphy. Patients taking opiates were more likely to undergo gastric emptying scintigraphy within the preceding two years ($p=0.019$) than those who were not taking opiates. **Conclusion:** Opiate prescription is common among gastroparesis patients despite guidelines advising against this practice. The chronic use of opiates by patients with gastroparesis may result in more frequent returns to the ED as well as more frequent 30-day readmissions. Acute opiate use during a hospital stay might not carry those risks. Opiate use among patients with gastroparesis may contribute to increased utilization of redundant gastric emptying scintigraphy.

Goblet Cell Carcinoid of the Appendix Presenting as an Ovarian Mass

Jennifer Hurtubise; Adrienne Kirby; Christopher Lutman, MD; Phillip Heyse, MD; Kelly Clinton-Cirocco, MDH

Presenting Author: Jennifer Hurtubise; Adrienne Kirby

Faculty Mentor: Christopher Lutman, MD and Kelly Clinton-Cirocco, MD

Mentor's Department: Obstetrics and Gynecology

Poster Number: 61

Research Question/ Objective: Understanding the histopathology and presentation of goblet cell carcinoma of the appendix. **Background:** Cancer of the appendix is an uncommon disease with an annual incidence of 0.12 cases per million. However, it has been reported that appendiceal carcinoids are found in 1 out of every 300 appendectomies. Goblet cell carcinoid (GCC) is a rare neuroendocrine tumor of the vermiform appendix that comprises approximately 5% of all primary appendiceal neoplasm. **Methods:** An otherwise healthy 49-year-old female presented to the gynecologic oncology team after an enlarged, complex left ovarian mass was found incidentally on sonogram by her primary OB/GYN. After a lengthy discussion with the patient, a mutual decision was made to proceed with definitive surgical management. A robotic-assisted total laparoscopic hysterectomy with bilateral salpingo-oophorectomy was undertaken. Intraoperatively, an incidental enlarged, turgid appendix was noted. An intra-operative general surgical consult was obtained and a laparoscopic appendectomy and hemicolectomy was performed. **Results:** Final histopathological examination of the right hemicolectomy specimen and the appendix showed a GCC of the appendix. The proximal and distal half of the appendix was involved. Immunohistochemistry stains showed tumor cells positive for CK AE1/AE3, CD56, synaptophysin and chromogranin. **Conclusion:** Given the varying presentations of GCC, suspicion for the neoplasm is necessary in various situations prompting abdominal surgery. A survey of the abdomen during complex gynecologic and abdominal surgeries and other varied situations leading to abdominal surgeries is necessary.

Examination of the appendix can prove to be particularly important.

Platelet Function In Traumatic Brain Injury; Does The Type Of Test Matter?

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: 15th European Congress of Trauma & Emergency Surgery & 2nd World Trauma Congress; Frankfurt, Germany, May 2014

Poster Number: 29

Research Question/ Objective: The purpose of this study is to determine whether Adenosine Diphosphate (ADP) based tests or Epinephrine (EPI) based tests are adequate in assessing platelet function in traumatic brain injury. **Background:** Traumatic brain injury (TBI) in patients who are being treated with platelet inhibitors has risen dramatically in the U.S. Attempts to quantify the level of platelet dysfunction have been recommended to guide treatment. Since bleeding time is no longer a standard test offered in most U.S. hospitals, platelet function is either measured by an Adenosine Diphosphate (ADP) based test or by an Epinephrine (EPI) based test. The purpose of this study is to analyze the effectiveness of each methodology in directing treatment algorithms. **Methods:** We used the trauma registry at our community-based, academically-affiliated hospital with a Level I Trauma Center to conduct a retrospective review of patients admitted for TBI from January 2009 through December 2011. Patients were categorized as mild (GCS 12-15) or severe (GCS 3-11) and assessed for EPI and ADP levels. Other data collected included age, sex, Injury Severity Score (ISS), hospital length of stay, mechanism of injury, and discharge location. Means and standard deviations are reported for continuous variables, and counts and per cents are reported for categorical variables. The independent samples t test was used to compare the mild and severe GCS groups on continuous variables while the chi square test or Fisher's Exact Test was used for group comparisons of categorical variables. Inferences were made at the 0.05 level of significance with no corrections for multiple

comparisons. Analyses were conducted using IBM SPSS Statistics 21.0 (IBM, Armonk, NY). The study was approved by our Institutional Review Board. **Results:**

Our trauma registry found 2004 patients with TBI. Data on anti-coagulation and platelet function testing was available in 1864 patients. In the patients in which ADP platelet function testing was performed there was no correlation between the test and the status of anti-platelet therapy. The EPI test does correlate with the status of the anti-platelet therapy $p < 0.001$ but had a high 10% false negative rate. **Conclusion:** Evaluation of the patient with either the ADP or the EPI test does not seem to be adequate and may lead to inappropriate treatment according to current algorithms. Our findings would suggest other testing, such as Thromboelastography (TEG), might better guide reversal in this complex group of patients.

The use of motivational interviewing with the Statin/Aspirin Choice Decision Aid (SCDA) to encourage smoking cessation

Samantha Imfeld; Sara Robertson; Michelle Nguyen; Emily Ervin; Ronald J. Markert, PhD; Anne Proulx DO

Presenting Author: Samantha Imfeld; Sara Robertson

Faculty Mentor: Anne Proulx, DO

Mentor's Department: Family Medicine

Poster Number: 45

Research Question/ Objective: Will the use of motivational interviewing techniques and the Statin/Aspirin Choice Decision Aid (SCDA) positively influence patient readiness to change behaviors and medication regimens? **Background:** In 2013, the ACC/AHA Guidelines to Assess Cardiovascular Risk were updated. With the release of these new guidelines came new atherosclerotic cardiovascular disease (ASCVD) risk equations, which provide estimates of 10-year risk specific to gender and race. During the same year, the ACC/AHA also released guidelines on the Treatment of Blood Cholesterol, which used these ASCVD risk equations and guidelines in order to determine which patients would most likely benefit from statin therapy. The guideline takes into account age, gender, race, total cholesterol, HDL,

systolic blood pressure (SBP), smoking status, and presence/absence of diabetes and hypertension. Statin use is recommended when the individual's risk of cardiovascular disease (CVD) exceeds 7.5%. This calculation of risk may be difficult for patients to comprehend because there are several variables to consider. The Mayo Clinic recently created a tool that we think may circumvent this comprehension issue. The Statin/Aspirin Choice Decision Aid (SCDA) is a validated, online decision tool that may be used by a patient or by a healthcare provider with a patient in order to illustrate each individual's risk for CVA. It uses the ASCVD risk equation and presents the results in a pictorial form, showing a patient his or her 10-year risk on a dot matrix. The tool is interactive, meaning that once a patient's initial risk is determined, it is possible to shed light on risk reduction should the patient choose to begin Statin and/or ASA therapy. Additionally, as items such as smoking status and blood pressure are included in the initial calculation, a patient may be shown the effect of smoking cessation or better blood pressure control would have on his or her CVD risk. Given the level of interaction associated with the tool, it becomes a prime opportunity for the use of motivational interviewing in the office setting, which has consistently been proven to outperform traditional advice given by physicians.

Methods: We implemented the SCDA accompanied by motivational interviewing in the family medicine office setting, with the goal of determining patient satisfaction with the tool, in addition to patients' level of motivation to change behaviors or medication regimens after counseling. Primarily, patients were screened and excluded if they had any prior history of CVD, peripheral vascular disease, stroke, diabetes, or prior/current use of statin therapy. Patients who met inclusion criteria were guided through the SCDA by medical and/or pharmacy students at the Five Rivers Family Health Center, either before or after their scheduled appointment with a resident or attending physician. Metrics collected at the time of visit included the amount of time it took to use the tool, as well as patient willingness to change and the specific intervention that each patient was willing to change. Data collected included patient age, gender, race, smoking status, systolic blood pressure, total cholesterol, HDL level, and presence of hypertension. These data points were all required variables for the SCDA risk calculator. No other

identifiers were collected. Data was analyzed to determine demographic breakdown, as well as the number of patients who were willing to change behavior and/or medication regimen after viewing results of the SCDA risk calculator. **Results:** Data was analyzed in SPSS. 42 patients were ultimately included in data analysis. In terms of demographics, patients were female predominant (F=25, M=17), mostly African American (AA=29, Caucasian=13), and most patients were nonsmokers (smoker=15, non-smoker=27). The average age of included patients was 52.17 years (SD=7.05), mean total cholesterol was 197.12 (SD=52.57), mean SBP was 136.38 (SD=19.91), mean initial risk was 7.9% (SD=6.61%), and mean potential risk with intervention was 4.69% (SD=3.92%). In terms of willingness to change, one patient was missing data, and one patient elected to make no changes at the time of the survey. However, the remaining 40 patients stated willingness to modify either behavior and/or medication usage. Most notably, 13 out of 15 smokers stated that they were willing to work toward quitting smoking after the SCDA illustrated the dramatic decrease in CVD risk for non-smokers as compared with smokers. **Conclusion:** The SCDA has been found to improve medication adherence in the short term, has shown improved understanding of risks of CVD, and reduced decisional conflict in patients compared to patients educated given standard information pamphlets. Our use of this tool in the office setting was successful in that almost all patients asked to participate were willing, and patients overwhelmingly found the tool to be a valuable and educational resource in their healthcare. An unexpected compelling use for the SCDA was the evidence for increased interest in smoking cessation verbalized by patients viewing their SCDA results with smoking factored in as a risk and then compared to a non-smoker with all other domains constant. It will be interesting to review the potential for future positive effect on decreasing the risk of CVD by patients counseled with the SCDA tool. Further investigation will also be necessary to determine which patients claiming to be ready to change their smoking habits will actually make the necessary interventions to decrease their CVD risk.

Amide Local Anesthetic Injections as a Screening Tool for High Frequency Electric Nerve Block

Daniel Johns, Amol Soin M.D., M.B.A, Ravi Grandhi M.B.A

Presenting Author: Daniel Johns

Faculty Mentor: Amol Soin, MD, MBA

Mentor's Department: Surgery

Previous submission: Poster Number: 59

Research Question/ Objective: Does an injection of amide local anesthetic serve as an accurate screening test for high frequency electric nerve block implantation? **Background:** Most neuromodulation techniques rely on a screening tool to determine whether or not the patient is a good candidate for stimulation. This also provides the patient an opportunity to test or trial the device prior to proceeding with an implant. Because implantation costs can be upwards of \$35,000, physicians and health insurers want to make sure the patient is indeed a good candidate for the procedure. If a percutaneous lead was to be inserted and ran at high frequency as a screening method, there would be undesirable electrical activity in tissues adjacent to the target nerve. Therefore in order to deliver high frequency alternating current to a peripheral nerve, a surgically implanted cup must be used in order to restrict the current to the target nerve.

Here we describe a case report of using an injection of amide local anesthetic via the targeted peripheral nerve for the stimulating nerve cups, operating on the theory the stimulating nerve cup creates a completely polarizing nerve block of sodium channels similar to an amide local anesthetic. Thus if an amide local anesthetic block works, we would presume that the high frequency alternating current electric nerve block would work as well. **Methods:** A below the knee amputation patient who was deemed a good candidate for high frequency electric nerve block of the peroneal and tibial nerves was selected for this study. The patient was asked to quantify his level of pain on a scale from 1-10, with 10 being the most pain. Using ultrasound guidance, amide local anesthetic injection of approximately 10 cc near the peroneal and tibial nerves was completed. 20 minutes after the injection, the patient was asked to score his pain on a scale from 1-10, with 10 being the most pain. The

same injection technique was repeated a second time, and the patient again was asked to score his pain on a scale from 1-10. The patient then underwent implantation of a high frequency alternating current stimulating cup around the peroneal and tibial nerve. High frequency stimulation was carried out to 10 kilohertz at approximately 1.5 milliamps which created complete depolarizing block. This was run for 30 minutes and then stopped. The patient was again asked to rate his pain on a scale from 1-10. **Results:** Approximately 20 minutes after the injection of local anesthetic, the patient noticed a sharp decrease in pain. His pain score went from 8 to 2 and then stayed constant for approximately six hours. The same injection technique was repeated a second time with the same results. Following implantation of the electric nerve stimulator, the patient's pain relief mirrored the local anesthetic block almost identically with pain score going from 7 to 2. **Conclusion:** It appears that amide local anesthetic block may be a good screening tool for patients who are deemed candidates for high frequency electric nerve block technique.

Post-Operative Follow Up of Traumatic Blunt Aortic Injury Patients Who Undergo TEVAR: 8-year Experience and a System Analysis of a Level I Trauma Center

Kara M Joseph, PP Parikh, AP Ekeh, G Falls

Presenting Author: Kara Joseph

Faculty Mentor: Priti Parikh, PhD

Mentor's Department: Surgery

Previous submission: Society for Clinical Vascular Surgery (SCVS), March 29-April 2, 2015, Miami FL

Poster Number: 32

Research Question/ Objective: The treatment of acute aortic transection has shifted due to thoracic aortic stent devices. Originally intended to treat aortic aneurysms, the technology has been used to treat other acute and chronic aortic pathology. A highly morbid injury, aortic transection is a rare complication of severe blunt trauma. The procedure has facilitated treatment of these injuries without the added morbidity of direct aortic repair. The patient should undergo lifelong surveillance of the graft. Short and long-term follow up is highly recommended for these patients. Our primary

objective is to explore if these patients are being followed appropriately and to find if any systems or patient level factors contribute to the failure to follow up. **Background:** The treatment of acute aortic transection has undergone a dramatic shift over the last ten years due to the proliferation of thoracic aortic stent graft devices. Intended to treat thoracic aortic aneurysms, the technology has been extrapolated to treat other acute and chronic aortic pathology. The mortality rate of traumatic blunt aortic injury is on the order of 30-50%. While TEVAR has not significantly decreased this, the procedure has facilitated prompt treatment of the injuries without the added morbidity of a thoracotomy and direct aortic repair. In exchange for this benefit, the patient should undergo lifelong surveillance of the graft to avoid future issues. We have seen an increase in the number of trauma patients who have survived this injury with the stent graft. As a cohort, the trauma patient is younger, has less access to services, and is more prone to being lost to follow up. Furthermore, it is this younger patient population that is more inclined to sustain blunt aortic injury, in addition to other serious injuries in which follow up is imperative. As such, with patients who have undergone TEVAR, it is vital to follow these patients in order to determine what the long term implications of thoracic stent graft placement are in young patients and hopefully, identify and avoid any issues that could lead to catastrophic outcomes. By improving follow up in this subset of trauma patients, we anticipate improving long term outcomes, even in the face of serious injuries. **Methods:** Patients of a Level I trauma Center from 2005-2013 and who have had TEVAR were enrolled. Charts were reviewed retrospectively. Demographic data was recorded along with data on compliance to follow ups. **Results:** 25 patients met the inclusion criteria. A majority of the patients (72%) were male with the age range of 17-80 years (mean=47.32±18.95 years). We observed that few patients were followed up after the procedure. The primary patient level factor for non-compliance was unemployment (44%) and residing out of state. Furthermore, the system level factors such as failure to order CT for follow up and to schedule appointment with a surgeon or specialist also played a role in non-compliance of follow through the patients. **Conclusion:** TEVAR is used in an increasing number of patients.

