

PROGRAM WITH ABSTRACTS

WRIGHT STATE UNIVERSITY
BOONSHOFT SCHOOL OF
MEDICINE

3RD ANNUAL RESEARCH SYMPOSIUM

April 4, 2024

4:30 – 7:00 p.m.

Student Union: Apollo,
Atlantis, and Endeavor Rooms





Program

4:00 p.m.

Poster Setup
and
Registration

4:30 p.m.

Research
Talks

5:25 p.m.

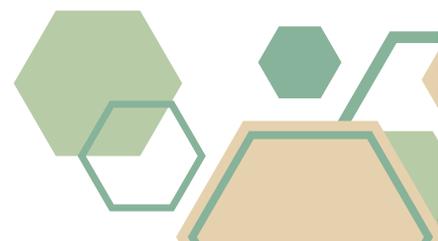
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Dr. Toussaint

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and
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Featured Student Research Talks

Garrett Fisher, BS, MS3

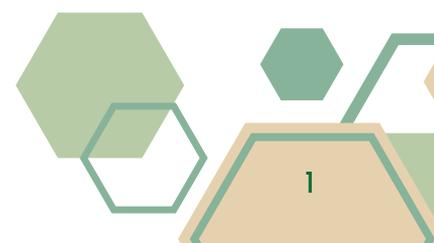
Novel Interventions to Treat Photosensitivity

Garrett Fisher is a third-year MD-MS student at the Boonshoft School of Medicine. He is previously from Centerville, OH, and earned his Bachelor of Science in Chemical Engineering at the University of Alabama. He previously conducted tissue engineering research at Cincinnati Children's Hospital investigating methods to better replicate native human bowel from induced pluripotent stem cells. Garrett is currently involved in photosensitivity research with the Department of Pharmacology and Toxicology at Wright State and image-guided thermal ablation research with the Department of Therapeutic Imaging at the Dayton Veterans Association. He looks forward to a future in academic medicine.

Kristy Waters, BS, MS3

Prevalence and Correlates of Families' Unmet Social Needs in Primary Care

Kristy Waters is a third year MD/MPH candidate in the Physician Leadership Development Program at Boonshoft School of Medicine. She received a B.S. in Biology from Xavier University in 2020, where she graduated Summa Cum Laude. At Xavier, Kristy built her interest in public health and became passionate about education and improving underserved medicine. In medical school she has worked on numerous public health research studies, including quality improvement projects, healthcare utilization studies, and improving patient experience in primary care. Her current research aims to generate a deeper understanding of how variations in social and demographic variables affect the prevalence of unmet medical needs in the pediatric population. Such knowledge can guide primary care venues in providing beneficial resources to improve familial health outcomes.





Featured Faculty Research Talks

Hongmei Ren, PhD

Lipin1: A Novel Therapeutic Target for Duchenne Muscular Dystrophy

Dr. Hongmei Ren is an associate professor in the Department of Biochemistry and Molecular Biology at Wright State University. Dr. Ren received her PhD. degree from London Metropolitan University and postdoc training from the University of Kentucky. Her research interest focuses on lipid metabolism, its association with mitochondrial homeostasis, and its effects on cardiac and skeletal muscle functions. Supported by an NIH RO1 and a DoD award, Dr. Ren's lab made an intriguing discovery that lipin1 expression levels were significantly reduced in the skeletal muscle of Duchenne Muscular Dystrophy (DMD) patients and the mdx mouse model. They further found that increasing lipin1 expression levels prevented muscle damage, reduced muscle degeneration, inhibited fibrosis, significantly improved cardiac and skeletal muscle function, and resulted in substantially prolonged survival in the unique mdx:lipin1 transgenic (mdx:lipin1Tg) mouse model. Currently, her lab is working on a gene delivery approach to determine whether lipin1 could potentially act as a therapeutic target for the treatment of DMD.

Chasity O'Malley, PhD

Evidence Based Instructional Practices for Community College Anatomy and Physiology Instructors- CAPER to the Rescue

Dr. Chasity O'Malley is an Associate Professor of Medical Education and Physiology in the Department of Medical Education at the Boonshoft School of Medicine at Wright State University. She received her PhD in Molecular and Cellular Biology from Tulane University and did postdoctoral training at the Durham VA Medical Center, Tulane University Center for Bioenvironmental Research, and Ochsner Clinic Foundation. Her research aims to improve students' learning experiences by helping them learn to study and interact with the material in meaningful ways and for faculty by helping guide them on implementing active learning in their classrooms. She is funded by the National Science Foundation (NSF) with a 5-year grant of \$2,000,000 entitled the Refinement and Expansion of the Community College Anatomy and Physiology Education Research (CAPER) Program which aims to examine instructor change following professional development related to Evidence Based Instructional Practices.



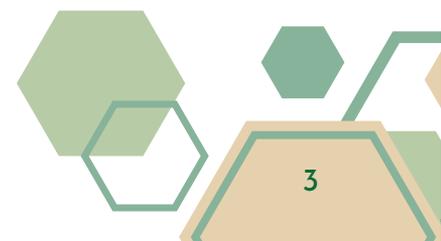
Featured Faculty Research Talks

She has also served as a co-principal investigator for smaller educational focused grants including the International Association of Medical Science Educators (IAMSE) with a grant to develop an “Imposter Phenomenon Mitigation Toolkit for Medical Students” and another to develop curriculum towards “Enhancing LGBTQI Cultural Competency Education in an Undergraduate Medical Curriculum”. She is also actively involved in the International Association for Medical Science Educators and the Human Anatomy and Physiology Society, serving as a committee chair for both organizations. She is also a Human Anatomy and Physiology-Thieme Award for Excellence in Teaching recipient. In her spare time, she loves to run and will be running the Capital City Half Marathon at the end of April.

Sherif Elbasiouny, PhD

Development of Treatments and Biomarkers for ALS

Dr. Elbasiouny is the Wright State University and Premier Health Endowed Chair in Neurodegenerative Diseases Research. He received his PhD. degree in rehabilitation neuroscience from the University of Alberta (Canada, 2007), his master's degree in rehabilitation engineering (Outstanding, 2001), and his bachelor's (with honors, 1997) in biomedical engineering from Cairo University (Egypt). He completed postdoctoral training in cellular neuroscience at Northwestern University (USA, 2008-2012). He joined Wright State University (Ohio, USA) as an Assistant Professor in 2012, where he is currently a full Professor of Neuroscience and Biomedical Engineering and the Director of Neuroengineering Education and Research. Dr. Elbasiouny's research in neuroengineering, neuroprosthetics, neurodegeneration, and aging has attracted >\$12M in federal funding from NIH, DARPA, the National Academy of Sciences, and the Air Force Research Labs. He has been the recipient of numerous honors and awards, among which are: the Outstanding Scholarly and Creative Activity award (2024) and Brage Golding Distinguished Professor of Research award (2023) from Wright State University, the Academy of Medicine's Outstanding Junior Faculty award from the Boonshoft School of Medicine (2017), and the Presidential Early Career Achievement award from Wright State University (2015).

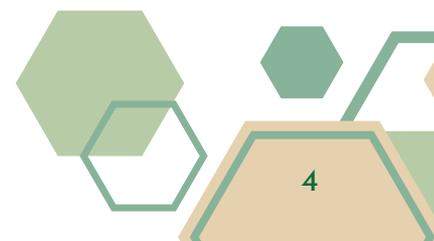


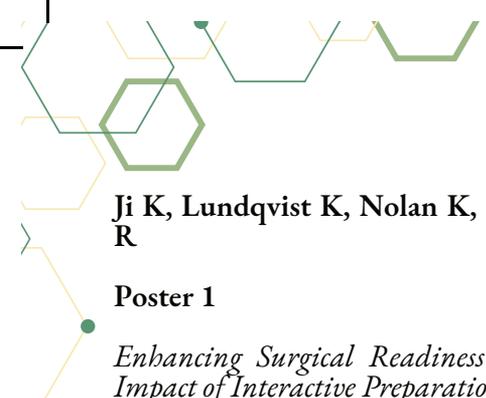


Poster Session and Reception

Student Union Apollo Room
5:30 to 7:00 p.m.

On the following pages you will find information regarding the poster presentations for this evening's symposium. The poster number corresponds to the location of the poster. All departments are associated with Wright State University or the Boonshoft School of Medicine unless otherwise noted.





Ji K, Lundqvist K, Nolan K, Gilman A, Stolfi A, Lober R

Poster 1

Enhancing Surgical Readiness in Medical Students: The Impact of Interactive Preparation and Simulation

Mentor: Robert Lober, MD, PhD

BSOM, Department of Pediatrics

Surgical education faces challenges related to assessing medical students' preparation and confidence in the operating room, influenced by the subjective nature of cases and teaching methods. This research investigates the impact of hands-on preparation style. Researchers hypothesized that interactive preparation, compared to observational methods, increases surgical confidence as a measure of readiness. A survey was sent to third- and fourth-year medical students (n=29 of 244) asking about their surgical shadowing/cadaveric experiences and Likert scale confidence with different aspects of surgery prior to surgical rotations. A significant difference was observed in comfort levels related to taking an active role in the Operating Room (OR), with distinctions between students who had no exposure, those with fewer than six experiences, and those with greater than seven experiences (p=0.041). To further investigate the impact of preparation, two third-year students were assigned either observational or interactive preparation and performed an open reduction and internal fixation (ORIF) in a cadaveric simulation. Both students had previous shadowing experience and used videos and textbooks to prepare. The interactive preparation student had additional hands-on guidance with an orthopedic specialist. Pre- and post-surgery Likert scale confidence surveys indicated that the student who underwent interactive preparation felt significantly more confident going into the surgery and perceived their preparation as more beneficial. Such findings are a vital step in understanding the importance of simulation and preparation in shaping medical student readiness for surgical clerkship. Future studies may increase the sample size and consult attending physicians to evaluate the accuracy of performance to offer valuable insight for enhancing surgical education.

Jr O'Malley C, Benedik L, Mattot M, and Manger J

Poster 2

Why the Delay?: Understanding Factors that Correlate with Step 1 Delay

BSOM, Department of Medical Education

The decision to delay taking Step 1 could impact a student's timeline through medical school; however, the negative impact of taking Step 1 and failing is arguably much greater.