Even though lifelong surveillance is strongly recommended, a large number of these patients are lost for various reasons. By identifying these factors, we hope to address these issues by standardizing patient education, establishing clear protocols at the hospital levels to track these patients, and advocating development of local, regional, and national databases to facilitate future trauma outcomes research.

Auditory training during development mitigates a hearing loss-induced perceptual deficit.

Ramanjot Kang; Emma C. Sarro, PhD

Presenting Author: Ramanjot Kang

Faculty Mentor: Dan H. Sanes, PhD

Mentor's Department: Center for Neural Science, New York University

Poster Number: 2 **Digital Presentation**

Research Question/ Objective: Can a brief period of training during development compensate for the perceptual deficits displayed by adult animals reared with CHL? **Background:** Sensory experience during early development can shape the central nervous system, which is thought to influence adult perceptual skills. In the auditory system, early induction of conductive hearing loss (CHL) leads to deficits in central auditory coding properties in adult animals, and this is accompanied by diminished perceptual thresholds. In contrast, a brief regimen of auditory training during development can enhance the perceptual skills of animals when tested in adulthood. **Methods:** Juvenile gerbils with CHL, and age-matched controls, were trained on a frequency modulation (FM) detection task for 4 or 10 days. The performance of each group was subsequently assessed in adulthood, and compared to adults with normal hearing (NH) or adults raised with CHL that did not receive juvenile training. **Results:** We show that as juveniles, both CHL and NH animals display similar FM detection thresholds that are not immediately impacted by the perceptual training. However, as adults, detection thresholds and psychometric function slopes of these animals were significantly improved. Importantly, CHL adults with juvenile training displayed thresholds that approached normal hearing adults. Additionally, we found that hearing impaired animals trained for 10 days displayed adult thresholds closer to

untrained adults than those trained for 4 days. **Conclusion:** A relatively brief period of auditory training may compensate for the deleterious impact of hearing deprivation on auditory perception on the trained task.

Ultrasound Guided Intercostal Nerve Block to Treat Post-Mastectomy and Breast Augmentation Pain

Omar Khan, Amol Soin M.D., M.B.A, Ravi Grandhi M.B.A

Presenting Author: Omar Khan

Faculty Mentor: Amol Soin, MD, MBA

Mentor's Department: Surgery

Poster Number: 58

Research Question/ Objective: Ultrasound Guided Intercostal Nerve Block to treat post Mastectomy and Breast Augmentation pain.

Background:

Most patients with breast cancer undergo some form of surgery for treatment. For personal and cosmetic reasons, these patients also often receive breast augmentation after the mastectomy is completed. Occasionally, due to various factors such as infection of the breast implant, improper wound healing or post-procedural radiation, patients can develop pain and discomfort over the breast area. This pain can be extremely debilitating and prevent the patient from maintaining normal activities of daily living. Since the etiology of the symptom may be related to damage of peripheral nerves, we propose doing intercostal nerve blocks to treat this type of pain. **Methods:** This is a single case report of a patient who suffers from severe allodynia and hyperalgesia in the left breast area after undergoing chemotherapy, radiation and a mastectomy followed by breast augmentation. In this case, the breast implant became infected and was therefore removed and subsequently replaced at a later date. Although the infection cleared, the patient still suffered from debilitating pain. We decided to attempt intercostal nerve block to see if this would alleviate the pain. **Results:** The patient was brought back to the operating room and an ultrasound probe was placed over the intercostal segments approximately 6 cm from midline of the thoracic spine. Dermatomes selected that were consistent with the patient's pain included T2, T3, T4, and T5. 25-gauge spinal needles were placed

and advanced to lie just inferior to the intercostal margins of the levels listed above. We used ultrasound as a way to map and adequately place the needles. Furthermore, it allowed us to adequately gauge the depth of pleura in order to avoid the potential complication of a pneumothorax. After appropriate needle placement was confirmed with fluoroscopy, approximately 1 cc of 2% lidocaine mixed with a total of 80 mg of Depo-Medrol was injected at each site. The procedure was repeated approximately 6 weeks later. **Conclusion:** Within 45 minutes, the patient started to notice a decrease in the severity of pain and within 1-1/2 hours, the pain was completely absent. The patient mentioned that this was the first time she had not experienced pain since she had her surgical treatment. The first nerve block lasted approximately three to four weeks, and we subsequently repeated the procedure a couple weeks thereafter.

A mobile application to screen for autism in Arabic-speaking communities in Oman

TJ Klein, Tahani Al-Ghasani, Majda Al-Ghasani, Amna Akbar, Elias Tang, Yahya Al-Farsi

Presenting Author: TJ Klein

Faculty Mentor: Dean Parmelee, MD

Mentor's Department: Academic Affairs

Previous submission: Consortium of Universities for Global Health 6th Annual CUGH Conference. Boston, MA. 26-28 March 2015.

Poster Number: 42

Research Question/ Objective: To develop a culturally appropriate mobile application to screen for autism in a low resource setting.

Background: Epidemiological studies of autism spectrum disorders (ASDs) in Arab communities have usually shown lower prevalence than those from Western nations. In Oman, the ASD prevalence is estimated to be 0.14 per 1000 Omani children aged 0–14 years. Many factors contribute to this low estimate including lack of awareness, non-standardization of diagnostic tools, and unequal distribution of services. This study aimed to develop and pilot a mobile application to provide families with a reliable and easy-to-use tool to screen their children for ASDs. Using culturally appropriate images, this mobile application also seeks to reduce ambiguity in the

interpretation of the standard Modified Checklist for Autism in Toddlers (M-CHAT) screening tool that arises from language and cultural differences. **Methods:** Between December 2013, and March 2014, a team of software developers used an improved and validated version of the M-CHAT in Arabic to create the mobile application called "Autism Fingerprint". The application uses animations and comparative images to demonstrate autistic and non-autistic behaviors. We customized images to Omani culture to reduce ambiguity and misunderstanding. In addition, the application includes general information about ASDs to increase awareness and knowledge. We conducted a validation study between March and October 2014, with volunteers from Arabic-speaking countries. Through collaboration with the Oman Autism Association (the national autism support group), potential participants were approached during exhibitions and autism awareness activities. Validity was assessed by calculating sensitivity and specificity of the screening test. The gold standard was the confirmed diagnostic status as indicated in medical reports issued by specialized medical centers. The reliability was assessed by measuring the correlation coefficient of test-retest reliability. **Results:** We included 130 participants in the validation study, of whom 65 (50%) were caretakers of children with a confirmed ASD and the rest were caretakers of children with typical development. Of the 65 confirmed cases of ASD, the mobile application identified 58 of these cases as high likelihood of ASD (positive), giving a sensitivity of 0.89. Of the 65 confirmed non-cases of ASD, the mobile application indicated 53 as low likelihood of ASD (negative), revealing a specificity of 0.82. The reliability assessment shows that the application had a high test-retest reliability (correlation coefficient, $r=0.86$). **Conclusion:** We have developed a mobile application to screen for autism in Arabic-speaking populations that is both sensitive and specific. Future versions of the Autism Fingerprint application will have an option for English, be available for download on Apple iOS devices, and have the ability to directly send the results to a chosen physician. Effectiveness and validity will continue to be monitored, and any updates to the M-CHAT will be incorporated into future versions.

Acetabular Rim Length: an Anatomical Study
Jensen Kolaczko; Karns MR; Patel SH; Liu RW;
Mather RC 3rd; Nho SJ; Salata MJ

Presenting Author: Jensen Kolaczko
Faculty Mentor: Michael Salata, MD
Mentor's Department: Orthopedic Surgery
Poster Number: 46

Research Question/ Objective: The objective was to determine normative values for the length of the acetabular rim. Additionally, we aimed to detect differences in acetabular rim length between gender, age, ethnicity, and leg length. **Background:** There is increasing scientific support for acetabular labral reconstruction in cases of irreparable/insufficient labrum. Techniques developed to reconstruct the labrum estimate graft length intra-operatively. No studies have specifically looked at defining values of acetabular rim length, which could aid in labrum reconstruction. **Methods:** Cadaveric skeleton specimens from a large osteologic collection were studied. Six measurements were taken on the acetabular rim using a MicroScribe G2X digitizer: circumferential (excluding the acetabular notch), anterior inferior iliac spine (AIIS) anteriorly, AIIS posteriorly, 12 to 3 o'clock, 12 to 9 o'clock, and 11 to 5 o'clock. Leg length data was utilized from a previous study. Student T-tests and Pearson's correlation were used for statistical analysis and a multiple regression analysis to determine the relationship between age, sex, ethnicity, leg length, and acetabular rim length. **Results:** One-hundred and forty-three pelvises were measured. The average acetabular rim length in males for circumferential, AIIS-anteriorly, AIIS-posteriorly, 12-3 o'clock, 12-9 o'clock, and 11-5 o'clock were 15.82cm, 4.17cm, 11.72cm, 4.88cm, 4.70cm, and 9.46cm; and for females 13.67cm, 3.73cm, 10.03cm, 4.32cm, 4.13cm, and 8.30cm respectively. All six measurements were significantly larger for males ($p < 0.0001$). Multiple regression analysis demonstrated a strong relationship between gender and rim length for all six measurements and a significant relationship between leg length and acetabular rim length for 5 of the 6 measurements. A significant relationship was found between African American race and the circumferential and 12 to 9 o'clock rim

measurements ($P = 0.036$ and $P = 0.030$). No statistically significant relationship between age and rim length was found ($P > 0.157$). **Conclusion:** Average acetabular rim lengths were established. The acetabular rim is significantly longer in males and correlates with leg length. Age and race don't appear to be a significant predictor of acetabular rim length.

The Association Between Secondhand Smoke Exposure and Metabolic Syndrome in Children with Obesity

Alexandra Lawson; Abiodun Omolaja, MD; Leah Sabato, RD; James Ebert, MD; Adrienne Stolfi, MSPH

Presenting Author: Alexandra Lawson

Faculty Mentor: Abiodun Omolaja, M.D.

Mentor's Department: Nephrology Department, Dayton Children's

Previous submission: Pediatric Academic Societies Annual Meeting, San Diego, CA, April 25-28, 2015

Poster Number: 13

Research Question/ Objective: To determine whether secondhand tobacco smoke exposure is associated with metabolic syndrome in obese children. **Background:** The harmful cardiovascular effects of secondhand tobacco smoke exposure (SHSe) in children have been well described. Due to the current childhood obesity epidemic, there is an increased incidence of metabolic syndrome (MetS) and its associated cardiovascular morbidity. In children, the relationship, if any, between SHSe and MetS has not been well described. This is important because of the potential combined increased risk for cardiovascular morbidity and mortality from these two public health issues. **Methods:** A retrospective chart review was conducted of all obese children aged 6-11 years seen in a pediatric lipid clinic from 2008-2010. Data collected included age, sex, race (white vs. black/other), BMI, and six metabolic syndrome (MetS) criteria. MetS was defined as BMI >85th percentile and 2 or more of the following: systolic or diastolic blood pressure ≥ 90 th percentile, HDL <35 mg/dl, triglycerides >150 mg/dl, 2-hour glucose ≥ 140 mg/dl, or fasting insulin ≥ 17 μ IU/ml. Information about the number of smokers in the household was obtained from the parent/guardian report. Children

were classified as exposed to SHSe if one or more smokers resided in the household. Comparisons between children exposed (SHSe+) and not exposed (SHSe-) were made with chi-square and Mann-Whitney tests. **Results:** Of 206 eligible children, 147 had non-missing information on SHSe and were included in the study. Ninety of the 147 children (61%) lived with 1 or more smokers. There were no differences between the SHSe+ and SHSe- children for age (mean \pm SD 9.3 \pm 1.3 years), BMI percentile (99.1 \pm 0.9), or sex (61% female), but a greater percent of the SHSe+ group was white race (71% vs. 52% SHSe- group, $P=0.023$). The prevalence of MetS was significantly higher in the SHSe+ group (52% vs. 35% SHSe- group, $P=0.042$). SHSe+ children also had higher levels of triglycerides compared to SHSe- children (133 \pm 168 vs. 96 \pm 68 mg/dl, $P=0.030$). **Conclusion:** The increase prevalence of metabolic syndrome as well as increased triglyceride levels in obese pediatric patients with SHSe suggests an increased risk for future cardiovascular diseases. Additional studies are needed to investigate the combined effects of MetS and SHSe on the cardiovascular health of children.

A Method to Allow for Positional Changes in a Patient with a Spinal Cord Stimulator without Significant Discomfort

Nicholas Mata; Amol Soin, MD, MBA; Ravi Grandhi

Presenting Author: Nicholas Mata

Faculty Mentor: Amol Soin, MD, MBA

Mentor's Department: Surgery

Poster Number: 55

Research Question/ Objective:

Can a Spinal Cord Stimulator with "sensing" capability decrease the discomfort of positional changes traditionally associated with Spinal Cord Stimulators without sensing capability?

Background: Spinal cord stimulators are commonly used to treat chronic back and leg pain if medications, epidural injections, and physical therapy have failed to alleviate the pain. Implantation of electrical wires called "leads" into the dorsal column of the epidural space with attachment to a pacemaker-type battery allows the spinal cord stimulator to administer frequencies, electrical current, and stimulation. This

stimulation acts via the gate control theory to create a tingling paresthesia that will typically help patients experience less pain.

Because leads are oftentimes implanted into the epidural space, they are subjected to positional movements of the spine such as bending, laying down and standing up. The positional changes of the leads within the epidural space commonly results in sporadic changes in electric sensory stimulation, creating discomfort.

The Restore Sensor Internal Pulse Generator is a relatively new piece of equipment that has an accelerometer that can sense changes in position similar to that of a smartphone. This accelerometer is activated by turning on the Restore Sensor Algorithm. Thus, positional changes such as bending, laying down, and standing up are recognized by the battery which then changes the current output to the leads in order to create a smooth, even stimulation sensation.

We present a case report of a patient who had the new Medtronic Restore Sensory Spinal Cord Stimulator Battery placed that may allow for better controlled electric sensory stimulation with positional changes in order to prevent discomfort in paresthesia sensation. **Case Presentation:**

This is a single patient case report of a Medtronic Restore Sensor Spinal Cord Stimulator Battery implantation in a 36-year-old male patient who suffered from grade 3 spondylolisthesis with lumbar fusion. The patient had chronic back and right lower extremity pain refractory to medication, epidural injections, and physical therapy. Two leads were placed in the epidural space at approximately T8 and they were inserted into the Internal Pulse Generator. The patient was observed for 2 months prior to turning on the internal pulse generator's Restore Sensor Algorithm. The patient was then reassessed after the algorithm was activated. **Discussion:**

For the first 2 months following the spinal cord stimulator implantation, the patient noted discomfort with positional changes, particularly when laying down and standing up. After turning on the Restore Sensor Algorithm, the patient no longer noticed discomfort with positional changes.

Clinical Relevance: Due to the success of the Medtronic Restore Sensor Spinal Cord Stimulator Battery in this patient, the use of spinal cord stimulators with "sensing" capability for positional movements may prevent uncomfortable changes in

paresthesia sensory threshold and provide a better experience for a broader spectrum of patients with chronic back and leg pain.

A Randomized Controlled Simulation Study of Factors Improving Chest Compression Depth during Cardiopulmonary Resuscitation

Kelsey Mayrand, Eric Fischer, Raymon Ten Eyck, MD

Presenting Author: Kelsey Mayrand

Faculty Mentor: Raymond Ten Eyck, MD

Mentor's Department: Emergency Medicine

Previous submission: BSOM Central Research Forum, Wright State University, Oct. 16, 2014

Poster Number: 29

Research Question/ Objective: This study assessed the impact on chest compression depth of factors including bed height, step stool utilization, the position of the rescuer's arms and shoulders relative to the point of chest compression, the rescuer's height, the rescuer's weight, and gender.

Background: Current resuscitation guidelines emphasize a systems approach with a strong emphasis on quality cardiopulmonary resuscitation (CPR). Despite the American Heart Association (AHA) emphasis on quality CPR for over 10 years, many resuscitation teams fail to meet recommended CPR standards. **Methods:** We performed a randomized simulation pilot trial of physician assistant students and first year emergency medicine residents. Fifty-six participants enrolled and were randomized in blocks to treatment (bed lowered and step stool readily available) and control (bed locked 10 cm above lowest setting and step stool concealed) groups. Each participant completed two minutes of CPR per AHA guidelines. **Results:** Using an intention to treat analysis, the mean compression depths for the treatment and control groups were not significantly different. Most participants did not comply with their allocated condition for step stool use. Subjects positioning their arms at a 90° angle to the mannequin's chest achieved a mean compression depth significantly greater than those compressing at an angle less than 90°. The correlations between compression depth and height, weight group, and gender were statistically significant. **Conclusion:** The rescuer's shoulder angle relative to the point of compression, height, weight, and gender all

influence the compression depth achieved during cardiopulmonary resuscitation.

Sodium channel slow inactivation as a therapeutic target for Myotonia Congenita

Jacob Mitchell, Jennifer Norman, Mark Rich, MD, PhD

Presenting Author: Jacob Mitchell; Jennifer Norman

Faculty Mentor: Mark Rich, MD, PhD

Mentor's Department: Neuroscience, Cell Biology & Physiology

Poster Number: 37

Research Question/ Objective: Our goal was to use a previously proposed mechanism underlying warm up in Myotonia congenita to guide development of a novel therapy. **Background:**

Myotonia congenita is characterized by slowed muscle relaxation following voluntary contraction. Myotonia congenita stems from a loss of function mutation in the CIC-1 chloride channels. In the absence of chloride conductance, muscles become hyper-excitable and action potentials occur spontaneously following cessation of voluntary contraction. Repetitive activity in the muscle triggers a reduction in this muscle stiffness, a phenomenon known as warm-up. Our hypothesis is that the slow inactivation in sodium channels that underlies warm up phenomenon could potentially be a target of therapeutic intervention. There are two drugs approved by the FDA that increase slow inactivation of sodium channels. One of the drugs (lacosamide) is used to treat epilepsy, whereas the other drug (ranolazine) is used to treat myocardial ischemia. Mexiletine, a sodium channel blocker, is the current standard of care for Myotonia congenita.

Methods: Previous in vitro work identified sodium channel slow inactivation as the mechanism underlying the warm up phenomenon in Myotonia. Our in vivo research measured therapeutic drug effect on motor function and measured drug impact on Myotonia. Sixteen mice were treated, and motor performance was measured at 5 and 15 minutes after peritoneal injection of lacosamide, ranolazine, mexiletine, or saline. All mice were tested for baseline motor function before each treatment. Motor function was analyzed by timing the righting reflex three times and by scoring two performance trials on a modified Rotarod test. Based on the

doses determined to have the best therapeutic effect, in vivo measure of drug impact on Myotonia was determined via EMG readings of paraspinal and gastrocnemius muscle action potentials. Degree of Myotonia was assigned a subjective severity score by two blinded EMG examiners using standard EMG technique. **Results:** In vivo studies determined that all three drugs improved motor function as measured by decrease in time of righting reflex, with no statistically significant difference between the drugs. At their optimal doses, both mexiletine and ranolazine showed greater improvement on the Rotarod than lacosamide ($p < .05$). As determined via EMG, both lacosamide and ranolazine appeared to be more effective than mexiletine in shortening the duration of Myotonia. Our in vivo studies suggest ranolazine is at least as effective in treating motor dysfunction and Myotonia in CIC mice as either mexiletine or lacosamide. **Conclusion:** Previous analysis of the mechanism underlying improved motor performance with warm up in the CIC mouse model of Myotonia congenita suggested that slow inactivation of sodium channels is an important contributor. There is currently no FDA approved treatment for Myotonia congenita. The most commonly used strategy to treat Myotonia congenita is to reduce muscle sodium currents. Ranolazine and lacosamide are FDA-approved drugs whose mechanism of action is an increase in sodium channel slow inactivation. Ranolazine and lacosamide appeared more effective in reducing duration of Myotonia in vivo. However, despite inferiority in lessening Myotonia, mexiletine was superior to lacosamide in improving motor function. This may be due to the propensity of lacosamide to cause ataxia and vertigo at therapeutic doses. This raises the possibility that side effects of lacosamide may limit efficacy in treating patients. Ranolazine appeared to cause less sedation and ataxia than lacosamide, and was equal to or better than mexiletine in all in vivo measures of improvement in Myotonia and motor function. We propose that ranolazine may be superior to mexiletine for three reasons. First, mexiletine modulates an essential function of sodium channels (fast inactivation), and may cause problems with normal regulation of excitability. The second advantage of using ranolazine may be that it is less likely to induce loss of muscle fiber excitability at high doses. The third advantage is that mexiletine

is not well tolerated by many patients due to gastrointestinal side effects and a possible increase in mortality. We conclude that ranolazine has excellent therapeutic potential for treatment of patient with Myotonia congenita.

Perceptions of a Patient-centered Care Model in Urban Vietnam: A Pilot study

Minh-Tri Nguyen; Sabrina Neeley PhD, MPH; Ashley Fernandes MD, PhD

Presenting Author: Minh-Tri Nguyen

Faculty Mentor: Sabrina Neeley PhD, MPH; Ashley Fernandes MD, PhD

Mentor's Department: Community Health

Poster Number: 3 **Digital Presentation**

Research Question/ Objective:

Objective 1: To explore patient satisfaction with the use of an interviewing intervention (the Going Out With Linked Directives "GOLD" card) that focuses on increasing PCC.

Objective 2: To explore the relationship between effective use of the PCC interviewing intervention and the patients' confidence in managing and understanding their own conditions.

Background: A large component of Patient-Centered Care (PCC) is the development of the physician-patient communication and health literacy. Both have been correlated with improved health outcomes.

Little research has focused on the promotion of effective physician-patient communication and health literacy in newly industrialized countries like Vietnam. **Methods:** 49 adult patients (ages 18-80) were recruited from Lam Dong General Hospital, an urban hospital in Da Lat Vietnam. Recruitment was between June – July 2014.

Eligibility: - scheduled for a doctor's visit
- informed and consented

- agreed to fill out survey on use of intervention (the GOLD Card)

Patients who were illiterate, unable to give consent, or otherwise unable to answer written surveys were excluded.

The GOLD card contains basic information about diagnosis and discharge information. During physician visit:

The GOLD cards were filled out by the patient with the physician present and with the help of the researcher. **Results:** Overall, patient perceptions

towards the intervention were observed to be positive.

The majority of patients felt that the use of the GOLD card allowed for improved communication, understanding of medical condition, comfort in managing care, ultimately leading to a perceived more satisfying doctor visit.

Patients also perceived the GOLD card as an easy and effective tool to remind them of how to manage their care. The majority of patients would recommend the use of the GOLD card in their clinical settings. **Conclusion:** Further research should aim to recruit a larger sample from various community hospitals. Quantitative data could be collected for more robust statistical correlation. Further studies will be required in order to fully understand the implications of PCC in a country like Vietnam as well as to help determine the cost-effectiveness or even feasibility of providing a PCC model in Vietnam.

This was a pilot study offering descriptive results for a small sample of Vietnam's urban Lam Dong Hospital. Therefore, our results cannot be generalized to all of Vietnam or its vastly diverse patient population.

This is the first known study seeking to gauge the interest of PCC among native Vietnamese patients.

Preoperative Incidence of Penile Abnormalities Found in Voluntary Adult Male Medical Circumcision in Swaziland

Anthony Oddo; Elizabeth Ruedrich; Christopher Zust; Lindsey Marugg; Echo VanderWal P.A.; Harry VanderWal, M.D.; Mary McCarthy M.D.

Presenting Author: Anthony Oddo

Faculty Mentor: Dr. Mary McCarthy

Mentor's Department: Surgery

Poster Number: 11

Research Question/ Objective: Objective: Identify the rates of penile abnormalities found in voluntary adult male medical circumcisions performed in Swaziland. **Background:**

Circumcision has proven to be an effective procedure in reducing the transmission of HIV in Africa (need citation). The Luke Commission, a mobile outreach hospital, has responded by performing thousands of male circumcisions throughout rural Swaziland. Due to limited access to healthcare, penile abnormalities are often found

and corrected during these voluntary medical male circumcisions. These abnormalities would be regularly diagnosed during recommended well-baby checks. The purpose of this study is to evaluate the rates of these medical conditions, including the number of individuals with multiple abnormalities. We assessed the rates of phimosis, paraphimosis, epispadias, hypospadias, ulcers, balanitis, torsion, and cases of adherent foreskin attached to glans through a retrospective data analysis of medical records kept by The Luke Commission. It was ultimately found that 83% of males undergoing voluntary medical male circumcision had at least one penile abnormality. Over 98% of those individuals with abnormalities were ages 6-19. These results demonstrate a significant majority of patients had abnormalities which had persisted into their teenage years or beyond. This data exemplifies the steps The Luke Commission is taking alongside the Swaziland government towards decreasing HIV transmission and improving male reproductive health.

Methods: Our patient base included all males who had a voluntary medical male circumcision performed by the Luke Commission during their medical outreach in rural Swaziland collected from many different outreach sites in Swaziland. The information was analyzed retrospectively, with the Luke Commission giving us access to their patient data, de-identified having removed protected health information in order to protect patient confidentiality. As part of the TLC protocol for voluntary medical male circumcision, nursing staff perform a preoperative examination. This includes, but is not limited to, identification of phimosis, paraphimosis, epispadias, hypospadias, ulcers, balanitis, torsion, and cases of adherent foreskin attached to glans. Nursing staff enter these findings on a coversheet, later transferred to a TLC Male Circumcision Record Form. Subsequently, this information is entered into an electronic format, a spreadsheet file, where it was compiled with previous data. This data was analyzed statistically by Ronald Markert at Miami Valley Hospital.

Results: Out of 929 total circumcisions, 83% (771 patients) had at least one condition while 17% (158 patients) had no penile malformations. Other Bar graphs included on poster.

Conclusion: While the Luke Commission's primary reason for performing circumcisions is to prevent HIV infection, the data shows the TLC is also very active in improving

male reproductive health. Most (83%) of men being treated also have a malformation examined and/or treated (such as removing a phimosis or treating an adhesion). The range of ages shows that most of the patients are over the age of 5, and most between the ages of 6 and 19 (895/929 patients, or 96.3% of patients). By the time the majority of men have been treated for their malformation, they have been living with their condition for several years. Adhesions and phimoses can be painful, inconvenient, and make hygiene more difficult. Repairing these conditions can certainly improve quality of life in addition to reducing the transmission of HIV. These results demonstrate that the TLC, in cooperation with the Swazi Government, is continuing to provide quality health care to the people of Swaziland that goes beyond HIV prevention.