While active learning and removing the numeric Step 1 score should promote student success and lifelong learning attitudes, it has also limited the ability of students to accurately gauge their learning and Step 1 readiness. No study has yet examined Step 1 delay trends in active and traditional learning or identified other factors that could influence Step 1 outcomes. This information could both support active learning as a positive shift in medical education and inform interventions for students likely to delay or fail Step 1.

Here, we compare matriculating MCAT scores, MCQ performance, final exam performance, and demographics across active-learning and lecture-based cohorts of students. We used a stepwise regression, one way ANOVA, t-tests, and Chi Square analyses, with a p-value <0.05 considered significant.

We found no significant increase in students delaying Step 1 since the transition away from numerical scores. MCAT scores, MCQ performance, and final exam performance strongly correlated with Step 1 outcomes, indicating that strong performance in an active learning environment is associated with taking Step 1 on time with positive outcomes. With this information, we expect to drive more targeted interventions for those students who are at risk of delaying Step 1.

Hale L, Hale K, Verbillion M, Murray B

Poster 3

The GRACE Study: Gestalt versus Rigorous Assessment and Calculation for Emergency Medicine Residency Evaluation

Mentor: Brian Patrick Murray, DO

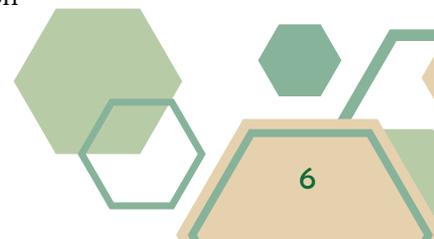
BSOM, Department of Emergency Medicine

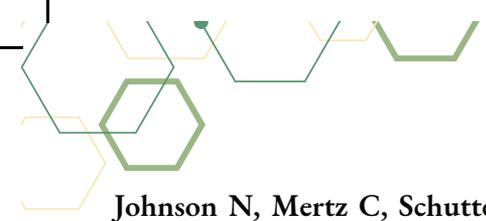
During the 2023 Match application season, prospective applicants were evaluated by both faculty gestalt, the traditional method of applicant evaluation, and an objective score based on agreed-upon definitions of applicant criteria related to geographic preference, standardized letters of recommendation, licensing examination scores, and interview scores. Both methods were used to rank the applicants into thirds, and top 10%. These rankings were then compared for interrater reliability, and with the final ranking after a comprehensive review.

Results: In total, 134 applicants were interviewed and included in the analysis. The inter-rater reliability was low between the two scoring methods. However, 94% of applicants were ranked the same within one degree of freedom for each score. After a review of all applicants who did not have an agreement, the final ranking most closely aligned with the calculated score.

Conclusion: While inter-rater reliability between a gestalt and calculated review of applicants was low, there was overall good agreement between the final rank and the calculated rank of the applicants.

This suggests that using predefined definitions and scores is superior to applicant evaluation than a gestalt impression of applicants.





Johnson N, Mertz C, Schutter B, Owens W, Fisher G, Parikh P, Stolfi A, Brittain G, Gilbert M, Frommeyer T

Poster 4

Personality Types, Motivations, and Anki Usage in a Single Medical School

Mentor: Priti Parikh, PhD

BSOM, Department of Surgery

Introductory Statement: Anki is a widely used software flashcard tool for medical school with limited data on its role in medical education.

Purpose: The purpose is to identify personality types, or motivations, that correlate with frequency of Anki usage.

Methodology/Approach: The study included 129 medical students from one school. After IRB approval, a survey was sent including questions to assess level of Anki usage and 13 motivation statements measured on 5-point Likert scales from strongly disagree to strongly agree. Myers-Briggs personality type tests were available for all students. Personality types were compared between survey responders (n=48) and non-responders (n=81), and within survey responders. All-the-time-users utilized Anki for every course, and sometime-users used Anki for at least one course but not all. Motivation statements were dichotomized and analyzed with chi-square or Fisher's exact tests.

Findings: Responses included 28 all-the-time-users, 15 sometime-users, and 5 non-users. No differences were found in personality traits for responders and non-responders, or within responders, students desiring surgical (n=22) vs. non-surgical (n=26) future specialties. All-the-time-users were more likely to be Thinking on the Myers-Briggs Thinking/Feeling component than sometime-users. All-the-time-users were more likely to agree/strongly-agree that Anki identified learning gaps, increased academic performance, increased competitiveness for residency application, increased studying efficiency and reduced study time, and provided structure to study routine compared to sometime-users. **Conclusions:** Attitudes and personalities of medical students differed significantly when grouped by Anki usage. Further research into this popular study tool could aid in tailoring educational approaches to best suit individuals.

Owens W, Travers F

Poster 5

Dissecting Cellulitis of the Scalp, A Review of Pathogenesis and Therapeutics

Mentor: Jeffrey Travers, MD, PhD

BSOM, Department of Dermatology

Dissecting Cellulitis of the Scalp (DCS) is a chronic, physical, and mentally distressing condition that impacts patients' quality of life.

The disease can range from tender nodules to sinus tract and abscess formation. It is primarily seen affecting the posterior vertex of the scalp and is most common in African American males. DCS is one disease within the Follicular Occlusion Tetrad, and it is commonly diagnosed along with one of its counterparts. The pathogenesis of DCS is not fully understood, which has contributed to the limited therapies available currently. Within the current understanding of DCS development, follicular occlusion serves an inciting event that if followed by hyperactive immune response resulting in persistent inflammation. Pharmacologic treatments that have been utilized includes antibiotics, retinoids, corticosteroids, and most recently, biologics. Surgical intervention and laser therapy have also played a role for treating refractory disease. This review paper discusses the current understanding of the pathologic events involved in the development of DCS and related disorders, treatment options, and a suggested disease grading system.

Johnson-Gonzalez C, Chandiramani C, Linkous B, Wilcher K, Bowman-Gibson S, Nolan K, Stone E, Maxwell R, Dhanraj, Brown T

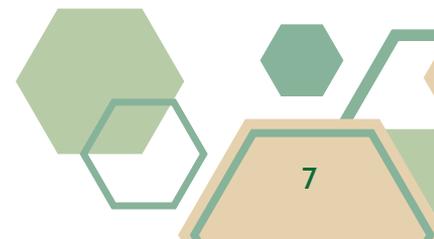
Poster 6

Master Regulators of Oxygen Sensing and Cellular Energy in the Human Placenta are Significantly Associated with Early-Onset Preeclampsia

Mentor: Thomas L. Brown, PhD

BSOM, Departments of Neuroscience, Cell Biology, and Physiology, and Obstetrics and Gynecology

Preeclampsia is one of the most serious complications in pregnancy and can progress rapidly. It is a leading cause of maternal and fetal morbidity and mortality, making it a major public health issue in the field of obstetrics. While this condition has been studied extensively, many questions still remain about how preeclampsia develops. In this study, we evaluated critical pathways that may be involved in early-onset preeclampsia. Using placental tissue from healthy control and preeclamptic patients, placental samples were analyzed for levels of important metabolic proteins. Adenosine monophosphate kinase (AMPK) and hypoxia-inducible factor 1 (HIF-1a) protein levels were found to be significantly elevated when compared to the controls, suggesting an important role for oxygen-sensing and regulation of cellular energy in the pathogenesis of preeclampsia. These two pathways are known to induce glycolytic metabolism. Downstream proteins involved in the glycolytic, β -oxidation, and glucose uptake pathways were also found to be significantly increased, indicating a response at the level of cellular metabolism in pathogenic placentas. Our results have identified specific metabolic changes at the functional protein level that occur in early-onset preeclamptic placentas and provides much needed insight into how this devastating condition may affect placental function and lead to pathogenesis.





Bashir K, Johnson-Gonzalez C, Dhiman A, Schmidt A, Lee J

Poster 7

Lifestyle Medicine Application in Family Medicine

Mentor: Jennifer Lee, DO

BSOM, Department of Family Medicine

Lifestyle medicine, a patient-centered approach promoting healthy lifestyle behaviors, is a powerful, evidence-based tool for preventing and treating chronic diseases. Incorporating lifestyle medicine has been shown to reduce the burden of diseases such as diabetes mellitus, cardiovascular disease, anxiety, and depression. Despite surmounting evidence supporting lifestyle medicine, clinical implementation is lagging, with many physicians facing barriers to effectively encouraging lifestyle change to patients. This project seeks to study the lifestyle medicine assessment (LMA) tool in terms of feasibility of implementation and influence on patient motivation, perception of lifestyle changes, and satisfaction. A two-pronged approach was conducted. First, the time to implement the LMA tool with motivational interviewing (MI) was recorded for multiple patient encounters. Next, a different subset of patients receiving the LMA tool with MI completed a pre- and post-encounter survey asking about their motivation to change behaviors, perception of lifestyle changes on well-being, and satisfaction with the visit. These surveys were also distributed to a control group of patients who did not receive the LMA tool. Our results show the average time of application to be 7.18 minutes. In addition, intragroup scores for motivation to change behaviors were significantly higher in the LMA intervention group post-intervention ($p_{LMA} = 0.000886$), but not in the control group. These results show the potential benefits of the LMA tool in a clinical setting, demonstrating realistically achievable implementation times and resulting in increased patient motivation regarding better lifestyle choices. Providers should consider using the LMA tool to promote lifestyle change within their practice.

Szeltner D, Schutter B, Johnson-Gonzalez C, Ortenzio M, Frommeyer T, Gilbert M, Brittain G, Parikh P

Poster 8

Nurturing Academic Medicine: Student-Led Strategies for Career Exploration

Mentor: Priti Parikh, PhD

BSOM, Department of Surgery

Background: Stress is integral to maternal well-being, affecting psychological and physical equilibrium. While research delves into the impact of stress on mental health conditions (MHC) in pregnant women, the influence of preexisting MHC on stress, resilience (ability to adaptively respond to adversity), and hope (optimistic attitude of

mind based on an expectation of positive outcomes) remains poorly understood.