A Technique Utilizing Spinal Cord Stimulation and Peripheral Nerve Field Stimulation To Treat Axial Back Pain

H. Robert Papas, Amol Soin M.D., M.B.A, Ravi Grandhi M.B.A

Presenting Author: H. Robert Papas

Faculty Mentor: Amol Soin, MD, MBA

Mentor's Department: Surgery

Poster Number: 60

Research Question/ Objective: To demonstrate one method of alleviating axial low back pain after multiple intervention failures. **Background:** Axial low back pain can be very difficult to treat, especially after multiple surgical interventions, physical therapy, and injections have been attempted. Oftentimes, the only further intervention available is spinal cord stimulation. Spinal cord stimulation (SCS), however, is not a panacea. After lead placement in the spinal cord, stimulation in the lower back region can be difficult. Stimulation of the nerve roots of the tracts that descend into the lower extremities can be achieved with ease, but occasionally, adequate coverage cannot be obtained when specifically attempting to isolate the lower back. **Case Presentation:** This is a single case report describing a patient who received SCS lead placement in the thoracic spine, as well as peripheral nerve field stimulation in the lower axial back. The patient presented with chronic back pain unresolved after multiple surgical interventions.

For the procedure, the patient was brought to the operating room and using strict, aseptic technique, the SCS lead wire was advanced to approximately the top of T8, as is convention. This provided pain coverage from the buttocks down to the ankles. The stimulator intensity was increased and the lead was advanced cephalically in an effort to achieve better coverage of the axial low back; the effects were minimal. For optimal coverage of the specific area, a separate peripheral lead was placed approximately 2 cm into the subcutaneous tissue over the pain generating area. This peripheral lead was connected to the same internal pulse generator as the SCS lead, which allowed for peripheral nerve field stimulation. The effects resulted in a tingling sensation in the lower back described subjectively as pleasurable by the patient. **Discussion:** Combination of these two modalities was shown to be effective. Patient utilization of the device at home resulted in a 78% reduction in pain and a 65% increase in functional activity. Given that this patient had failed surgical management, and the lack of other further treatment options, the patient found this relief to be satisfactory allowing for full implantation of the device. Chronic back pain is a complex dilemma and has multiple etiologies. When physical therapy, injections, and surgical interventions do not succeed, options are limited. SCS is a reasonable next step in attempted therapy on its own. Now, in conjunction with peripheral nerve stimulation, improved results can potentially be realized. **Clinical Relevance:** Utilization of spinal cord stimulation, in addition to local lead placement for peripheral nerve field stimulation, may be an adequate way to treat axial low back pain in specific patients refractory to all other treatments.

Long-term use of Valproic Acid and Hyperammonemia

Krupa Parkih; Natalie Pyatka

Presenting Author: Krupa Parkih

Faculty Mentor: Christina Waite, MD

Mentor's Department: Psychiatry

Previous submission: Wright State Central Research Forum, Dayton, OH, 2014

Poster Number: 54

Research Question/ Objective: VHE is a rare finding that can present after short or long-term

valproic acid therapy. **Background:** Half the patients taking valproic acid develop benign elevated ammonia levels in the presence of normal liver enzymes. Yet, only a few develop valproic acid-related hyperammonemic encephalopathy (VHE). This case highlights the development of hyperammonemia in relation to the duration and dose of valproic acid treatment. **Case Presentation/Discussion:** In our patient, divalproex was determined to be the cause of hyperammonemia as evidenced by the resolution of altered mental state after the drug was discontinued. **Clinical Relevance:** There are no screening guidelines to evaluate for asymptomatic hyperammonemia, even though the risk associated with routine ammonia level measurements is low. We advocate for obtaining ammonia levels during every hospital admission as well as with yearly liver function tests and yearly valproic acid levels.

Simulation-Based Interdisciplinary Team Learning—Pilot Study

Brian Patterson; Adam Altman; Brittani Purkepile; Bethany Sibbitt; Zach IIGiovine; Nick Christian; Josh Wenzell; Natasha Mehta; Raymond Ten Eyck, MD

Presenting Author: Brian Patterson

Faculty Mentor: Raymond Ten Eyck, MD

Mentor's Department: Emergency Medicine

Previous submission: WSU Central Research Forum, Wright State, October 16th 2014

Poster Number: 51

Research Question/ Objective: To measure the attitudes and perceptions of healthcare professional students and faculty with regard to: 1) Interdisciplinary Team-learning, and 2) Simulation-base Team-learning activities. This data will be used to assess the success of the Simulation Lab as a platform for interprofessional education, as well as plan future interdisciplinary collaborations. **Background:** Currently, IPE is becoming widely integrated into healthcare professional education and regulating bodies (e.g. the LCME) have added IPE as a curricular requirement. Recent studies have concluded that students value IPE, but there are a number of challenges associated with initial engagement. Many schools are unsure how to approach this interdisciplinary integration. In addition to IPE,

simulation has become an important tool in the education of health professionals. As the first exercise at Wright State University involving interprofessional groups composed completely of undergraduates, interested students from the Boonshoft School of Medicine, the WSU College of Nursing and Health, and the Cedarville College of Pharmacy collaborated to conduct a series of IPE cases in the Department of Emergency Medicine's high-fidelity simulation lab. In order to support a continuous improvement process and identify strengths and weaknesses of the interprofessional simulation, we collected data from all participating students. **Methods:** Our study was approved as an exempt protocol by the University IRB. We conducted repeat surveys of an interprofessional group of students assessing their attitudes prior to and immediately after completing a series of simulations. The survey included 6 Likert scale questions, as well as a comments section. Paired t-test and frequency analysis were utilized for each of the survey questions to determine baseline status and determine any statistically significant change from baseline. **Results:** Students from all three health professions demonstrated overall positive attitudes toward IPE and simulation training. Results from four of the survey questions demonstrated a statistically significant positive increase in differences between pre-simulation and post-simulation survey. Baseline responses indicate a strongly positive attitude towards IPE. In comparison to pre-simulation survey responses, post-simulation responses demonstrated statistically significant increases in students' experience and perceived value of high-fidelity healthcare clinical simulation. Additionally, there were statistically significant increases in students' perceived value of interdisciplinary team training and its importance in the future of medical education. **Conclusion:** This study found that students from all three participating health professions demonstrated overall positive baseline attitudes toward IPE that could be further enhanced through participation in simulation-based exercises. This study provides a model of one method for integrating IPE into curricula for healthcare professionals.

High Frequency Electric Nerve Block in Post-Amputation Pain; A Continued Look at Outcomes of an Ongoing Study

Dylan Phillips; Lauren Welch; Amol Soin, MD; Ravi Grandhi

Presenting Author: Dylan Phillips, Lauren Welch

Faculty Mentor: Amol Soin, MD

Mentor's Department: Surgery

Poster Number: 17

Research Question/ Objective:

Is high frequency electric nerve blockade a successful modality of treatment for post-amputation pain? **Background:** For the past five years we have been monitoring patients who received a high frequency electric nerve conduction block implant to treat amputation stump pain. This abstract represents a continued look at those patients as we continue to capture data. **Methods:** 24 patients were contacted, of which 13 underwent screening and 10 received a high frequency nerve conduction block implant. This was initially a three-month study. However, we have been continually collecting data from the patients and we are now at 60 months post-implant. After initially reaching the three-month end point, patients chose to either continue with the device or have it removed. Three of the 10 patients elected to have the device explanted, while seven have continued with it. The efficacy of the device is measured by patient-reported pain score, and 30-minute nerve stimulation sessions with frequency of up to 10 kHz, and voltage of 0-10 mA. **Results:** The seven patients that kept the implant continue to report sustainable pain relief. Approximately 78% of the testing sessions done were deemed successful as measure by a 50% reduction in pain. We are now at the 60-month end point and patients have reported significant reductions in pain scores, and improvement in other aspects of their life. Subjects with the implant reported a reduction in the average number of prescription pain medications taken from 13 per week to 2.5. There has been no tachyphylaxis or tolerance noted; subjects have not reported a reduction in efficacy of the device in the time since implantation. **Conclusion:** High frequency alternating current has been shown to create a complete nerve conduction block in patients. This can be useful in patients who suffer

from amputation stump pain. We are now at the 60-month point for our patients who have had this device and will continue to follow these patients for an additional year. Further studies are certainly warranted and currently a large multisensor placebo controlled trial at 15 sites is being completed in the hopes of receiving FDA approval for the device.

Greater and Lesser Occipital Nerve Radiofrequency Denervation as a Treatment Modality to Treat Cervicogenic or Occipitogenic Headaches

Kelly Poffenberger; Amol Soin, MD

Presenting Author: Kelly Poffenberger

Faculty Mentor: Amol Soin, MD

Mentor's Department: Surgery

Poster Number: 15

Research Question/ Objective: Determine benefits of treatment with greater and lesser occipital nerve radiofrequency denervation in patients with occipitogenic or cervicogenic headaches. **Background:** Headaches can be a very debilitating cause of pain as well as loss of effective workdays in patients in the United States. Headaches can be very complex, ranging from migraines to psychogenic headaches. There are a subset of headaches, known as cervicogenic headaches that originate in the cervical spine or in the nerve roots that exit the cervical spine in the occipital area. These nerves are typically the greater and lesser occipital nerves and start in the occiput and radiate up to the top of the forehead. Patients who present with this type of headache may be a good candidate for radiofrequency denervation. **Methods:** Five consecutive patients who suffered cervicogenic headaches and also had a positive screening test with injectable lidocaine over the greater and lesser occipital nerves were deemed candidates for occipital nerve radiofrequency denervation. The procedures were completed in the operating room utilizing strict aseptic technique. Using a Stryker radiofrequency ablation machine under fluoroscopic image guidance, two 20-gauge needles were advanced over the occipital protuberance. The needles were then placed in the greater and lesser occipital nerves and an impedance check was carried out which was found to be normal. Motor stimulation at 2 hertz and sensory stimulation at 50 millihertz were also tested

to assure adequate placement of the needles. After the needles were adequately placed in position, 1 cc of 2% lidocaine was injected in each site and radiofrequency denervation was carried out at 80 degrees Celsius for 90 seconds. **Results:** Each of the five patients who had successful local anesthetic blocks initially did well with the occipital nerve radiofrequency ablation. What was interesting was that the percentage of pain relief from the local anesthetic block was similar to the radiofrequency denervation. A measurement of success was determined to be at least a 50% reduction in headache over the span of six months. Each of the five patients reached this goal. The total duration of the radiofrequency ablation lasted an average of six to seven months. **Conclusion:** Radiofrequency denervation may be an option to provide longer-term pain relief for patients who suffer from occipital or cervicogenic headache. Usually, a greater and lesser occipital nerve block is performed for these patients. The advantage is that it is possible to achieve good pain relief; however, due to the short half-life of local anesthetic, the injections typically only last a brief period of time. Completing a radiofrequency denervation may be a longer lasting alternative for patients who have successful pain relief following a local anesthetic injection.

A Review of Gene Expression Patterns in the Ruptured Anterior Cruciate Ligament

Landon, Polakof; Tarun Goswami, D.Sc.

Presenting Author: Landon Polakof

Faculty Mentor: Tarun Goswami, D.Sc.

Mentor's Department: Orthopedic Surgery

Previous submission:

Poster Number: 48

Research Question/ Objective: The incidence of anterior cruciate ligament (ACL) injuries has increased over past decades in parallel with participation in sports, with females at increased risk compared to males when participating in similar activities. The etiology of this increased risk is believed to be multifactorial, including anatomical and hormonal differences as well as variation in muscle recruitment and movement patterns. **Background:** A recent area of research has focused on gene expression patterns in ACL injury which might explain these differences seen

in both risk and injury that are observed on an epidemiological level. **Methods:** This review attempts to encompass current literature on gene expression in the intact and ruptured ACL, as well as variations that occur based on sex and age. **Results:** The intact ACL is transcriptionally unique, and following injury, rapid changes in gene expression occur, with catabolic inflammatory cytokines peaking early before anabolic markers appear 9 days post-injury. Males and females have differentially expressed major markers of healing, including ACAN, FMOD, and WSP1. Younger patients show increased levels of catabolic genes, including ADAMTS4, ADAMTS5, MMP1, and MMP13. **Conclusion:** Further elucidation of these differences in gene expression may have great impact in tailoring ACL injury prevention and treatment strategies to at-risk individuals.

Do Not Resuscitate Orders Among Trauma Patients

Alina Post; Catherine A. Marco, MD; Scarlett Michael, MD; Jamie Bleyer, MD

Presenting Author: Alina Post

Faculty Mentor: Catherine A. Marco, MD, FACEP

Mentor's Department: Emergency Medicine

Poster Number: 24

Research Question/ Objective: This study was conducted to identify the prevalence and type of DNR orders among trauma patients, and to identify associations of DNR orders with injury severity, length of stay, and whether CPR was performed in cases of cardiac arrest. **Background:** Do Not Resuscitate (DNR) orders are commonly instituted in the trauma intensive care unit for patients with severe injuries or shock. Previous studies have demonstrated variable prevalence of DNR orders among hospitalized trauma patients. **Methods:** Medical records were reviewed retrospectively for 263 trauma patients at Miami Valley Hospital in 2014 with a DNR order. Data regarding age, demographics, model of arrival in ED, triage vitals, injury mechanism, co-morbid medical conditions, types of advanced directives, institution of DNR order, ED diagnosis, ED disposition, final diagnosis, and final outcome was recorded for each patient. **Results:** Among 3394 trauma patients in 2014, 263 (8%) patients had a DNR order. Most DNR orders in this patient population were

instituted during the hospitalization (N = 176; 7%). Eligible participants were 43% male and 57% female. The mean age was 76 (range 16 to 90+). The most common mechanisms of injury included fall (N = 214; 81.4%) and motor vehicle collision (N = 16 6.1%). Most patients arrived by ambulance (N = 189; 71.9%), or helicopter (N = 68; 25.9%). The most common types of advance directives included DNR order (N = 224; 85.2%), living will (N = 124; 47.2%), and durable power of healthcare attorney (N = 126; 47.9%). Most patients were admitted to the hospital (N = 261; 99.2%). A minority of patients died during hospitalization (N = 100; 38.0%). Among patients who were deceased, 14 (14.0%) had CPR performed. Patients whose DNR was previously written were significantly older than patients with DNR instituted during inpatient hospitalization (median age 85 years vs. 80 years, respectively, $p=0.001$, Mann Whitney Wilcoxon two-tailed test). Death was more common among patients who had a DNR order instituted during the inpatient hospitalization (49.4% (87 of 176), compared to 14.9% (13 of 87) of patients whose DNR was previously written ($p\text{-value}<0.001$, Chi square). **Conclusion:** Among trauma patients with DNR orders, most DNR orders were instituted during the hospital admission. Most deceased patients with DNR orders did not have CPR performed during the hospital stay.