Methods: Surveys were conducted on 114 English-speaking women aged 18 or older who were at Miami Valley Hospital post-delivery in 2017-2019. The survey utilized Snyder's hope scale, and collected demographics, stress impacts, and barriers to care. Data were analyzed via the Statistical Package for Social Science (SPSS) 29.0.

Results: Among 114 women, 25% had a history of MHC. Participants with a prior MHC (37%) reported stress during pregnancy, compared to 17% without MHC ($p < 0.05$), regardless of race. Feeling overwhelmed by stress revealed a racial trend, with 75% of Black women reporting higher stress compared to 50% of White women and 33% of other races ($p = 0.56$). There was no significant effect of race on resiliency, nor did MHC predict resiliency scores. Conclusion: This study emphasizes the importance of integrating stress management and resilience-building into care strategies for pregnant women, especially those with a history of MHC. Interventions should prioritize culturally sensitive stress management for all pregnant individuals, as racial disparities potentially impact maternal well-being. Despite racial trends in stress, resiliency appears consistent across racial lines, suggesting a universal aspect of coping. These findings advocate for comprehensive care approaches addressing individual needs within social-cultural contexts.

Ortenzio M, Travers J, Rohan C

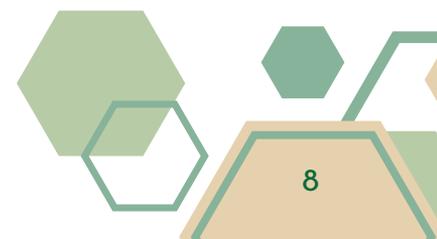
Poster 9

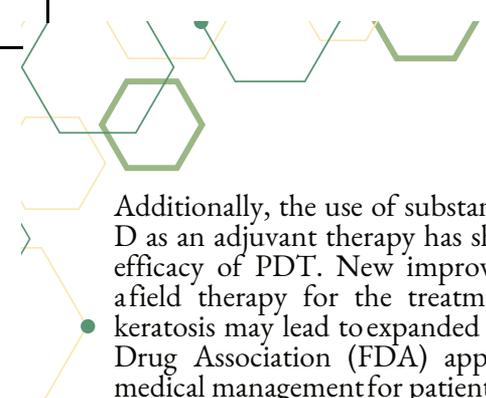
Utilizing New Strategies to Improve the Tolerability and Effectiveness of Topical Photodynamic Therapy

Mentor: Jeffery B. Travers, MD, PhD

BSOM, Department of Pharmacology and Toxicology

In the United States, skin cancer, specifically non-melanoma skin cancer, accounts for the vast majority of cancer diagnoses each year. Research on cancer therapy and prevention has expanded as a result of it being the second most common cause of death in the United States. Enhancing topical photodynamic therapy (PDT), a treatment for actinic keratosis (AK), a precancerous lesion of squamous cell carcinoma, is one area of particular interest. Patients frequently decline PDT as their preferred course of treatment despite its well-established advantages due to its side effects, which include discomfort and inflammation. Furthermore, compared to other field therapies such as topical 5-fluorouracil, PDT as it is currently administered seems to be less effective. We highlight new basic and translational research in this review that may shed light on PDT-induced side effects and ways to improve the efficacy of this method of treatment. According to recent studies, PDT-induced immunosuppression may be attributed to the release of subcellular microvesicle particles (MVP), a mechanism that may be prevented with pharmacologic intervention. To that end we provide murine and human data suggesting that PDT generates MVP and that these could be responsible for its immunosuppressive effects.





Additionally, the use of substances generated from vitamin D as an adjuvant therapy has shown promise in raising the efficacy of PDT. New improvements to topical PDT as a field therapy for the treatment of precancerous actinic keratosis may lead to expanded utilization of this Food and Drug Association (FDA) approved protocol as part of medical management for patients with actinic keratosis.

Robbins J, Schutter B, Cush C, Szeltner D, Erlich H, Crawford T, Pecchioni L, Velasco

Poster 10

Effect of Adhesive Drapes on Surgical Site Infection Prevention in Infrainguinal Vascular Surgery

Mentor: Justin Robbins, MD

BSOM, Department of General Surgery

Objectives: Iodine impregnated adhesive drapes, such as Ioban® reduce surgical site infections (SSIs) in cardiothoracic surgery but have inconsistent results in other specialties. A Cochrane review found significantly higher SSIs in the adhesive vs control groups (13.7% vs 11.2%) in OBGYN, orthopedic, abdominal, and CT surgeries with Ioban®. There are no studies on its use in vascular surgery. This study evaluates its effect on infrainguinal vascular surgery SSIs.

Methods: This retrospective study assessed infrainguinal vascular surgery patients from 2013-2023. Demographic data, intraoperative factors (including Ioban® use), closed-incision negative pressure wound therapy (ciNPWT), topical antibiotics, and vein or graft use were collected. SSIs within 90 days post-surgery were evaluated, excluding procedures in an already infected field.

Results : 1292 patients, average age 62.1 ± 8.8 years, predominantly male (64.9%), 52.0% current smokers. 80.0% used Ioban®, 18.1% had SSIs (79.6% superficial, 20.4% deep). Higher body mass index (BMI), female sex, and diabetes increased SSI likelihood. ciNPWT linked to SSI ($p=0.046$). Logistic regression: non-significant 14% decrease in SSI odds with Ioban® (OR = 0.86; 95% CI: 0.57–1.30). Secondary analysis: significant interaction between Ioban® use and BMI ($p=0.007$), with higher BMI associated with increased SSI odds.

Conclusions: Usage of Ioban® in vascular surgery varies, derived from cardiothoracic studies. Specific assessment in the vascular population is lacking. This study suggests reduced SSI with Ioban® but notes a potential influence from BMI. Future multicenter trials are necessary to clarify efficacy in SSI prevention.

Cush C, Stefko J, Jaworksi H, Lyons J

Poster 11

Trends and Epidemiology of Spine Fractures in the Super-Elderly Population in the United States from 2011 to 2012

Mentor: Joseph G. Lyons, MD

BSOM, Department of Orthopaedic Surgery

Introduction: Spine fractures are associated with significant morbidity, mortality, and economic burden.¹ Super-elderly individuals (80+ years old) represent a significant segment of the US population and have increased fragility fracture susceptibility.² This study investigates spine fracture incidence, stratified by fracture site, sex, and age, in 80+ year old patients between 2011-2020.

Methods: National Electronic Injury Surveillance System (NEISS) was analyzed, identifying 80+ year old diagnosed with neck, upper trunk, or lower trunk injury from 2011-2020. Outcome measures included annual, overall, and age-adjusted fracture incidence rates (IRs), temporal IR trends, and demographics. IRs were expressed as # fractures/10,000 person-years at-risk (PYR). Age stratification was used for comparison (octogenarians, nonagenarians, centenarians). IRs were analyzed using linear regression. Average annual percent change (AAPC) indicates magnitude/direction of injury rate trends.

Results: 385,375 super-elderly patients sustained spinal fractures from 2011-2020 for IR of 31.5 PYR. Female fracture rate was significantly higher than male; both IRs significantly increased. Octogenarian and nonagenarian injury rates increased, but centenarian remained stable. Nonagenarian and centenarian fracture IRs were significantly higher than octogenarian. Annual spine fracture IRs increased from 20.8 PYR to 40.3 PYR from 2011-2020 (AAPC=8, $p=0.00002$). Cervical (AAPC=6.9, 95%, $p=0.00079$), thoracic (AAPC=9.5, $p=0.00027$), and lumbar spine (AAPC=8, $p=0.00004$) fracture incidences increased significantly.

Discussion: Annual spinal fracture incidence in 80+ year old significantly increased from 2011-2020 despite detection and management advancements.² Male and female fracture incidences increased significantly, along with octogenarian and nonagenarian incidences, but not centenarian. This data can uncover causes of increased fracture incidence and highlight areas for prevention and care improvements .

Robbins J, Schutter B, Cush C, Szeltner D, Ehrlich H, Katchen S, Crawford T, Rishi M, Pecchioni L, Velasco J

Poster 12

Endoscopic Vein Harvest and its Effect on Lower Extremity Arterial Bypass Patency

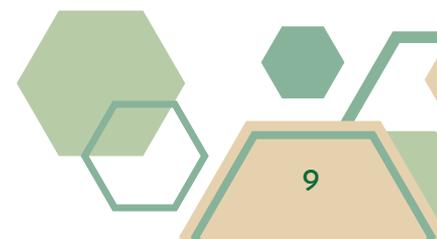
Mentor: Justin Robbins, MD

BSOM, Department of General Surgery

Objectives: Continued interest with endoscopic (EVH) vs. open (OVH) vein harvest in lower extremity arterial bypass exists. While EVH decreases wound complications, long-term graft patency concerns remain. This study assesses routine EVH and its impact on patency.

Methods: Retrospective study:

340 patients with limb-threatening ischemia underwent infrainguinal bypass using continuous segment greater



Schutter B, Durkin S, Twyman M

Poster 14

Effects of Pre-Visit Educational Videos on Patient Understanding and Implementation of Intermittent Fasting

Mentor: Marlon Twyman, MD

BSOM, Department of Family Medicine

Introduction: Despite an increasing focus on preventative medicine, US hypertension and obesity rates continue to rise. This research focuses on how educational materials on intermittent fasting (IF) can influence patients' motivation in implementing healthier habits.

Background/Significance: In the last decade, obesity and severe obesity prevalence has increased from 30.5% to 42.4% and 4.7% to 9.2%, respectively. These rates indicate a disconnect between preventative goals and healthier patient outcomes, necessitating additional interventions to increase patient compliance with preventative treatment.

Methods: Among 52 obese patients with type 2 diabetes not taking insulin or intermittent fasting in Dayton at PriMed Physicians, 27 were shown a 4.5-minute educational video on IF while 25 were not. The video explained the physiologic effects of IF and how to implement it. Patients then met with their family doctor and discussed IF implementation. Afterwards, patients answered a survey of Likert scale questions (1=strongly disagree, 10=strongly agree) to evaluate their understanding of IF and likelihood of implementation.