Association of serum 25-Hydroxyvitamin D with symptoms of depression in Chinese women with polycystic ovary syndrome

Shoukui Xiang, Long Wang, Yang Wu, Steven R. Lindheim, Rose Maxwell, Jennifer L. Rehbein, Xiaohong Jiang, Fei Hua

Presenting Author: Jennifer Rehbein

Faculty Mentor: Steven Lindheim, MD

Mentor's Department: Obstetrics and Gynecology

Poster Number: 30

Research Question/ Objective: The aim of this study was to determine the relationship between serum levels of 25-hydroxyvitamin D (25[OH]D) and depression in Chinese women with Polycystic Ovary Syndrome (PCOS). **Background:** Polycystic ovary syndrome (PCOS) is the most common endocrine disorder among reproductive age women with a prevalence estimate of 6% to 10%. PCOS is a heterogeneous clinical disorder

characterized primarily by chronic anovulation and hyperandrogenism. Previous studies suggest that clinical symptoms of menstrual dysfunction, infertility, hirsutism, alopecia, acne, and the possible increased risk of diabetes and cardiovascular disease can have adverse effects on a number of health-related quality of life (HR QOL) disorders including depression and anxiety, suicide attempts, body dissatisfaction, eating disorders, diminished sexual satisfaction, and lowered health-related quality of life. While the etiology of PCOS is unclear, the hyperinsulinemic and hyperandrogenic state is commonly associated with Vitamin D deficiency and may be closely linked to symptoms of PCOS. Some studies suggest an association between low vitamin D concentrations and depression in select populations. However, there is limited research exploring the implications of vitamin D status for depressive symptoms in PCOS women. Therefore, the purpose of this study was to assess a possible relationship between serum 25[OH]D and depression in women with PCOS. **Methods:** The study was conducted with 210 Chinese women with PCOS. Depression scores in these patients were evaluated using the Beck Depression Inventory-II (BDI). Clinical information was collected and correlation analyses were performed. Blood samples were obtained to test serum levels of 25[OH]D. **Results:** According to the BDI scores, 76 (36%) of the 210 women with PCOS were determined to have depression. The PCOS women with depression were found to have significantly lower serum 25[OH]D levels than that of PCOS women who did not show depression according to their BDI scores [11.6 (IQR, 8.4–14.7) vs. 20.5 (IQR, 16.1–25.1) ng/ml, $P < 0.001$]. Overall, a negative correlation was found between serum 25[OH]D levels and BDI scores ($r = -0.362$, $P < 0.001$). Using Receiver Operating Curve analysis, an optimal cutoff value for serum 25[OH]D levels as a marker for predicting depression in PCOS women was estimated as 11.5ng/mL. Using multivariate analysis and after adjusting for confounders, an increased risk of depression was associated with serum 25[OH]D levels < 20 ng/mL (OR 6.98, 95%CI, 3.25–22.65; $P < 0.001$). **Conclusion:** In conclusion, our results demonstrate a significant negative relationship between serum 25[OH]D levels and depression in Chinese women with PCOS. Although this study suggests that vitamin D deficiency may be a

potentially risk factor for depressive symptoms in Chinese women with PCOS, further studies are advocated to confirm this relationship, which may provide new treatments of depression in women with PCOS.

Robotically Assisted Laparoscopic Strassman Metroplasty for Treating Patients With Mullerian Anomalies And Chronic Pelvic Pain

Bijan Salari; Bala Bhagavath, MD; Eric Behrman, MD; Wendy Vitek, MD; Sheila Barhan, MD; Jerome L. Yaklic, MD; Steven R. Lindheim, MD.

Presenting Author: Bijan Salari

Faculty Mentor: Steven Lindheim, MD

Mentor's Department: Obstetrics and Gynecology

Poster Number: 1 ****Digital Presentation****

Research Question/ Objective:

We report a step-by-step Strassman Metroplasty utilizing the robotic approach to optimize good surgical principles in two patients with Mullerian anomalies and pelvic pain. **Background:** The Strassman Metroplasty, originally described for infertility and obstetric indications, for Class III (uterus didelphys), IV (bicornuate uterus), and V (septate uterus) anomalies, fell out of favor due to concerns regarding complications of abdominal metroplasty including increased adhesions, intra-operative hemorrhage, infection, and uterine perforation. Abdominal and recently laparoscopic metroplasty have been reported for gynecologic indications including chronic pelvic pain, adenomatoid tumors, and gestational trophoblastic tumors. **Methods:** Our video describes two patients with non-communicating uterine horns who underwent a metroplasty for outflow obstruction, chronic pelvic pain (CPP) and Mullerian anomalies using robotically assisted laparoscopy. Patient 1 was a 16 year old G0 African American female with a history of dysmenorrhea and CPP refractory to medical ovarian suppression. Patient 2 was a 21 year old G0 Caucasian female who was admitted through the emergency department for severe dysmenorrhea. Her past surgical history was significant for a left salpingo-oophorectomy for a ruptured ovarian cyst and lysis of adhesions for pelvic pain. Both revealed hematometra on pelvic imaging **Results:** Our video demonstrates management of these patients including: 1) Pre-operative evaluation using pelvic

ultrasound and MRI to best assess for pelvic and renal collecting system pathology; 2) Intraoperative management including a) Operative hysteroscopy for the non-communicating uterine horn and b) Robotic assisted laparoscopic Strassman Metroplasty for the bicornuate uteri and a Modified Strassman Metroplasty for the septae uteri where specific attention is paid to re-approximation of the uterine horns with care to avoid the endometrial cavity; and 3) Post-operative management including consideration to placement of an intrauterine catheter to reduce the risk of Asherman's syndrome; HSG; and/or pelvic ultrasound to assess for re-accumulation of hematometra. **Conclusion:** In patients with non-communicating uterine horn anomalies and gynecologic indications including CPP, and severe dysmenorrhea, a Strassman and Modified Strassman metroplasty can be considered. A robotically assisted laparoscopic approach is a viable alternative to conventional open abdominal metroplasty for Mullerian anomalies as it optimizes outcomes providing excellent tissue re-approximation, facilitates laparoscopic suturing, and enables the surgeon to construct a drainage pathway to relieve pelvic pain.

Adult vaccination history: Goals for quality improvement aimed for better population coverage

Jaclyn Scholtz, Maggie Rachel

Presenting Author: Jaclyn Scholtz

Faculty Mentor: Amanda Bell, MD; Lisa Keller, MD

Mentor's Department: Family Medicine

Poster Number: 20

Research Question/ Objective: To investigate adult vaccination coverage and determine reasons adults choose not to be vaccinated. Goals include providing recommendations for physicians in the Greater Dayton area as to what barriers and strategies might be employed to ensure greater vaccination coverage. **Background:** Many Americans know that kids have a recommended schedule of vaccines but few are aware of the recommendations for themselves as they age. Currently, the CDC recommends a flu vaccination for all healthy adults with few exceptions, a pneumococcal vaccine for all adults 65 and older

and the shingles vaccine for all adults 60 and older. Despite these recommendations, the CDC Morbidity and Mortality Weekly Report found that in 2012, only 59.9% of adults ≥ 65 years old had received a pneumococcal vaccine and just 20.1% of adults ≥ 60 years old had received the shingles vaccine. The influenza vaccination coverage for those at least 18 years old and older was 41.5% during the 2012-2013 flu season. **Methods:** All patients of Drs. Mullenix, Loving, and Family Physicians at WSP, Wright Care, and Five Rivers who are at least 18 years old were invited to participate in a paper survey when seen in the office during June through March 2015. The survey did not collect any identifiable information and all information gathered is from patient recall. The survey asked patients if they have received the influenza, pneumococcal, and shingles vaccination, and the location and time they received that vaccination. If a patient reports that he or she did not receive a vaccination, he or she was asked to reflect on the reason for this decision. The next phase of this project asked patients if they wanted a CDC handout on influenza vaccine at Five Rivers. **Results:** 197 adult patients completed the survey, 35 from WFP and Wright Care, 95 from Family Practice Associates of Dayton and 67 from Five Rivers Family Health Clinic. The average age of patients was 51 years. 77% of patients were female, 23% male. 44% were married or cohabiting, 12% had served in the military. On average, patients had been with their current primary care doctor for 8.44 years. Patients report that they visit their family doctor an average of 3.46 times per year for illness or injury and 65.48% report getting a physical every or nearly every year. 77% of patients have received a flu shot in the past, while only 50% got the flu shot in the previous year. Patients report getting their flu shot most often at their primary care physician's office or local pharmacy. Adults choosing not to get the flu vaccine appears largely to be a result of errant beliefs around how vaccines work (43%) or having non-specific reasons but knowing they don't want the vaccine (35%). These persons also report largely being certain that they will not get a flu vaccine in the future. The oldest patients and those visiting the doctor 3-5 times per year are the most likely to have received a flu shot in the previous year. For these individuals, it may be best to spend time talking through what specific concerns they have and providing non-biased

information. Overall, only 42% of patients 60 years or older had received the shingles vaccine, but 72% of those eligible for the pneumococcal based on age had been vaccinated. Those eligible for the shingles and pneumococcal vaccine were largely uninformed about the vaccine's existence or that it was recommended for them, 46% and 63% respectively. A further 9% said they would like to get the shingles vaccine but just haven't yet. In order to improve coverage, these patients should be targeted by awareness campaigns and performing vaccinations if possible during regularly scheduled office visits or making a plan for the next time the patient picks up a prescription at the pharmacy. **Conclusion:** Population coverage of adult vaccinations is not making headlines but remains an important way to lower disease burden, both for healthy individuals and those at greatest risk. Based on this data, the flu shot appears to have the largest number of skeptics, likely fueled by the news stories about ineffective flu vaccines and recommendations that persons not receive the vaccine if they might already have the flu. For those not receiving the shingles or pneumococcal vaccine, it appears simple patient education would go a long way to improving overall coverage.

Project Parenthood: Efficacy of Evidence-Based Parenting and Safer Sex Education Program in an At-Risk Adolescent Population

Jasmin Scott-Hawkins; Bethany Harper, MD; Brenda Roman, MD; Ramzi Nahhas, PhD; Sabrina Neeley, PhD, MPH; Valerie Houseknecht, MD

Presenting Author: Jasmin Scott-Hawkins

Faculty Mentor: Sabrina Neeley, PhD, MPH

Mentor's Department: Community Health

Poster Number: 39

Research Question/ Objective: Project Parenthood was developed to support the growth of adolescent parenting education and to provide a resource for adolescent safer sex education and repeat pregnancy prevention. By providing the education and social support to succeed, Project Parenthood promotes confidence in parenting abilities and fosters positive parent-parent and parent-child relationships in order to help young parents break the cycle of abuse and grow into psychologically healthy adults and children. Furthermore, the program provides evidence-based

safer sex education in an effort to prevent unplanned pregnancy and the adverse outcomes of risky sexual behavior. **Background:** Adolescents make up a distinct segment of the population with key health issues unique to their age bracket. The Centers for Disease Control and Prevention (CDC) monitor six categories of "priority health-risk behaviors among youth and young adults" through The Youth Risk Behavior Surveillance System (YRBSS), one of which is "sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases (STDs), including human immunodeficiency virus (HIV) infection" (Eaton et al., 2012, p.1). In a study conducted by the CDC regarding pregnancy and childbirth among adolescent females, Ventura, Hamilton, Mathews, and The Centers for Disease Control and Prevention (2013, p. 71) stated, "pregnancy and childbirth among females aged <20 years have been the subject of long-standing concern among the public, the public health community, and policy makers." Further, Martinez, Copen, and Abma (2011, p. 3) found that those between the ages of 15 and 24 represent about 25% of the "sexually experienced population" and they "acquire nearly one-half of all new STDs." The estimated direct medical costs of sexually transmitted diseases among those between the ages of 15 and 24 were "\$6.5 billion in 2000 alone" (Martinez et al., 2011, p. 3). **Methods:** Through the use of pre- and post-surveys, three key variables were measured: (1) knowledge, (2) perspective, and (3) skill. Survey questions were categorized as measuring one of the three variables. Survey data was aggregated to create a pre-composite score and post-composite score for each variable. The percentage of questions that resulted in an increase, decrease, or no change in the average response was calculated for each variable. A paired t-test analysis (adjusted for serial correlation by fitting via a linear mixed model) was run to evaluate whether or not there was a significant change in pre- and post-survey composite scores for each variable. **Results:** Forty-five adolescents between the ages of 14 and 22 years participated in at least one workshop within two 12-week cycles of workshops. Twenty-five participants attended multiple workshops and 16 participants reported at least 1 pregnancy or at least 1 living child. Within question categories, 65% of questions resulted in an increase in knowledge, 50% resulted in a change from a faulty

to an appropriate perspective, and 62% resulted in an increase in skill. The change in mean pre- and post-survey composite scores was positive for two of the three outcomes (knowledge: +1.82, $p < 0.01$; perspective: 0.00, $p = 1.00$; skills: +0.46, $p = 0.26$). **Conclusion:** Project Parenthood improved participants' knowledge and skill, but failed to improve faulty perspectives (and the improvement in knowledge was of a statistically significant magnitude). A recommendation from these data is to focus on developing new and expanding existing parenting and safer sex education programs for adolescents. This should be done in an effort to (1) reach an increased number of vulnerable adolescent populations, (2) decrease teen pregnancy rates, repeat pregnancy rates, and adverse effects of risky sexual behavior, (3) improve adolescent parenting skills, and (4) improve child welfare.