Results: On average, patients who watched the video believed they better understood the physiologic effects of IF, 8.36 (n=27) compared to 5.44 (n=25, p=0.0016). Additionally, those who watched the video believed they better understood the implementation of IF, 9.04 (n=27) compared to 6.48 (n=25, p=0.0006). There was no statistical difference between likelihood of implementation between groups (p=0.2045)

Conclusions: A pre-visit educational video for IF was shown to increase patients' understanding of the physiologic effects and implementation of IF, but it did not show statistical significance in convincing patients to begin IF.

Schutter B, Weimar D, Cush C, Smith A, Christoffel M, Albert M

Poster 15

Analysis of Rehabilitation in Pediatric Anterior Cruciate Ligament (ACL) Reconstructions via Isometric and Isokinetic Biodex Data for Three Different Graft Types

Mentor: Mike Albert, MD

BSOM, Department of Orthopedic Surgery

Introduction: A rupture of the ACL is a common sports injury in the adolescent population and the course of treatment is still heavily debated. There is very little research relating to rehabilitation outcomes following ACL reconstruction

for the following grafts:
bone-tendon-bone (BTB), hamstring tendon (HT), quad tendon (QT).

saphenous vein (2013-2023). Compared OVH (n=111), EVH (n=229). Evaluated: demographics, harvest technique, incisional breakdown, arterial procedures, 1-5 years. Patency categorized: primary (no reintervention), primary assisted (adjuvant interventions), secondary (graft failure, new bypass).

Results: 340 patients, average age 62.6 ± 8.8 years, male (71.5%), white (88.8%), smokers (52.2%), hypertensive (78.0%), BMI 27.9 ± 6.0 . 75% had below knee (BK) outflow, 25% above knee (AK). EVH mean operative time 193 mins, OVH 228 mins (p=0.03). Primary patency rates: EVH 70%, OVH 67.1% (p=0.91), assisted primary: EVH 10.6%, OVH 11.4% (p=0.83), secondary: EVH 16.7%, OVH 21.6% (p=0.32). AK primary patency higher (78%) than BK (67%). EVH lower incision breakdown (11.9% vs. 21.1%, p=0.04). Logistic regression: EVH lower odds of secondary patency (adjusted OR: 0.66; 95% CI 0.33-0.99) and fewer complications than OVH.

Conclusions: No significant difference in patency rates observed between EVH and OVH. Promising benefits include shorter operative time, similar patency rates, and reduced wound complications. EVH holds potential for vein harvest, but necessitates further research on long-term efficacy.

Szeltner, D, Herchline, T

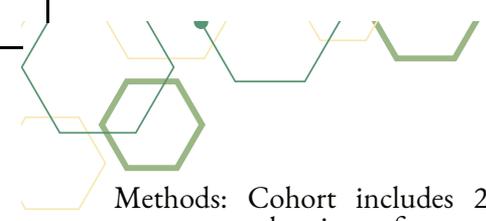
Poster 13

COVID-19-Associated Bradycardia: A Significant Marker for Increased Mortality Risk

Mentor: Thomas Herchline, MD

BSOM, Department of Internal Medicine

Since December 2019, the global outbreak of COVID-19 has resulted in millions of cases that have led to severe complications and fatalities. The common cardiac arrhythmias reported in COVID-19 patients are atrial fibrillation, ventricular tachycardia, sinus tachycardia, ventricular fibrillation, atrioventricular block, and QTc prolongation. Instances of bradycardia with increased mortality were documented in patients treated at St. Luke's University Health Network. This study was conducted at Miami Valley Hospital and aimed to evaluate the mortality rates of COVID-19 patients who developed bradycardia as well as identify factors associated with bradycardia. Data from 10,571 patients admitted between March 1, 2020 and December 31, 2021, were retrospectively analyzed. Bradycardia was defined as heart rates ranging from 30 to 55 beats per minute. Patients were excluded from multivariate analysis if there was missing categorical data. Of the 9,303 patients included in the analysis, 35% experienced bradycardia, with an overall mortality rate of 23%. The study revealed a significant correlation between bradycardia and increased mortality (p<0.001), male sex (p<0.001), age 65-79 (p<0.0001), and Caucasian race (p<0.001). These findings underscore a pronounced elevation in mortality risk among COVID-19 patients with bradycardia. Males, individuals aged 65-79, and those of Caucasian ethnicity were at increased risk for bradycardia. These findings contribute to our understanding of COVID-19 cardiovascular manifestations and may inform targeted interventions to improve patient outcomes.



Methods: Cohort includes 236 patients aged 22 and younger at the time of surgery who underwent primary ACL reconstruction with one of three graft types: BTB, HT, and QT. Patients were followed for rehabilitation in our orthopedic department and were tested using isokinetic and isometric forces via Biodex machine. Patients were tested pre-surgery and 3-, 6-, 9-, and 12-months post-surgery. Exclusion criteria includes patients with concomitant multi-ligamentous knee injury and bone injury (i.e. tibial spine fracture). Other information obtained includes patient age, sex, sport during injury, and meniscal repair during surgery.

Results: At this time, data collection is complete and analysis of data is expected to be completed by mid-March of 2024. Interpretation of results and creation of the poster is planned for the end of March 2024.

Discussion and Significance: Results have yet to be calculated and analyzed. There is extremely limited literature on studies of this type, making this an unexplored area of pediatric ACL rehabilitation. Through analysis of the isometric and isokinetic Biodex data across the different graft types, patient rehabilitation can be better optimized and tailored to each individual patient.

Hefner D, Dye M, Nguyen T, Yu S, Saeed A, Bey J, Walk C, Lantz R

Poster 16

Diversity in Education: Vascular and Cardiothoracic Fellowship Representation by Gender, Background, and Training

Mentor: Rebekah Lantz, DO

Premier Health, Department of Internal Medicine

The pursuit of diversity, equity, and inclusion in the field of medicine has been widely acknowledged as crucial for enhancing health outcomes. Despite advancements made in general surgery residency programs, there has been a noticeable disparity in female representation within vascular(VS) and cardiothoracic surgery(CTS) fellowships between 2011 and 2020. This highlights the need for effort towards achieving more equal gender representation in these disciplines. This study observes the latest matriculation data for VS and CTS fellowships as a means of gaining insight into possible barriers. We hypothesized that females, Osteopathic(DO), and Non-United States(US) graduates would be underrepresented when compared to male, allopathic(MD), and US-trained counterparts.

Methods: Data was obtained through the American Medical Association's Fellowship and Residency Electronic Interactive Database. We collected 2022-2023 matriculant data and compared male vs female gender, MD vs DO certification, and US vs Non-US graduate medical education. Lack of diversity was indicated by $p < 0.05$.

Results: Vascular Surgery: Female frequency 40(32%) ($p < 0.0001$)(CI 24,41); DO frequency 21(16.2%) ($p < 0.0001$)(CI 11,23); Non-US graduate frequency 12(13.3%)($p < 0.0001$)(CI 8,22). There was statistical significance to suggest that females, DOs, and Non-US graduates remain underrepresented in VS.

Cardiothoracic Surgery: Female frequency 76 (36.2%) ($p < 0.0001$) (CI 30, 43), DO frequency 16 (7.6%) ($p < 0.0001$) (CI 5,12), and non-US graduate frequency 25 (12.2%) ($p < 0.0001$) (CI 8,17). There was statistical significance to suggest that females, DOs, and Non-US graduates remain underrepresented in CTS.

Conclusions: We determined that significant disparities remain for VS and CTS fellowship when gender, training, and US status are observed. Continued efforts to achieve more equal representation within VS and CTS should be made.

Elliott B, Carmody J.B., Gottschall Z, Suppa

Poster 17

Trends in Medical Student Research on PubMed from 2012 to 2022

Mentor: Brian Elliott, MD

Walter Reed National Military Medical Center, Department of Internal Medicine and Neurology

Purpose: Analyze the trends in quantity and quality of medical student research on PubMed from 2012 to 2022.

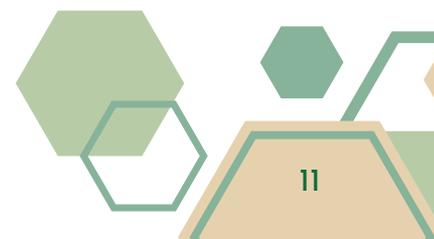
Methods: A retrospective cohort study of all PubMed publications from 2012-2022 with an author affiliation of "medical student.". We used Zotero to exclude inapplicable studies, Semantic Scholar to evaluate citation counts, and scimagojr.com journal rankings (SJR) to assess journal quality and infer the specialty of each publication. We manually reviewed each publication to determine study designs.

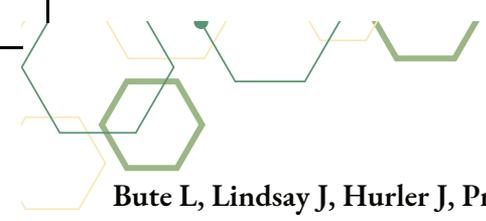
Results: 5,181 PubMed articles were available for analysis. Publications increased 1,330% during the study period, from 54 publications in 2012 to 718 in 2022 with increases seen in 34 of 35 specialties assessed. 4,532 (87%) articles were assessed via SJR. The median SJR increased from 2012 to 2021 (0.470 to 0.630, $p = 0.0002$).

Using the Semantic Scholar database, 1,199/5,172 (23.1%) articles were cited 0 times. The number of publications cited 0 times increased from 7.1% in 2012 to 21.6% in 2019 ($p = 0.008$) and 21.9% in 2020 ($p = 0.006$).

The proportion of study designs were not significantly different from 2012 to 2022 except for two designs. The proportion of perspective articles increased from 6% in 2012 to 23% in 2022 ($p = 0.002$) and the proportion of case reports decreased from 26% in 2012 to 14% in 2022 ($p = 0.02$).

Discussion: PubMed publications attributed to medical students have dramatically proliferated since 2012. Despite increases in research quantity, quality trends are mixed - SJRs show modest improvements in the quality of journals where articles were published, while citation metrics suggest less impactful publications.





Bute L, Lindsay J, Hurler J, Priti P

Poster 18

USMLE Step 1 Binary Grading - Does it Pass the Test?

Mentor: Priti Parikh PhD, and Joe Hurler MD

BSOM, Department of Surgery

The transition of the United States Medical Licensing Examination (USMLE) Step 1 exam to pass/fail introduced uncertainties in the residency match process, affecting medical students' specialty pursuit and altering evaluation criteria for program directors (PDs). We sought to investigate the importance of other application components given this change from the perspectives of applicants and PDs from both competitive and less competitive programs. To quantify competitiveness, specialties with a published ratio of Doctor of Medicine (MD) / Doctor of Osteopathic Medicine (DO) Senior Applicants to that specialty per match positions available of >1.0 were deemed, "competitive" and ≤ 1.0 were deemed, "less competitive."

Qualitative interviews with seven PDs and nine fourth-year medical students were interviewed and analyzed thematically. Findings were categorized by specialty competitiveness. Early results suggest a transition to emphasizing Step 2 scores for residency selection, generally viewed positively by applicants. However, differences emerged among specialties, with competitive residencies prioritizing Step 2 scores and research, while traditionally less competitive areas value experiences, letters of recommendation, and clinical reviews. Furthermore, concerns arose about selecting candidates fully capable of passing exams who earned positive reviews and leadership experience. Research publications gained significance when distinguishing similar applicants.

This study highlights discordance in application priorities between those specialties designated as competitive and those designated as noncompetitive, underscoring the need for alignment and illustrating variations between program types. Ongoing research aims to guide applicants in tailoring their applications to meet program directors' expectations amidst uncertainties. Additionally, this research assists program directors in selecting residents aligned with their program's needs, enhancing the matching process's effectiveness and mutual benefit.

Rings V, Wysong E, Younglove S, Brute L, Maxwell R, Barhan S

Poster 19

Postpartum Non-Pharmacologic Pain Management After Vaginal Delivery

Mentor: Sheela Barhan, MD

BSOM, Department of Obstetrics and Gynecology

This research investigated the relationship between abdomino-pelvic binders and pain severity in patients who underwent vaginal delivery. Inadequately managed postpartum pain is associated with increased risk of depression, chronic intractable pain, and opioid use disorder. Approximately 25% of patients endorse pregnancy-related low back and pelvic girdle pain.

Further research on abdominal binders and other pain management is needed to definitively advance this field.

A prospective randomized study was performed, recruiting patients on a Labor and Delivery unit who were scheduled for spontaneous vaginal delivery (SVD) from 2019 to 2022. Patients were randomly assigned to receive an abdominal binder within two hours postpartum or remain as a control. Both groups received routine postpartum pain management. Primary outcomes included: pain score; location of pain; and frequency for pharmacologic analgesia. Outcomes were recorded on postpartum days 0 and 1.

Fifty patients received abdominal binders and fifty patients received only standard postpartum pain management. Pain scores immediately postpartum were higher in the abdominal binder, ($p = 0.05$), although average pain scores on days 0 and day 1 were not significantly different. There were no differences between groups in pain location or use of pharmacologic analgesia.

This study showed no evidence for reduced pain or reduced use of pharmacologic pain interventions with an abdominal binder plus standard pain management after SVD, despite previously studied benefits of binders for pain control antepartum and after caesarean section. Research on nonpharmacologic pain management is still in its infancy, particularly when relating to labor and delivery.

Olaoluwa S, Eardley Z, Rings V, Sheikh A, Pucheril D

Poster 20

Diagnostic Accuracy of Nuclear Scan Imaging of Benign Renal Masses in a Community Health Setting

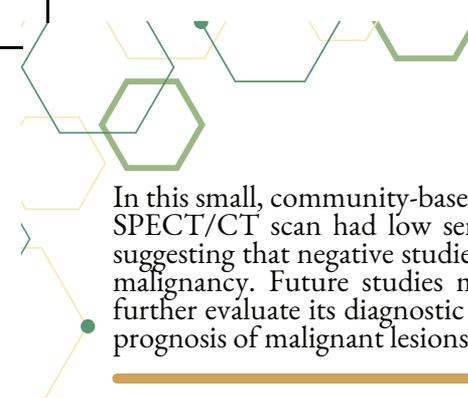
Mentor: Daniel Pucheril, MD, MBA

BSOM, Department of Surgery

The use of axial computerized tomography (CT) and magnetic resonance imaging (MRI) increased incidental renal tumor findings. Oncocytomas are the most common benign solid renal tumor with excellent prognosis but are not easily differentiated from renal cell carcinoma on standard imaging. As a result, 10-20% of patients with oncocytomas undergo unnecessary surgical resection. Previous studies have proposed that nuclear scan modalities like the technetium-99m (^{99m}Tc)-sestamibi single photon emission computed tomography/computed tomography (SPECT/CT) scan may be useful in differentiating oncocytomas from other renal tumors. Oncocytomas have comparably higher amounts of mitochondria, increasing scan uptake. Utilizing these scans could reduce the need for unnecessary biopsies or surgeries. Our study investigates the use of sestamibi scans to accurately diagnose and differentiate benign and malignant renal tumors in a community health setting.

A retrospective study was performed, reviewing data of 29 patients at a community hospital with clinical suspicion for renal oncocytomas and subsequently underwent a sestamibi scan. Demographic data, tumor size, nuclear scan results and tumor pathology were derived from the electronic health record (EHR). Primary outcomes were sensitivities and specificities of the sestamibi scan for detecting renal oncocytomas.

Data analysis showed that the sestamibi scan diagnosed oncocytomas with a sensitivity and specificity of 40% and 82% respectively.



In this small, community-based study, the ^{99m}Tc -sestamibi SPECT/CT scan had low sensitivity and high specificity, suggesting that negative studies warrant further workup for malignancy. Future studies may repeat these methods to further evaluate its diagnostic accuracy of benign lesions or prognosis of malignant lesions.

Reese R, Stolfi A, Manger J, Johnson S

Poster 21

The Impact of Gross Neuroanatomy Education on Second-Year Medical Students

Mentor: Stephanie Johnson, MD

BSOM, Department of Medical Education

Cadaveric dissection is an important method of learning anatomy during a physician's education. However, gross brain dissection is not a required part of the curriculum at all medical schools, including our institution. This study aims to analyze the impact and perception of exposure to gross neuroanatomy in second-year medical students. Brain cutting sessions were offered to students at the beginning of their neurology course. A 10-question neuroanatomy quiz was administered to all students at the beginning and end of the course, and students who completed the dissection responded to surveys regarding the perceived usefulness and suggestions for improvement. Of students who consented to the study, 28/104 chose to dissect, and there was no difference in academic performance in prior non-clinical coursework between the groups ($P=0.424$). A total of 89/104 students completed pre- and post-course identical neuroanatomy quizzes. Pre-neuroanatomy quiz scores were similar between session participants ($n=26$) and non-participants ($n=63$) (30.38% versus 30.95%). Post-neuroanatomy quiz scores were significantly higher for those who completed the brain dissection (68.46% versus 59.05%, $P<0.001$). The cumulative neurology final exam scores did not differ between groups ($P=0.347$). Qualitative results from post-course surveys showed students felt more confident in their neuroanatomy skills and enjoyed the small group, hands-on aspect the most, with the biggest area for improvement being the timing of the session in regard to the neurology course. Overall, gross neuroanatomy dissections increased neuroanatomy knowledge, confidence, and student engagement and should be considered a valuable part of a medical school curriculum.

Annamraju R, Manne R

Poster 22

Exploring the Interplay of Socioeconomic, Environmental, and Lifestyle Factors: A Comparative Analysis of Obesity and Diabetes Prevalence in Rural and Urban Ohio Counties

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Our mission in this paper was to investigate how the classification of a county as urban or rural affected the correlation between the percentage of adults with obesity and diabetes in Ohio counties in 2022.

Furthermore, we wanted to look at other variables, such as high school completion rates, percentage of rural residents by county and food environment index, and their impact on obesity prevalence in Ohio counties. We obtained data on obesity and diabetes prevalence, percentage of adults who completed high school, the food environment index score, and percentage of rural residents in the 2010 census through the County Health Rankings data the percentage of adults who completed high school, the food environment index score, and the sheet and analyzed this data through statistical analysis in the Statistical Package for the Social Sciences (SPSS). Our results showed that there was a statistically significant correlation between the prevalence of diabetes and obesity in rural and urban Ohio counties, with the correlation coefficient being higher for urban counties, at .648 vs .475 for rural counties. The percentage of adults who completed high school and the food environment index was a statistically significant predictor of obesity rates across all Ohio counties in 2022. Furthermore, there was a statistically significant negative correlation between food environment index and adult obesity across all Ohio counties in 2022. This data shows the complex variables that lead to diabetes and obesity and can provide a glimpse into future research that can delve into preventative measures to reduce prevalence in urban and rural areas.

Annamraju R, Fisher A

Poster 23

Primary Seminal Vesicle Adenocarcinoma with Clear Cell Features Presenting 17 Years After Radiation Therapy

Mentor: Ananth Annamraju, MD

Urology Specialists of Ohio

Primary seminal vesicle adenocarcinoma (PSVA) is a rare tumor with <60 cases reported in the literature. Lesions within the seminal vesicles are often due to secondary spread from nearby organs: seminal vesicle invasion and recurrence of prostate cancer post radiation is well documented. However, literature regarding treatment and diagnostic criteria of PSVA is lacking. Here we discuss a case of a PSVA with clear cell features, a markedly rare entity (<5 cases reported in the literature), presenting in a 78 year-old male with a history of prostate cancer treated in 2005 via brachytherapy appearing as an incidental indeterminate bilobar pelvic complex cystic mass between rectum and bladder causing bladder pressure and urgency. MRI noted a mural nodule on the anterior portion of the cyst near the prostate. Patient underwent percutaneous drainage of the lesion, however, subsequent CT showed recurrent mass. Patient underwent seminal vesiculectomy and pathology revealed PSVA with clear cell features. It is speculated that brachytherapy resulted in damage to ejaculatory ducts which potentially contributed to the development of PSVA. Radiation induced seminal vesicle carcinoma has been noted in the literature, though lesions were Prostate Specific Antigen positive and typically appeared within five years post radiation. This case study demonstrates that carcinomas following radiation can appear decades later. Symptoms of bladder urgency are common in male geriatric patients, and the benign appearing, nonspecific presentation of this case highlights the importance of remaining vigilant in screening for potential seminal vesicle carcinomas in patients who have had any previous genitourinary radiation.