A Case Series of Minimally Invasive Lumbar Decompression versus Standard Lumbar Epidural Steroid Injection under Fluoroscopic Image Guidance in Patients with Spinal Stenosis.
Ben Shearer; Amol Soin, MD; Ravi Grandhi

Presenting Author: Ben Shearer
Faculty Mentor: Amol Soin, MD
Mentor's Department: Surgery
Poster Number: 14

Research Question/ Objective: Does minimally invasive lumbar decompression provide greater long term pain relief than standard lumbar epidural steroid injections in the treatment of spinal stenosis? **Background:** Spinal stenosis can be a debilitating pain condition caused by narrowing of the spinal canal which can induce neurogenic claudication and pain on ambulation. There are many treatment options for spinal stenosis including invasive surgery, epidural steroid injections and physical therapy. More recently, minimally invasive lumbar decompression has emerged. A technique where, under fluoroscopic guidance, two small puncture wounds are made and a bone rongeur and tissue sculptor are utilized to de-bulk the ligamentum flavum. By doing a posterior decompression of the ligamentum flavum, more space is created within the spinal canal so that nerves are no longer irritated or impinged upon and improving symptoms. **Methods:** We selected ten consecutive patients who suffer from spinal

stenosis. Five patients were treated with minimally invasive lumbar decompression technique. The remaining five patients were given lumbar epidural steroid injections. Their outcomes were followed at 0, 3 and 6 months at which time pain score, percentage of pain reduction, percentage of global change in function were noted. **Results:** At immediate follow-up, all 10 patients received improvement in symptoms from both the minimally invasive lumbar decompression and lumbar epidural steroid injection. After three months, however, patients who had lumbar epidural steroid injection started to have increased pain. By six months, their pain was back to pre-treatment baseline. Patients who had the minimally invasive lumbar decompression technique did not see this return to pre-treatment pain levels. These patients' pain levels held steady between three and six months. Both groups of patients during this period filled out pain diaries and tracked their numerical rating pain score on a 0-10 scale. The minimally invasive lumbar decompression group had an average pain level of 6 with a percentage of pain reduction of 2.8. These patients also noticed a 56% improvement in perceived pain relief and an improvement in the ability to complete activities of daily living (ADL's) when compared to the lumbar epidural group. **Conclusion:** Lumbar epidural steroid injections are used quite commonly to treat spinal stenosis, however, they appear to only have short term benefit when compared to minimally invasive lumbar decompression which produced longer and more sustained pain relief.

No Dessert in a Desert: Identification and Implications of the Food Desert around an Urban Hospital
RJ Sontag

Presenting Author: RJ Sontag
Faculty Mentor: Therese Zink, MD
Mentor's Department: Family Medicine
Previous submission: Family Medicine Education Consortium, Washington, DC, October 2014, Wright State University Central Research Forum, October 2014
Poster Number: 40

Research Question/ Objective: To determine whether the neighborhood surrounding Dayton's Good Samaritan Hospital, the site of the Family

Medicine residency, was a food desert and to evaluate the implications of the label. **Background:** Montgomery County, Ohio's diabetes prevalence outpaces the nation, and the incidence of adult obesity approaches 1/3. Access to healthy food in the impoverished neighborhood surrounding Dayton's Good Samaritan Hospital, the site of the Family Medicine residency, is important when educating about health lifestyle. **Methods:** -Database search: Review of current literature (2009-2014) using Web of Science database and search term "food desert". -Other sources considered: Additional references considered in this narrative review include sources outside the date range, but which were referenced in reviewed papers. -Food Atlas Search: The Economic Research Service (ERS) of the U.S. Department of Agriculture (USDA) maintains a Food Access Research Atlas, searchable by address. -Community sources accessed: Multiple stakeholders are researching the Dayton food system, and they provide unique insights into the current environment. **Results:** The review revealed that though food access can mean proximity to supermarkets, convenience stores, or even fast food restaurants, buying power is only maximized at supermarkets. We found that the hospital is in a food desert with residents living more than a half mile from a supermarket, and nearly 20% of households lack vehicle access. Defining an area's food options, price, quality, and nutritional value is not without controversy, and the importance of defining a food desert may be limited. Implications of such a determination are complex, and habitual behaviors are difficult to change. Proximity to a supermarket may not correlate with healthy choices. Federal policy makers consider the current food desert research to be inconclusive and question the importance of food desert mapping. Ohio is currently attempting to follow in the footsteps of the many states that have embraced food desert mapping and focused public-private grocery financing, though preliminary studies of the desired healthy behavioral changes are either too few or actually do not show positive benefits. **Conclusion:** Adding grocery options in a food desert may not improve fruit and vegetable consumption nor BMI. On average, Supplemental Nutrition Assistance Program (SNAP) "participants lived 1.8 miles from the nearest supermarket but traveled 4.9 miles to the

food store they most often used". Federal policy makers consider the current food desert research to be inconclusive, and they question the importance of food desert mapping. The implications of food deserts on diseases commonly seen by family physicians, including diabetes and obesity, are complex and may be part of the multifactorial causes of those diseases. Physicians should consider food access, affordability, and quality when working with patients to develop plans for improving food choices. Improved health literacy is essential to changing eating habits, and focusing solely on improving food access will not solve the problem. Food access in a defined food desert may still be adequate, despite the potential limitations of distance and vehicle access.

Effects of a single Achilles tendon platelet-rich protein injection on patient reported outcomes: a prospective observational one year follow up
Brendan Southam; Joseph Cox, MD; Jessica Lee, MD; Elizabeth Dulaney-Cripe, MD;
Ronald Markert, PhD; Richard Laughlin, MD

Presenting Author: Brendan Southam
Faculty Mentor: Richard Laughlin, MD
Mentor's Department: Orthopedic Surgery
Poster Number: 34

Research Question/ Objective: Does a single PRP injection improve and sustain patient related outcome scores at a year follow up? **Background:** Multiple studies have identified Platelet-Rich Plasma (PRP) injections as a promising intervention for chronic Achilles tendinopathies refractory to other conservative treatments. PRP contains a variety of growth factors such as PDGF, TGF-B, IGF-1, and VEGF which are postulated to facilitate tendon healing through mechanisms of collagen regeneration, angiogenesis, cellular proliferation and stimulation of synthesis of extracellular matrix components. Studies yielding improved functional and subjective outcomes following PRP injection have only demonstrated short term changes. The goal of this study is to evaluate the effects of PRP injection over a 52 week period. **Methods:** A cohort of seventeen patients who had failed previous conservative management for Achilles tendinopathy received a total of twenty-two PRP injections. Two patients received bilateral injections and three patients received

repeat ipsilateral injections. PRP injections were prepared using the Arthrex Autologous Conditioned Plasma system. The tendon lesion was then palpated and injected with 3 ml of PRP. Post-procedure activity included non-weight-bearing status for three days followed by activity progression as tolerated with crutch assistance over a three week period. Primary outcomes included VISA-A, a validated index of the severity of Achilles tendinopathy, the Short Form 12 (SF-12) health survey and the Visual Analog Scale for Pain (VAS Pain). Baseline measurements were completed at the time of injection along with repeat measures at 4 weeks, 8 weeks, 12 weeks, 26 weeks and 52 weeks after the injection. Dependent T-tests were then conducted with the VISA-A, SF-12 and VAS Pain between the initial time of injection and each time at which these survey measures were repeated. **Results:** Patients experienced improvement in the domains of pain, function and activity as measured by the VISA-A at 4 weeks after injection (28.025 to 42.175; $P=.007$) that persisted to 52 weeks after injection (27.294 to 60.824; $P<.001$). Patients also exhibited improvement in physical health scores on the SF-12 at both 4 weeks (34.280 to 39.780; $P=.003$) and 52 weeks after injection (24.547 to 45.529; $P=.002$), but did not demonstrate a similar improvement in mental health scores at those same time intervals (58.740 to 57.300; $P=.313$) (58.835 to 54.953; $P=.029$). Patients experienced an improvement in pain at 4 weeks (6.125 to 3.450; $P<.001$) and 52 weeks after injection (5.676 to 2.118; $P<.001$) as measured by the Visual Analog Scale for Pain. **Conclusion:** Patients within this study experienced statistically significant improvement in pain, level of function and overall perception of physical health at 4 weeks post-injection and at all subsequent visits at 4 week intervals up to 52 weeks. Although the study was limited by the absence of a control group and a relatively small sample size, the positive results of this study suggest that PRP injections are potentially a viable option for individuals who have failed conservative management of Achilles tendinopathy. Further investigation of PRP injections is warranted at this time.

A Novel Method for Detection of a Traumatic Knee Arthrotomy

Eric Szymanski; Roman Trimba, M.D., Brandon Horne M.D., Indresh Venkatarayappa M.D

Presenting Author: Eric Szymanski

Faculty Mentor: Indresh Venkatarayappa, MD

Mentor's Department: Orthopedic Surgery

Previous submission: One AO Multi-Special Meeting 2/2015, Las Vegas, NV

Poster Number: 9

Research Question/ Objective: Can a traumatic knee arthrotomy be detected by injecting air into the damaged joint space and looking air bubbles in a water column placed over the external wound?

Objectives:

1) Exploratory study to show proof of concept of a new, cost and time-effective bedside diagnostic technique for traumatic knee arthrotomies in an emergency setting that can be performed by a medical practitioner with little or no additional training necessary. 2) Lay the groundwork for additional studies that would aim to show equal or superior sensitivity and specificity at detecting traumatic knee arthrotomies compared to the current standard saline load test. 3) We hypothesized that this could be accomplished through the use of a bag mask connector, sterile saline, a 60 cc syringe with a 16-gauge needle, a one-way IV valve, and 40 cc of air. **Background:** Penetrating joint injuries are often difficult to diagnose and can lead to septic arthritis, further complicating the injury. The majority (53%-91%) of traumatic arthrotomies occur in the knee. The saline load test is the currently accepted method for acute diagnosis of traumatic knee arthrotomy, which can be extremely painful to perform in the emergency setting on an awake patient. It has been shown to have low sensitivity even with large volumes of saline. We conducted this exploratory study to show proof of concept of a load test using air instead of saline. **Methods:** Fourteen fresh cadaver specimens were utilized. Bilateral knee traumatic arthrotomies were created at the location of a standard superior medial arthroscopy portal using a #10 (0.75 cm blade width) blade surgical scalpel, with an overlying skin wound of 1.0 cm on the left and 3.0 cm on the right. A hollow plastic cylinder was placed over the wound and a

water column was created from a mixture of saline and Castile soap. A 60 cc syringe with a 16-gauge needle was then used to inject 40 cc of air into the joint at the site of a standard superior lateral arthroscopy portal. As the air was injected, the water column was monitored for any “bubbling” effect. If none was observed, the joint was manually compressed to express the air. **Results:** 10/14 1.0 cm skin wound knee arthrotomies and 14/14 3.0 cm wound arthrotomies were detected by the proposed method in the fresh cadaver specimens. The four negative specimens were explored with the needle in place and it was determined that the injection occurred into the prefemoral fat pad and synovium, missing the joint. Using plus-four method, 95% confidence that the true proportion of successful diagnoses of traumatic knee arthrotomy in cadavers with a 1.0 cm wound size using this test procedure lies between 0.45 and 0.88 and between 0.78 and 1.00 for the 3.0 cm wound size. There is also strong evidence to suggest that a traumatic knee arthrotomy is more likely to be successfully diagnosed in a knee with a 3.0 cm wound than in a knee with a 1.0 cm wound at significance level $\alpha = 0.05$. **Conclusion:** We believe this method for detecting traumatic knee arthrotomy is easy to perform and has good diagnostic value. The feared complication of air embolism is highly unlikely given current knowledge on the subject. Documented cases of venous air embolism have occurred at volumes of up to 200-300 mL of gas/air injected, including one case of 300 mL during knee arthroscopy. This preliminary data shows a proof of concept. We hope to complete a blinded, larger sample size study in the near future to obtain both sensitivity and specificity data to compare to the saline load test.

Is there a role for Conservative Treatment in those with Unilateral Tubal Occlusion?

Stephanie Welsh; Anthony Eschliman, MD; Alan M. Martinez, MD; Rose Maxwell, PhD; Julie M. Sroga, MD; Steven R. Lindheim, MD, MMM.

Presenting Author: Stephanie Welsh

Faculty Mentor: Steven Lindheim MD, MMM

Mentor's Department: Obstetrics and Gynecology

Poster Number: 8

Research Question/ Objective: To assess the

value of conservative ovulation induction and intrauterine insemination (OI-IUI) and pregnancy outcomes in those with unilateral tubal occlusion (UTO). **Background:** Heterosalpingography (HSG) is the accepted standard to diagnose tubal patency. In contrast to bilateral tubal occlusion where therapy is directed towards laparoscopic correction or in vitro fertilization (IVF), treatment of UTO is less clear, including conservative OI-IUI directed towards the patent tube. **Methods:** We evaluated patients diagnosed on HSG with UTO (n=24) (proximal [n=7] and mid-distal or distal occlusion [n=17]). Inclusion included women <38 years; regular menstrual cycles; normal sperm parameters; and normal spill from 1 fallopian tube on HSG. Controls underwent donor insemination (n=87 in 275 cycles) with bilateral tubal spill. Treatment included luteinizing hormone (LH) testing and time intercourse (n=5) or OI-IUI with Clomiphene Citrate or Letrozole (n=19 in 36 cycles). All treatment cycles were monitored by ultrasound; human chorionic gonadotropin (hCG) was given when lead follicle size reached >18mm (unless recruited follicle on obstructed side); and IUI was performed 24-36 hours later. The primary outcome measured was clinical pregnancy (CP). **Results:** Baseline demographics including age (32.2 ± 4 [±SD] vs 33.4 ± 2 yrs, p-NS) and BMI (27.9 ± 7 vs 28.2 ± 8 kg/m², p-NS) were similar between UTO and control groups. Between HSG and treatment, spontaneous pregnancy occurred in 5 (21%) women with UTO (1 proximal, 4 distal). In those undergoing OI-IUI treatment, CP rates/patient (32%, n=6/19 and 24%, n=21/87, p=0.56) and CP/cycle (17%, 6/36 and 8%, 21/275, p=0.10) were similar for UTO and control groups. Overall, CP occurred in 2 (29%) and 9 (53%) patients with proximal and mid-distal or distal UTO, p=0.005, respectively. Twenty-nine (81%) cycles recruited a dominant follicle on the patent side (19% CP/cycle), in contrast no pregnancies occurred (0%, 0/7) if recruitment occurred on the side of UTO, p=0.3. **Conclusion:** Pregnancy rates are not compromised in women with UTO and conservative treatment with OI-IUI appears justified as a first line approach, obviating more aggressive therapies including laparoscopy and IVF.

Healthy Way Initiative: A Closer Look at Inpatient Units

Zenar Yohannes; Mira Trivedi; Adrienne Stolfi MSPH; Rachel Riddiford RD; Shalini Forbis, MD; Ranjana Sinha, MD

Presenting Author: Zenar Yohannes

Faculty Mentor: Shalini Forbis, MD

Mentor's Department: Pediatrics

Previous submission: University of Dayton and Miami Valley Healthcare Symposium: April 5, 2014

Poster Number: 52

Research Question/ Objective: To evaluate the effectiveness of the hospital wide initiative at Dayton Children's Hospital to decrease childhood obesity through identifying, evaluating, and placing appropriate referrals for patients at risk of obesity. **Background:** Childhood obesity is an escalating health concern. Health care providers should strive to identify children at risk and provide adequate assessments, as well as educate families on healthy lifestyles in order to prevent future health complications associated with obesity. **Methods:** In January 2014, Dayton Children's launched the inpatient Healthy Way Initiative (HWI) which entails giving each admitted patient a "5210/MyPlate" handout regarding a healthy lifestyle, clinician assessment of patients with BMIs > 95th percentile, ordering appropriate screening labs and/or referrals, and proper provider documentation of the intervention. A chart review was completed to assess if HWI implementation was associated with an increase in critical components including number and types of labs and referrals ordered, nursing and clinician documentation of their actions, and dietitian assessments. Data were collected for pre- and post-intervention for general pediatrics admissions during January- May of 2013 and 2014. Within each time period, inpatient admissions for patients aged 3-18 years were grouped by BMI (<85th percentile, 85-<95th percentile, ≥95th percentile). 75 admissions from each BMI category were randomly selected from each time period for a

total sample size of 450. Comparisons of the critical components, age, sex, and length of stay (LOS) between the two time periods were made with Mann-Whitney U, chi-square, or Fisher's exact tests. These factors were also compared among the 3 BMI groups in the post intervention time period with Kruskal-Wallis and chi-square tests. Clinician and nursing documentation were only performed during post period, therefore only descriptive statistics are reported. **Results:** Overall, median (IQR) age was 8 (8.0) years, LOS was 1.2 (1.0) days, and 50% of patients were male, with no differences between the time periods. In the post intervention time period clinician documentation was 94% and nursing documentation was 54%. Within the BMI ≥95th percentile group, clinician and nursing documentation was 95% and 65% respectively post intervention. Dietitian assessment was completed for 33% of admissions post-intervention, which was lower than the 45% pre-intervention (p <0.011). For the BMI ≥ 95th percentile group, completion of dietitian assessment was 31% post-intervention compared to 57% pre (p < 0.001). When comparing BMI groups in the post-intervention period, there were no differences for clinician documentation, dietitian assessment, labs, or referrals. However, there were differences in nursing documentation, which was completed in 53% of the BMI <85th group, 44% of the BMI 85th- <95th group, and 65% of the ≥95th group (p=0.031). **Conclusion:** In the early implementation stages of the HWI, no increase in the critical components of the intended outcomes was appreciated. This is likely due to the study time period being immediately after HWI was implemented, which could play a role in accurate assessment of the intervention as a whole. Future research would entail evaluating trends over longer study periods, as well as re-educating healthcare providers regarding the importance of the Healthy Way Initiative and how everyone's role coincides.

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Bijan Salari; Bala Bhagavath, MD; Eric Behrman, MD; Wendy Vitek, MD; Sheila Barhan, MD; Jerome L. Yaklic, MD; Steven R. Lindheim, MD.

Presenting Author: Bijan Salari

Faculty Mentor: Steven Lindheim, MD

Mentor's Department: Obstetrics and Gynecology

2. Auditory Training During Development Mitigates A Hearing Loss-Induced Perceptual Deficit.

Ramanjot Kang; Emma C. Sarro, PhD

Presenting Author: Ramanjot Kang

Faculty Mentor: Dan H. Sanes, PhD

Mentor's Department: Center for Neural Science, New York University

3. Perceptions of a Patient-centered Care Model in Urban Vietnam: A Pilot study

Minh-Tri Nguyen; Sabrina Neeley PhD, MPH; Ashley Fernandes MD, PhD

Presenting Author: Minh-Tri Nguyen

Faculty Mentor: Sabrina Neeley PhD, MPH; Ashley Fernandes MD, PhD

Mentor's Department: Community Health

4. Overview of Trauma Patient Discharge and Planning at a Level I Trauma Center

Ryan Chenevey, BS; Michael Finucan, BS; Pratik J Parikh, PhD; Mary C McCarthy, MD; Priti P Parikh, PhD

Presenting Author: Ryan Chenevey, Michael Finucan

Faculty Mentor: Priti Parikh, PhD

Mentor's Department: Surgery

5. A Report of Using Yttrium-90 Radioembolization for the Treatment of Initially Unresectable Hepatic Metastatic Disease

Ryan Chenevey BS, Shannon Kauffman MD, James Ouellette DO

Presenting Author: Ryan Chenevey

Faculty Mentor: Dr. Shannon Kauffman and Dr. James Ouellette

Mentor's Department: Surgery, Wright State Physicians

- 6. Platelet Function in Traumatic Brain Injury; Does The Type Of Test Matter?**
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: 15th European Congress of Trauma & Emergency Surgery & 2nd World Trauma Congress; Frankfurt, Germany, May 2014

- 7. Volumetric Analysis of Focal Epilepsy in Children**
Nasser Kashou, Allison Dixon

Presenting Author: Allison Dixon

Faculty Mentor: Dr. Gogi Kumar

Mentor's Department: Dayton Children's Neurology

Previous submission: ACNS, Houston February 6th 2015

- 8. Is there a Role for Conservative Treatment in Those With Unilateral Tubal Occlusion?**
Stephanie Welsh; Anthony Eschliman, MD; Alan M. Martinez, MD; Rose Maxwell, PhD; Julie M. Sroga, MD; Steven R. Lindheim, MD, MMM.

Presenting Author: Stephanie Welsh

Faculty Mentor: Steven Lindheim MD, MMM

Mentor's Department: Obstetrics and Gynecology

- 9. A Novel Method for Detection of a Traumatic Knee Arthroscopy**
Eric Szymanski; Roman Trimba, M.D., Brandon Horne M.D., Indresh Venkatarayappa M.D

Presenting Author: Eric Szymanski

Faculty Mentor: Indresh Venkatarayappa, MD

Mentor's Department: Orthopedic Surgery

Previous submission: One AO Multi-Special Meeting 2/2015, Las Vegas, NV

- 10. Use of Vibrotactile Feedback and Stochastic Resonance for Improving Laparoscopic Surgery Performance**
Rob Hoskins, Katherine Babbitt, Jinling Wang, Emily Diller, and Caroline Cao

Presenting Author: Katherine Babbitt

Faculty Mentor: Dr. Caroline Cao

Mentor's Department: Department of Biomedical, Industrial, & Human Factors Engineering

Previous submission: Central Research Forum, Wright State University, October 16th, 2014

- 11. Preoperative Incidence of Penile Abnormalities Found in Voluntary Adult Male Medical Circumcision in Swaziland**
Anthony Oddo; Elizabeth Ruedrich; Christopher Züst; Lindsey Marugg; Echo VanderWal P.A.; Harry VanderWal, M.D.; Mary McCarthy M.D.

Presenting Author: Anthony Oddo

Faculty Mentor: Dr. Mary McCarthy

Mentor's Department: Surgery

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Matthew Huang; Eugene Yoon; Andrew Hawk, MD; Catherine A. Marco, MD, FACEP

Presenting Author: Matthew Huang

Faculty Mentor: Catherine A. Marco, MD FACEP

Mentor's Department: Emergency Medicine

- 13. The Association Between Secondhand Smoke Exposure and Metabolic Syndrome in Children with Obesity**
Alexandra Lawson; Abiodun Omoloja, MD; Leah Sabato, RD; James Ebert, MD; Adrienne Stolfi, MSPH

Presenting Author: Alexandra Lawson

Faculty Mentor: Abiodun Omoloja, M.D.

Mentor's Department: Nephrology Department, Dayton Children's

Previous submission: Pediatric Academic Societies Annual Meeting, San Diego, CA, April 25-28, 2015

- 14. A Case Series of Minimally Invasive Lumbar Decompression versus Standard Lumbar Epidural Steroid Injection under Fluoroscopic Image Guidance in Patients with Spinal Stenosis.**
Ben Shearer; Amol Soin, MD; Ravi Grandhi

Presenting Author: Ben Shearer

Faculty Mentor: Amol Soin, MD

Mentor's Department: Surgery

- 15. Greater and Lesser Occipital Nerve Radiofrequency Denervation as a Treatment Modality to Treat Cervicogenic or Occipitogenic Headaches**
Kelly Poffenberger; Amol Soin, MD

Presenting Author: Kelly Poffenberger

Faculty Mentor: Amol Soin, MD

Mentor's Department: Surgery

- 16. Challenges and Considerations in Optimizing Ovarian Stimulation Protocols in Oncofertility Patients**
Katie Coyne; MacKenzie Purdy, MD; Kathleen O'Leary, MD; Jerome L. Yaklic, MD; Steven R. Lindheim, MD, MMM; Leslie Appiah, MD

Presenting Author: Katie Coyne

Faculty Mentor: Steven Lindheim, MD

Mentor's Department: Obstetrics and Gynecology

- 17. High Frequency Electric Nerve Block in Post-Amputation Pain; A Continued Look at Outcomes of an Ongoing Study**
Dylan Phillips; Lauren Welch; Amol Soin, MD; Ravi Grandhi

Presenting Author: Dylan Phillips, Lauren Welch

Faculty Mentor: Amol Soin, MD

Mentor's Department: Surgery

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Maggie Rechel, MA; Cynthia Williams, PharmD; Hannah Jantzi, BS; Susan Wherley, MSP; Christopher Fagan, BS; Gregory Orgel, BS

Presenting Author: Cynthia Williams

Faculty Mentor: Ashley Fernandes, MD

Mentor's Department: Pediatrics

Previous submission: University of Dayton & Miami Valley Hospital Healthcare Symposium March 28, 2015

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Jaclyn Scholtz, Maggie Rachel

Presenting Author: Jaclyn Scholtz

Faculty Mentor: Amanda Bell, MD; Lisa Keller, MD

Mentor's Department: Family Medicine

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Nicoletta Frankenstein; Tiffany Hunter; Marguerite Sullivan; Ashley Gillmor; John Pascoe, MD

Presenting Author: Nicoletta Frankenstein

Faculty Mentor: Richard Rapp, PhD

Mentor's Department: Pediatrics

21. Altered Mental Status Among Geriatric Trauma Patients

Ashlee Edgell, Catherine Eggers, Christopher Fagan, James Olson, PhD, Catherine A. Marco, MD

Presenting Author: Ashlee Edgell

Faculty Mentor: Catherine A. Marco, MD, FACEP

Mentor's Department: Emergency Medicine

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Catherine A. Marco, MD, Michael Harakas, Andy Davis, Sylvia Chang, Jason Pickett, MD, Dennis Mann, MD

Presenting Author: Andy Davis and Sylvia Chang

Faculty Mentor: Catherine A. Marco, MD, FACEP

Mentor's Department: Emergency Medicine

23. Do Not Resuscitate Orders Among Trauma Patients

Alina Post; Catherine A. Marco, MD; Scarlett Michael, MD; Jamie Bleyer, MD

Presenting Author: Alina Post

Faculty Mentor: Catherine A. Marco, MD, FACEP

Mentor's Department: Emergency Medicine

24. Opiates in Gastroparesis: Help or Hindrance?

Ross Humes; Ronald J. Markert, PhD

Presenting Author: Ross Humes

Faculty Mentor: Dean Bricker, MD

Mentor's Department: Internal Medicine

25. HIV Prevention in Swaziland: Occurrence of Adverse Events after Voluntary Medical Male Circumcision as a Function of Age, Weight and Seasonal Temperatures

Alison Bales; Jameson Dennis; Robert Siska; Michael Schneider; Echo VanderWal, PA; Harry VanderWal, MD; Mary McCarthy, MD

Presenting Author: Alison Bales

Faculty Mentor: Mary McCarthy M.D., F.A.C.S

Mentor's Department: Surgery

Previous submission: Wright State University Central Research Forum Fall 2014

26. Prediction of Disease Severity Among Emergency Department Patients with Abdominal Pain

Christopher Fagan; Catherine A. Marco, MD, FACEP; Dennis Mann, MD, PhD; Jason R. Pickett, MD; James Olson, PhD; Catherine Eggers; William Trautman; April Daubenspeck; Sara Birdsong, MD