Fisher A, Aquilino A, Murray Q, Kozurek G, Daniels D

Poster 24

The Solubility of Recombinant Influenza Polymerase Acidic Protein

Mentor: Douglas Daniels, PhD

University of Dayton, Department of Chemistry

Influenza is an extremely serious and deadly disease and has the ability to cause a pandemic, just as COVID-19 has. The Center for Disease Control (CDC) estimates that between October 1, 2022, and January 14, 2023 that there have been 25 - 50 million flu illnesses, 12 - 24 million flu medical visits, 270,000 - 600,000 hospitalizations, and 17,000 - 52,000 flu deaths—just within the United States. Current antivirals against the influenza virus are few and not as effective as they could be. It is important to develop new antivirals to further protect humans from influenza. A solution to this problem is to inhibit polymerase acidic protein. Polymerase acidic protein plays a vital role in the synthesis of vRNA of the influenza virus. Previous research has shown that when this protein is inhibited, influenza will be unable to replicate. Current protein crystals do not show an exposed binding pocket, so new varieties of this protein's crystals will provide avenues in which to explore the production of novel antivirals. This thesis aims to describe steps taken to alter the crystal structure to better reveal the binding pocket of the interest in protein crystals. This thesis will explain the processes of solubilizing polymerase acidic protein, the expression of the protein fusion of interest, and the purification of polymerase acidic protein.

Annamraju R, Kerr L

Poster 25

Suspected Nasal Dermoid Cyst Identified as Hyaluronic Acid Filler Remnant: A Case Report Highlighting Considerations for Surgical Rhinoplasty after Non-Surgical Rhinoplasty

Mentor: Mona S. Foad, MD

Mona Dermatology

Non-surgical rhinoplasty (NSR), a procedure in which Hyaluronic Acid (HA) filler (a biodegradable substance) is injected to reshape the nose, is a popular procedure which lasts between 8-14 months. Due to the impermanence of NSR, patients may seek out surgical rhinoplasty (SR). Importantly, HA filler can precipitate scar tissue or agglutinate and result in remnants which can cause physical complications for surgeons. However, considerations for patients who seek SR after NSR are not well explored in the literature. Here we present a case of a HA filler remnant mistaken for a nasal dermoid cyst, a lesion potentially seen with intracranial connection, in a 17-year-old undergoing SR after NSR. NSR was undisclosed preoperatively and surgery was halted when suspected nasal dermoid cyst was identified. Subsequent MRI ruled out intracranial communication and the patient disclosed previous NSR, which led the surgeon to suspect the structure to be a filler remnant.

Surgery was resumed and lesional biopsy showed “amorphous material...potentially compatible with a cosmetic filler.” The purpose of this case report is to illustrate considerations for surgeons completing surgical rhinoplasties on patients with previous history of non-surgical rhinoplasty. Further, this case highlights the variability of filler absorption, as the patient received HA injection in the nasal tip and bridge two years prior to surgery with a filler documented to last up to one year. This is an important consideration for practitioners when completing SR after NSR.

Kwok W, Weaver J

Poster 26

The Impact of Legislation and Social Factors on Firearm Fatalities

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

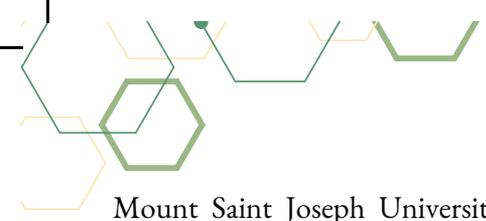
A tragic amount of gun fatalities occur in today's world. These fatalities can be from acts of aggression, negligence, or accidental, but nonetheless are taking lives at an alarming rate. There has been a call to action to make changes and begin combating these issues, and seemingly the most commonly proposed solution is through firearm regulation. This study aimed to assess the effectiveness of firearm legislation on controlling firearm fatalities while also attempting to identify underlying causes or predictors of firearm fatalities. In an attempt to simplify the many regulations implemented differently between states, this study looked at firearm legislation as dichotomous, separating states into permit-less concealed carry (constitutional carry) or permit required concealed carry states. Firearm fatalities between each group were evaluated, showing a statistically significant increase in firearm fatalities in states without regulation. This study also evaluated risk-taking behaviors and geographic location as potential correlations with firearm fatalities and found that excessive drinking was negatively correlated with firearm fatality rates. When assessing the predictive values of different variables, median household income was found to be the most impactful predictor of firearm fatalities. This study was rather limited in both scope and data and thus better serves as a catalyst for more investigation than as an absolute certainty. The evaluations of this paper are not meant to be definitive, but rather show where more specific research should be done.

Bohne W, Mangine M, Jansen C, Heinrich C, Schneider E

Poster 27

Effectiveness of Video Analysis on Enhancing Healthcare Worker Biomechanics During Patient Transfers

Mentor: Marsha Eifert-Mangine, EdD, PT, ATC



Mount Saint Joseph University, Department of Physical Therapy

Aims: Psychomotor skill education should include a multifaceted approach with feedback in various forms. The purpose of this study was to examine the effect of novice peer versus experienced faculty feedback utilizing video recordings on improving body mechanics during a sit-to-stand transfer. With improved body mechanics, the incidence of work-related back injury in healthcare workers should decrease.

Methods: Twenty participants were randomly assigned into groups receiving novice peer or experienced faculty feedback utilizing video recordings. Surface electromyography (sEMG) measurements of bilateral gluteus maximus (GM) and erector spinae (ES) activation were collected during a sit-to-stand transfer pre- and post-feedback intervention.

Results: Multiple paired T-tests showed sEMG activity for all participants pre- and post-intervention resulted in a statistically significant decrease of bilateral ES and left GM activation. Statistically significant decreases of left ES and left GM activation were found in the faculty member group, while statistically significant decrease of left ES activation was found in the peer group. No statistically significant between-group differences were found in post-intervention activation levels.

Conclusion: The results indicate that feedback utilizing video recordings can improve body mechanics regardless of the experience level of the person providing the feedback. Using feedback from video recordings can have positive effects on psychomotor skill acquisition. Implementation of such feedback recordings can result in better and safer training to ultimately reduce work-related back injury in healthcare workers who perform frequent patient transfers.

Bohne W

Poster 28

Management of Partial-Thickness Rotator Cuff Tears

Mentor: Marsha Eifert-Mangine, EdD, PT, ATC

Mount St. Joseph University, Department Physical Therapy

Introduction: Despite having a higher prevalence than full-thickness rotator cuff tears (FTRCT), the etiology and best treatment strategies for partial-thickness rotator cuff tears (PTRCTs) are not well defined. The purpose of this current concepts review is to examine the current body of evidence and compare the effectiveness of surgical repair versus conservative management of PTRCTs to help clinicians implement the best treatment strategies for these patients.

Methods: PubMed database was used to identify literature comparing evidence regarding current accepted treatment for PTRCTs.

Results: Surgical intervention and conservative management yield similar functional improvements in patients with PTRCTs. However, larger, and more involved tears often require surgical intervention for appropriate functional improvement.

Conclusion: Although the literature consistently cites surgical repair as being effective at significantly improving

functional outcomes in patients with PTRCTs, the magnitude of difference in functional outcomes between surgical repair and conservative management is often small. It is almost always recommended to begin treatment conservatively, and only resort to surgical repair if conservative treatment fails and more than 50% of the tendon is torn.

Larsen K, Silverstein S, Mack N, Hassan S, Perdue T, Crawford T

Poster 29

Stigma and Barrier to Recovery: A Qualitative Study on Overdose Experiences Among People Who Use Drugs (PWUD)

Mentor: Sydney Silverstein, PhD

BSOM, Department of Population and Public Health Sciences

Background: Stigma is known to be a major barrier to recovery for people who use drugs (PWUD). This study uses the Stigma and Health Discrimination Framework to analyze how different forms of stigma shape perceptions of the efficacy and utility of post-overdose interventions among a sample of PWUD in Dayton, Ohio—an epicenter of overdose death.

Methods: Interviews were conducted with 23 individuals who self-reported illicit opioid use within the past 30 days and had witnessed or experienced a drug overdose in the past six months. Interviews were recorded, transcribed, and thematically analyzed using Taguette software.

Results: Discrete forms of stigma were identified as barriers to post-overdose interventions intended to link PWUD with support and services to help them access recovery. Individuals identified experiences of enacted stigma through medical mistreatment, exploitation, and judgment and they identified anticipated stigma through mistrust and unsustainable recovery. Internalized stigma was identified through the effect of loss on mental health, feeling “stuck,” and the role of race on support-seeking behaviors. Experiences of perceived stigma included desensitization of addiction as a disease and lack of feasible, long-term treatment options.

Conclusion: The results suggest that enacted, anticipated, internalized, and perceived forms of stigma act as barriers to the efficacy of post-overdose outreach programs, and the initiation and longevity of recovery. Understanding how each form of stigma adversely impacts PWUD can improve public health and clinical interventions to reduce stigma and overdose death.

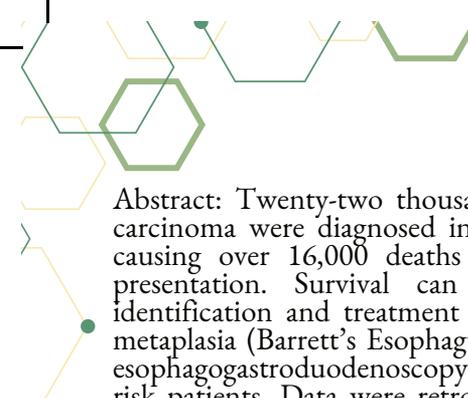
Haviland B, Botti C, Larsen K, Hendrixson M, Giffen B, Sarvepalli S

Poster 30

Inadequacy of Barrett’s Esophagus Screening Rates in the Community

Mentor: Shashank Sarvepalli, MD

Kettering Health, Department of Gastroenterology



Abstract: Twenty-two thousand new cases of esophageal carcinoma were diagnosed in the United States in 2023, causing over 16,000 deaths due to late and aggressive presentation. Survival can be improved with early identification and treatment of pre-malignant esophageal metaplasia (Barrett's Esophagus). Yet, there is inconsistent esophagogastroduodenoscopy (EGD) screening in higher-risk patients. Data were retrospectively collected from all patients over 18 years old with no previous diagnosis of esophageal metaplasia or carcinoma undergoing screening colonoscopy from April to June of 2022 in the Kettering Health System. Data were collected according to either the American College of Gastroenterologists screening criteria (ACG-SC) or Baylor screening criteria (B-SC). ACG-SC is defined as reflux symptoms plus any three of the following: male sex, white race, body mass index (BMI) greater than 25, age greater than 50, family history of esophageal metaplasia or carcinoma, or smoking history. B-SC is defined as either presence of reflux symptoms or any five of the prior criteria. A total of 267 patients underwent screening colonoscopy. Only 72 of the 133 eligible patients by ACG-SC (54.1%) were concurrently or previously screened with an EGD. Similarly, only 86 of the 158 eligible patients (54.4%) by the B-SC were screened. These findings suggest that significantly more patients undergoing colonoscopy should be identified and screened for esophageal metaplasia using these criteria. Preventative EGD screening during colonoscopy imposes minimal risk and can increase identification of esophageal metaplasia prior to malignant transformation.

Truax L, Hendrixson M, Naqvi J, Trevino J

Poster 31

The Use of Oral Retinoids in the Perioperative Period by Surgical Specialty

Mentor: Julian Trevino, MD

BSOM, Department of Dermatology

This literature review critically examines the impact of oral retinoids, particularly isotretinoin, on incisional wound healing across surgical specialties. Commonly prescribed for dermatologic conditions, concerns persist regarding potential adverse effects on wound healing, prompting the widespread practice of discontinuing these medications before surgery. The review spans dermatologic, plastic, ophthalmologic, orthopedic, ear, nose and throat/otologic, and maxillofacial surgeries. In dermatologic procedures, a consensus from the American Society for Dermatologic Surgery suggests that isotretinoin does not necessitate delaying certain treatments, challenging traditional practices. Plastic surgery studies reveal successful outcomes in breast reduction and rhinoplasty, even suggesting potential aesthetic benefits with perioperative isotretinoin use. Ophthalmologic studies on refractive surgery show no significant differences in visual outcomes with isotretinoin use. In orthopedic surgery, limited data suggest a potential impact on bone healing, urging a cautious approach. Maxillofacial surgery studies indicate no need to delay molar surgery during isotretinoin use. However, a case report in otologic surgery raises questions about potential complications, necessitating further investigation into contraindications.

Contrary to conventional practices, the findings challenge the necessity of discontinuing oral retinoids before surgery in many instances. This literature review underscores the need for individualized assessments, considering potential benefits and risks. While encouraging a reevaluation of current practices, it advocates for evidence-based decision-making in perioperative care across various surgical specialties.

Wong C, Haviland B, Rings V, Model E, Kile L, Reser R, Sarvepalli S

Poster 32

A Low FODMAP Diet: Barriers to Adherence

Mentor: Shashank Sarvepalli, MD

Kettering Health, Department of Gastroenterology

Background: Irritable bowel syndrome (IBS) is the most commonly diagnosed Gastrointestinal (GI) disorder, and known to significantly impair patients' quality of life. IBS is a GI disorder with a poorly understood multifactorial etiology, with lifestyle and dietary changes being first-line. The low FODMAP diet (LFD) is the first employed treatment for IBS and is the most studied lifestyle change, with success in treatment of IBS. However, long-term adherence remains a patient barrier and a topic with limited literature.

This study aims to understand barriers to adherence to LFD, to allow clinicians to provide additional resources when helping treat IBS.

Methods: Patients diagnosed with IBS and prescribed a LFD were contacted via telephone for a qualitative-quantitative survey evaluating: severity of symptoms; which symptoms improved or worsened; and experience adhering to LFD. A total of 136 records were collected. Additionally, patient age, sex, race and ethnicity were accounted for.

Results: Statistical analysis using Mann-Whitney U test showed clinical outcomes of patients not adherent to LFD versus those adherent to a LFD were not statistically significant ($p = 0.056$) but did still show clinical significance.

Conclusion: Overall, although there is not a statistically significant trend, qualitative responses did indicate a clinical improvement in symptoms when following a LFD. For future studies, continue data analysis (study limited to patients from March 2023). Results may also be limited due to lack of demographic diversity (a majority were white race). Finally, telephone bias due to variance in student researchers calling may play a role in results.

Gupta N, Chidambaram M

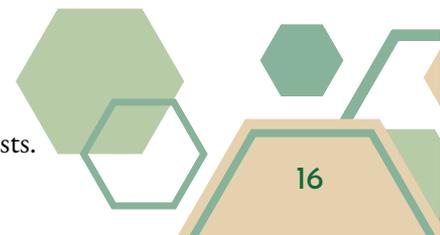
Poster 33

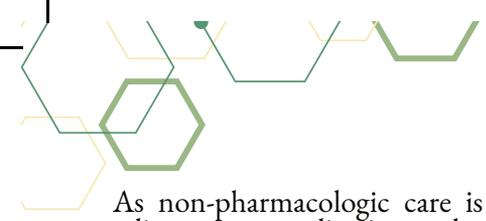
Gabapentin in Autism Spectrum Disorder: A Systematic Review

Mentor: Nihit Gupta, MD

BSOM, Department of Psychiatry

Introduction: Autism Spectrum Disorder (ASD) is characterized as difficulties in social communication and restricted behaviors and interests.





As non-pharmacologic care is limited, there is increased reliance on medications, though only risperidone and aripiprazole, are Food and Drug Association (FDA) approved.

Background: Gabapentin is commonly prescribed to children with ASDs, however its use is off-label since it is not approved for use in ASD.

Aim: Review evidence regarding efficacy and safety of Gabapentin for ASD.

Method: In accordance with predefined criteria, a systematic search of literature databases was conducted. Population: Individuals under the age of 18 with ASD. Intervention: Gabapentin. Control: Treatment as usual/placebo. Outcomes: Primary outcome: Anxiety and Irritability symptoms. Secondary outcomes: Core symptoms of ASD and Insomnia. In this review, two authors independently conducted the search and mutually agreed upon the articles for inclusion.

Results: We were unable to identify studies except one addressing irritability associated with ASD, none on gabapentin for anxiety-associated autism, one retrospective chart for insomnia, and none on core symptoms of ASD.

The strongest evidence was the retrospective chart review of 23 kids reporting improvements in insomnia among ASD. We also found a case report of a 27-year-old male with ASD and disruptive behaviors. Risperidone 6 mg was augmented with gabapentin 400 mg three times a day resulting in decreased aggressive and compulsive behaviors evident on Clinical Global Impression-Improvement scales.

Conclusion: Evidence supporting the use of gabapentin in ASD is lacking. With the scarcity of evidence-based treatment for ASD and the anecdotal benefits reported by multiple physicians, gabapentin should be considered for further research.

Chidambaram M, Gupta M

Poster 34

Tech Gaming Designs, Neurodevelopmental Vulnerabilities, and Rists for Internet Gaming Disorder (IGD) in Adolescents: What Every Clinician Needs to Know

Mentor: Mayank Gupta, MD

Southwood Psychiatric Hospital, Department of Child and Adolescent Psychiatry, Addiction

As digital gaming has boomed in recent decades, online gaming has captured the attention of people of all ages. Though gaming is not bad per se, there is a population of individuals who blur the lines between use, misuse, and addiction. Hence, Internet Gaming Disorder (IGD) was added to the Diagnostic and Statistical Manual of Mental Disorders 5 Text Revision (DSM-5-TR) with the caveat that it requires further research. In this study, we review the evolution of gaming and the neurobiological basis of game designs. Additionally, a comprehensive database search was conducted using keywords "Internet Gaming disorder," "gaming," and "IGD" to filter articles within the inclusion criteria. After organizing the results of the included articles, primary findings indicate that IGD has similar neurobiological changes to those of nicotine addiction and describes how modern game designs can perpetuate gaming addiction. Secondary findings indicate that a history of prior psychiatric diagnoses further increases one's susceptibility to developing IGD and that there exists no single universal screen for IGD that could be utilized by primary care providers.

Finally, it has been recognized that addiction to digital games extends beyond those that are played online. In conclusion, a universally established screening and treatment approach for IGD is necessary, especially among the patient population with established risk factors. Additionally, the vocabulary surrounding IGD needs modification to include offline gaming as well.

Chidambaram M

Poster 35

School Start Time and Adolescent Mental Health

Mentor: Mayank Gupta, MD

Southwood Psychiatric Hospital, Department of Child and Adolescent Psychiatry, Addiction

Introduction: Sleep has long been known to be a vital component of adolescent well-being. Current literature emphasizes the effects of the changing adolescent's body on their sleep patterns and the interference it can have on quality and quantity of sleep architecture when restricted to early school start times. According to research by the American Academy of Pediatrics, pubertal onset phase delay is linked with release of melatonin and circadian rhythm. Adolescent circadian rhythms align with a later sleep and wake time that do not align with early school start times as easily. These shifts in sleep have been studied to interfere with early school start, with implications on academic performance, mental health, and overall well-being.

Aim: Our goal is to review empirical literature on school start time and mental health.

Methods: A systematic literature search was conducted using the keywords "school start time," "mental health," and "adolescent." Purpose: Adolescents. Intervention: Delay in school start time. Control: School start time as usual. Outcome: Primary outcome: Changes in mental health. Secondary outcomes: Overall well-being. Ten articles that met the search criteria were included in this analysis.

Results: There was overwhelming evidence that delayed school start time had substantial effects on sleep, academic performance, physical health, and mental health outcomes.

Conclusion: Delaying school start times and enhancing sleep can yield benefits not only for mental well-being but also for physical health and academic achievement as long as the and the duration of delay was substantial enough to facilitate improved sleep.