Presenting Author: Christopher Fagan

Faculty Mentor: Catherine Marco, MD

Mentor's Department: Emergency Medicine

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Michael Dressing; Richard Rapp, PhD; John Pascoe, MD; Brittany Drummelsmith

Presenting Author: Michael Dressing

Faculty Mentor: Richard Rapp, PhD; John Pascoe, MD

Mentor's Department: Pediatrics

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Kelsey Mayrand, Eric Fischer, Raymon Ten Eyck, MD

Presenting Author: Kelsey Mayrand

Faculty Mentor: Raymond Ten Eyck, MD

Mentor's Department: Emergency Medicine

Previous submission: BSOM Central Research Forum, Wright State University, Oct. 16, 2014

29. Association of serum 25-Hydroxyvitamin D with symptoms of depression in Chinese women with polycystic ovary syndrome

Shoukui Xiang, Long Wang, Yang Wu, Steven R. Lindheim, Rose Maxwell, Jennifer L. Rehbein, Xiaohong Jiang, Fei Hua

Presenting Author: Jennifer Rehbein

Faculty Mentor: Steven Lindheim, MD

Mentor's Department: Obstetrics and Gynecology

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Spencer Hill

Presenting Author: Spencer Hill

Faculty Mentor: Jerome Yaklic, MD

Mentor's Department: Obstetrics & Gynecology

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Kara M Joseph, PP Parikh, AP Ekeh, G Falls

Presenting Author: Kara Joseph

Faculty Mentor: Priti Parikh, PhD

Mentor's Department: Surgery

Previous submission: Society for Clinical Vascular Surgery (SCVS), March 29-April 2, 2015, Miami FL

- 32. Substance Abuse and Perioperative Pain Management in Trauma Patients**
Jason Hehr; Ronald Markert PhD; Priti Parikh PhD; Jonathan Saxe, MD

Presenting Author: Jason Hehr

Faculty Mentor: Jonathan Saxe, MD

Mentor's Department: Surgery

- 33. Effects of a single Achilles tendon platelet rich protein injection on patient reported outcomes: a prospective observational one year follow up**
Brendan Southam; Joseph Cox, MD; Jessica Lee, MD; Elizabeth Dulaney-Cripe, MD; Ronald Markert, PhD; Richard Laughlin, MD

Presenting Author: Brendan Southam

Faculty Mentor: Richard Laughlin, MD

Mentor's Department: Orthopedic Surgery

- 34. Nutrition and Medical Education: The Application of 5 Servings of Fruits and Vegetables in a Clinical Setting**
Mai El Gasim; Ranjana Sinha, MD

Presenting Author: Mai El Gasim

Faculty Mentor: Ranjana Sinha, MD

Mentor's Department: Pediatrics

35. Pain Assessment in Male Circumcision Patients in Swaziland

David Dennis; Harry VanderWal, M.D., Echo VanderWal, PA, Mary C. McCarthy, M.D., F.A.C.S

Presenting Author: David Dennis

Faculty Mentor: Mary McCarthy M.D., F.A.C.S

Mentor's Department: Surgery

Previous submission: Wright State University Central Research Forum, Wright State, October 2014

36. Sodium Channel Slow Inactivation as a Therapeutic Target for Myotonia Congenita

Jacob Mitchell, Jennifer Norman, Mark Rich, MD, PhD

Presenting Author: Jacob Mitchell; Jennifer Norman

Faculty Mentor: Mark Rich, MD, PhD

Mentor's Department: Neuroscience, Cell Biology & Physiology

37. A Retrospective Single-Center Analysis of Robotic Abdominoperineal Resection

Minia Hellan, MD; Ralla Shrit: James Ouellette, MD

Presenting Author: Ralla Shrit

Faculty Mentor: Minia Hellan, MD

Mentor's Department: Surgery

38. Project Parenthood: Efficacy of Evidence-Based Parenting and Safer Sex Education Program in an At-Risk Adolescent Population

Jasmin Scott-Hawkins; Bethany Harper, MD; Brenda Roman, MD; Ramzi Nahhas, PhD; Sabrina Neeley, PhD, MPH; Valerie Houseknecht, MD

Presenting Author: Jasmin Scott-Hawkins

Faculty Mentor: Sabrina Neeley, PhD, MPH

Mentor's Department: Community Health

39. No Dessert in a Desert: Identification and Implications of the Food Desert around an Urban Hospital

RJ Sontag

Presenting Author: RJ Sontag

Faculty Mentor: Therese Zink, MD

Mentor's Department: Family Medicine

Previous submission: Family Medicine Education Consortium, Washington, DC, October 2014, Wright State University Central Research Forum, October 2014

40. STEPS Towards Better Health Care Delivery: A Student-Led Multidisciplinary Approach

Nicholaus Christian; Maggie Rechel; RJ Sontag; Paige Sutton; Juanita Draime; Amanda Schaad

Presenting Author: Nick Christian; RJ Sontag; Paige Sutton

Faculty Mentor: Paul Hershberger, PhD

Mentor's Department: Family Medicine

Previous submission: IHI National Forum on Quality Improvement in Healthcare, Orlando, FL, Dec 7th-10th, 2014

41. A Mobile Application to Screen for Autism in Arabic-speaking Communities in Oman

TJ Klein, Tahani Al-Ghasani, Majda Al-Ghasani, Amna Akbar, Elias Tang, Yahya Al-Farsi

Presenting Author: TJ Klein

Faculty Mentor: Dean Parmelee, MD

Mentor's Department: Academic Affairs

Previous submission: Consortium of Universities for Global Health 6th Annual CUGH Conference. Boston, MA. 26-28 March 2015.

42. Impact of the Affordable Care Act on Trauma Center Financials

Tom Cheslik; Chaitanya Bukkapatnam, BS; Charles H. Dabbs, MD; A. Peter Ekeh, MD; Mary C. McCarthy, MD

Presenting Author: Tom Cheslik

Faculty Mentor: Mary C. McCarthy, MD

Mentor's Department: Surgery

43. Parental Recall of Their Child's Discharge Instructions

Jay Ingram; Richard Rapp; Brittany Drummelsmith

Presenting Author: Jay Ingram

Faculty Mentor: Shalini Forbis, MD

Mentor's Department: Pediatrics

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Samantha Imfeld; Sara Robertson; Michelle Nguyen; Emily Ervin; Ronald J. Markert, PhD; Anne Proulx DO

Presenting Author: Samantha Imfeld; Sara Robertson

Faculty Mentor: Anne Proulx, DO

Mentor's Department: Family Medicine

45. Acetabular Rim Length: an Anatomical Study

Jensen Kolaczko; Karns MR; Patel SH; Liu RW; Mather RC 3rd; Nho SJ; Salata MJ

Presenting Author: Jensen Kolaczko

Faculty Mentor: Michael Salata, MD

Mentor's Department: Orthopedic Surgery

46. An Understanding of PCOS from Conception to Menopause

Michelle Durrant; Leah Whigham, PhD, Steven Lindheim, MD; Jerome Yaklic, MD

Presenting Author: Michelle Durrant

Faculty Mentor: Steven Lindheim, MD

Mentor's Department: Obstetrics and Gynecology

47. A Review of Gene Expression Patterns in the Ruptured Anterior Cruciate Ligament

Landon, Polakof; Tarun Goswami, D.Sc.

Presenting Author: Landon Polakof

Faculty Mentor: Tarun Goswami, D.Sc.

Mentor's Department: Orthopedic Surgery

48. A Repertoire of Micro-RNAs that Target PLD-3'UTR and Change the Cell-Invasion Phenotype of Basal Breast Cancer Cells

Kristen Fite; Lobna Elkhadragey; Julian Gomez-Cambronero, PhD

Presenting Author: Kristen Fite

Faculty Mentor: Julian Gomez-Cambronero, PhD

Mentor's Department: Biochemistry and Molecular Biology

49. Maintaining Humility in Medical Students: Use of the "I Don't Know" Option in TBLs

Kevin Bree; Jason Hao; Adrienne Stolfi, MSPH

Presenting Author: Kevin Bree

Faculty Mentor: Nicole Borges, PhD

Mentor's Department: Academic Affairs

Previous submission: CGEA Medical Education Conference, Columbus, OH, April 11, 2015

50. Simulation-Based Interdisciplinary Team Learning—Pilot Study

Brian Patterson; Adam Altman; Brittani Purkeypile; Bethany Sibbitt; Zach IIGiovine; Nick Christian; Josh Wenzell; Natasha Mehta; Raymond Ten Eyck, MD

Presenting Author: Brian Patterson

Faculty Mentor: Raymond Ten Eyck, MD

Mentor's Department: Emergency Medicine

Previous submission: WSU Central Research Forum, Wright State, October 16th 2014

51. Healthy Way Initiative: A Closer Look at Inpatient Units

Zenar Yohannes; Mira Trivedi; Adrienne Stolfi MSPH; Rachel Riddiford RD; Shalini Forbis, MD; Ranjana Sinha, MD

Presenting Author: Zenar Yohannes

Faculty Mentor: Shalini Forbis, MD

Mentor's Department: Pediatrics

Previous submission: University of Dayton and Miami Valley Healthcare Symposium: April 5, 2014

52. Implementing Patient Safety & Quality Improvement into Residency Curriculum: Challenges and Lessons Learned

Adam Altman; Kelly Rabah, MSW, LISW-S, ACHP, CPHQ; Molly Hall, MD; Al Painter, PsyD; Sabrina Neeley, PhD, MPH

Presenting Author: Adam Altman

Faculty Mentor: Sabrina Neeley, PhD

Mentor's Department: Community Health

53. Long-Term Use of Valproic Acid and Hyperammonemia

Krupa Parkih; Natalie Pyatka

Presenting Author: Krupa Parkih

Faculty Mentor: Christina Waite, MD

Mentor's Department: Psychiatry

Previous submission: Wright State Central Research Forum, Dayton, OH, 2014

54. A Method to Allow for Positional Changes in a Patient with a Spinal Cord Stimulator Without Significant Discomfort

Nicholas Mata; Amol Soin, MD, MBA; Ravi Grandhi

Presenting Author: Nicholas Mata

Faculty Mentor: Amol Soin, MD, MBA

Mentor's Department: Surgery

55. Fascia Iliaca Block Prior to Hip Fracture Repair Surgery as a Method to Decrease Post-Operative Narcotic Use and to Facilitate Anesthesia During Repair

Brian Dinh; Amol Soin, MD, MBA; Ravi Grandhi

Presenting Author: Brian Dinh

Faculty Mentor: Amol Soin, MD, MBA

Mentor's Department: Surgery

56. Alveolar Rhabdomyosarcoma: a Rarity in Adults?

Claire Christian; Ali Bukhari, MD; Logan Parrott, MD

Presenting Author: Claire Christian

Faculty Mentor: Ali Bukhari, MD

Mentor's Department: Internal Medicine

57. Ultrasound Guided Intercostal Nerve Block to Treat Post-Mastectomy and Breast Augmentation Pain

Omar Khan, Amol Soin M.D., M.B.A, Ravi Grandhi M.B.A

Presenting Author: Omar Khan

Faculty Mentor: Amol Soin, MD, MBA

Mentor's Department: Surgery

58. Amide Local Anesthetic Injections as a Screening Tool for High Frequency Electric Nerve Block

Daniel Johns, Amol Soin M.D., M.B.A, Ravi Grandhi M.B.A

Presenting Author: Daniel Johns

Faculty Mentor: Amol Soin, MD, MBA

Mentor's Department: Surgery

59. A Technique Utilizing Spinal Cord Stimulation and Peripheral Nerve Field Stimulation To Treat Axial Back Pain

H. Robert Papas, Amol Soin M.D., M.B.A, Ravi Grandhi M.B.A

Presenting Author: H. Robert Papas

Faculty Mentor: Amol Soin, MD, MBA

Mentor's Department: Surgery

60. Goblet Cell Carcinoid of the Appendix Presenting as an Ovarian Mass

Jennifer Hurtubise; Adrienne Kirby; Chirstopher Lutman, MD; Phillip Heyse, MD; Kelly Clinton-Cirocco, MDH

Presenting Author: Jennifer Hurtubise; Adrienne Kirby

Faculty Mentor: Christopher Lutman, MD and Kelly Clinton-Cirocco, MD

Mentor's Department: Obstetrics and Gynecology

61. Efficacy of Spinal Cord Stimulation in Cervical and Lumbar Radiculopathy

Michael Gemma; Amol Soin, MD, MBA; Ravi Grandhi; Mitchell R D'aloia

Presenting Author: Michael Gemma

Faculty Mentor: Amol Soin, MD, MBA

Mentor's Department: Surgery

62. Treatment of a Headache Following Endovascular Coiling for a Leaking Basilar Artery Aneurysm

Eric Fischer; Glen Solomon MD; Drew Triplett, DO

Presenting Author: Eric Fischer

Faculty Mentor: Glen Solomon, MD

Mentor's Department: Internal Medicine

63. Paraneoplastic Hypercalcemia Secondary to Cholangiocarcinoma Presenting as Constipation

Elise Kwizera, MD; Matt Koroscil, MD; Colleen Begley, BA; Padmini Krishnamurthy MD

Presenting Author: Colleen Begley

Faculty Mentor: Padmini Krishnamurthy, MD

Mentor's Department: Gastroenterology

64. Unusual Presentation of Hashimoto's Thyroiditis

Sibel Gokce BA; Ankur Gupta MD

Presenting Author: Sibel Gokce

Faculty Mentor: Ankur Gupta MD

Mentor's Department: Internal Medicine

65. The Who-What-When-Where of Nursing Interruptions in A Surgical Intensive Care Unit at a Level 1 Trauma Center

Nicole Craker; Robert A. Myers, MSE; Jessy Enid; Mary C. McCarthy, MD, FACS; Pratik J. Parikh, PhD

Presenting Author: Nicole Craker

Faculty Mentor: Pratik Parikh, Ph.D

Mentor's Department: Surgery

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