Oyeyemi O, J Lee

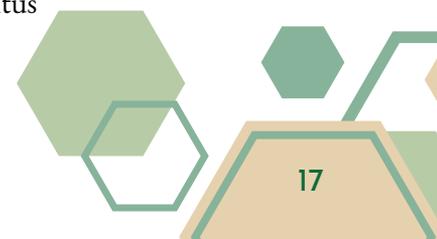
Poster 36

Type 2 Diabetes Mellitus and Barriers to Diabetes Care in Outreach Clinics of Nicaragua

Mentor: Jennifer Lee, DO

BSOM, Department of Family Medicine

Nicaragua has one of the highest rates of Diabetes Mellitus in Central America and the diabetes prevalence in Nicaragua is estimated to increase significantly.



Poster 38

Investigating the Impact of Childcare Accessibility on Resiliency in Pregnancy

Mentor: Rose Maxwell, PhD, MBA

BSOM, Department of Obstetrics and Gynecology

Background: Numerous mothers face challenges accessing childcare, impacting maternal health outcomes.^{1,2} Resilience, the capacity to overcome adversity, enhances maternal well-being but is poorly understood regarding barriers to childcare.² This study aims to explore the connection between childcare accessibility and resiliency in pregnancy.

Methods: Postpartum mothers who delivered at Miami Valley Hospital between 2017-2019, aged 18 or older, and English-speaking were surveyed. Participants completed an anonymous survey, utilizing Snyder's hope scale to measure resilience agency (initiating and maintaining goal-directed energy) and resilience pathway (planning to meet goals) (range=4-32). Neighborhood vulnerability was determined using the 2014 Montgomery County Health Assessment. Statistical analysis was performed in the Statistical Package for Social Sciences (SPSS), including Fisher's exact test and t-tests for categorical data, and analysis of variance for continuous data.

Results: Among 100 participants, 20% reported no childcare barriers, with 23% of whom had ≥ 2 children. Agency and pathway scores did not differ between first-time mothers and those with multiple pregnancies, or between mothers with one child versus those with ≥ 2 children. However, pathway scores varied significantly between participants with (mean=25.1 \pm 4.7) and without (mean=27.2 \pm 3.6) childcare barriers ($p < 0.05$), while agency scores did not. Poverty level and food desert residence did not impact agency and pathway scores between those with and without childcare barriers.

Conclusion: Childcare accessibility shapes maternal health outcomes, with mothers facing barriers showing reduced resilience pathway. This highlights the need to address these challenges, emphasizing the relationship between social determinants of health, resilience, and maternal well-being.

Poster 39

The Effects of Social Support During Pregnancy on Resiliency Score

Mentor: Rose Maxwell, PhD, MBA

BSOM, Department of Obstetrics and Gynecology

Introduction: Pregnancy represents a significant time in a person's life marked by drastic physiologic and hormonal changes, with the ability to exacerbate both the positive and negative social aspects of their life. Their resilience, or ability to withstand and recover from difficulties, can be heavily influenced by the level of support they receive from friends and family.

Methods: The data were collected via a three-part survey given to postpartum patients who delivered at Miami Valley Hospital between 2017 - 2019. Patients were eligible if they could read and understand English and were 18 years of age or older.

Research conducted on diabetes in Nicaragua is primarily done in the capital city, Managua, with little to no focus on the rural municipalities. To assess barriers to accessing care for Type 2 Diabetes Mellitus in the rural areas of Nicaragua, we conducted a study using verbal surveys to collect data from patients at One World Health's June 2023 mobile clinic outreaches. The verbal survey design included 6 questions and 13 answer choices/ categories for question 4. We asked the questions in English but a translator asked the participants in Spanish. They responded in Spanish, and their responses were then translated into English. Seven people (6.54%) in the study's population (n=107) reported having had a previous diagnosis of Type 2 diabetes. Every participant previously diagnosed with DM who answered the question reported multiple barriers to receiving care to manage their disease. Our findings suggest that participants in rural areas surrounding Tola and Rivas with T2DM have many barriers to care, which affects their ability to manage their disease.

Poster 37

Hospital Consolidation and Effects on Surgical Complication

Mentor: Andrew Froehle, PhD

BSOM, Department of Kinesiology and Health and Orthopedic Surgery

Several decades of reduced healthcare competition through consolidation have resulted in more concentrated hospital systems and healthcare markets. Previous analyses have focused on changes in healthcare costs due to consolidation, reaching differing opinions on the extent of this phenomenon. With a lack of literature on the effects associated with health outcomes, we seek to clarify the relationship between reduced hospital system competition and specific patient outcome quality metrics.

We hypothesized reduced competition within a hospital referral region would result in worse surgical complication rates. Utilizing established hospital referral regions (HRRs), tertiary-level care markets, we compare changes in consolidation and patient outcomes between 2016 and 2021. We calculated a patient discharge market share (HHI) to assess consolidation within a given HRR. Likewise, a discharge-weighted surgical complication rate was assessed from individual hospitals within HRR. The risk-adjusted surgical complication rate (PSI-04) constitutes preventable adverse health outcomes representative of quality care.

Preliminary data demonstrated that HHI increased across HRRs from 2016 (M=3802, SD=1958) to 2021 (M=4129, SD=2044). ($t(302)=-7.933, p < .001$) Likewise, increases in HHI were responsible for 17% and 14% of the variation in PSI-04 in 2016 and 2021. ($r=0.143, n=303, p < 0.05$; $r=0.174, n=303, p < 0.01$) We observed that PSI-04 differed across HRRs by the level of consolidation, with the greatest PSI-04 among the most consolidated grouping of HRRs. ($F(4,298)=2.613, p < 0.05$).

Results suggest that increased hospital consolidation likely contributes to surgical complication rates. Future research should focus on the mechanisms linking consolidation to complications, better contextualizing the trade-offs associated with health systems integration for policymakers.

Wilcher K, Gupta A

Poster 41

Subacute Thyroiditis in First Trimester of Pregnancy: Rare Cause of Thyrotoxicosis

Mentor: Ankur Gupta, MD, FACE

BSOM, Department of Internal Medicine

Background: Subacute thyroiditis (SAT) is extremely rare in pregnancy with only 8 prior reported cases. SAT can result in maternal and fetal complications. We describe a case of SAT in first trimester pregnancy.

Case Presentation: A 38-year-old female with past medical history of stillbirth presented with thyrotoxicosis in gestational week 10. During in vitro fertilization (IVF) with egg retrieval, she started thyroxine 50mcg daily for thyroid-stimulating hormone (TSH) (3.77mcIU/mL). She became pregnant without IVF and stopped thyroxine. One month later, labs showed low TSH (0.022mcIU/mL) (range: 0.4-4.5mcIU/mL) and high free thyroxine (FT4) (1.87ng/dL) (range: 0.7-1.8ng/dL). Repeat labs two weeks later showed low TSH (0.012mcIU/mL), high FT4 (2.08ng/dL), and high free triiodothyronine (FT3) (5.2pg/mL) (range: 2.3-4.2pg/mL).

During endocrinology referral, she reported intermittent neck pain, nausea, constipation, and anxiety since pregnancy. Physical exam demonstrated a non-tender, symmetric thyroid without enlargement or nodules. Ultrasound showed a heterogenous, pseudo-nodular area in the right lobe. Repeat labs two weeks later showed low TSH (0.005mcIU/mL), high FT4 (2.35ng/dL), and high FT3 (6.4pg/mL). In gestational week 16, labs showed normal TSH (2.76mcIU/mL), low FT4 (0.56ng/dL), and low FT3 (2.1pg/mL). She started levothyroxine 75mcg daily and was diagnosed with SAT. Follow up labs in gestational weeks 18, 20, and 24 showed improvement in TSH and FT4 on thyroid supplementation.

Conclusion: This case report discusses SAT in first trimester pregnancy. Currently, she is in gestational week 28 and still requiring thyroid supplementation. This case report significantly contributes to the literature and current knowledge of SAT in first trimester pregnancy.

Drouet G, Ramirez Y, Crawford T

Poster 42

Exploring Correlates of Resource Insecurity Among Older African Americans with HIV in Ohio

Mentor: Timothy N Crawford, PhD, MPH

BSOM, Department of Population and Public Health Sciences

Background: Resource insecurity is a social determinant of health that can impact people with Human Immunodeficiency Viruses (HIV) (PWH), in particular older African Americans (AA) with HIV.

Objectives: The purpose of this study was to identify resource insecurities among AA PWH specifically related to food and housing.

The survey included multiple questions about different barriers to care and whether, and to what degree, that barrier affected them. Resiliency scores were then calculated by agency (goal-directed energy) and pathway (the way to meet a goal) scales using patient self-report.

Results: In neighborhoods affected by either high or low rates of poverty, there was a significant difference in the level of family and friend support reported by patients ($p < 0.05$). Similarly, friend support was reported at significantly different rates when examining responses from patients who lived in neighborhoods affected by varying levels of infant mortality ($p = 0.03$). Pathway scores were significantly lower in participants who reported that friend support was a problem ($p < 0.01$).

Conclusion: Social support varies by neighborhood characteristic but overall, significantly impacted resiliency scores in postpartum patients, which may contribute to maternal and fetal outcomes.

Abboud A, Whitehead K, Wilcher K, Maxwell R

Poster 40

Exploring the Influence of Mental Health Conditions on Perinatal Stress, Resilience, and Hope

Mentor: Rose Maxwell, PhD, MBA

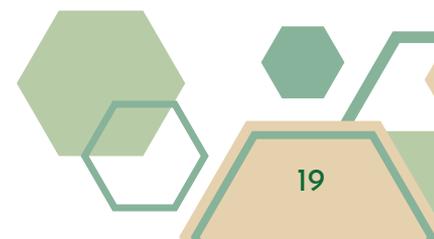
BSOM, Department of Obstetrics and Gynecology

Background: Stress is integral to maternal well-being, affecting psychological and physical equilibrium. While research delves into the impact of stress on mental health conditions (MHC) in pregnant women, the influence of preexisting MHC on stress, resilience (ability to adaptively respond to adversity), and hope (optimistic attitude of mind based on an expectation of positive outcomes) remains poorly understood.

Methods: Surveys were conducted on 114 English-speaking women aged 18 or older who were at Miami Valley Hospital post-delivery in 2017-2019. The survey utilized Snyder's hope scale, and collected demographics, stress impacts, and barriers to care. Data were analyzed via the Statistical Package for Social Science (SPSS) 29.0.

Results: Among 114 women, 25% had a history of MHC. Participants with a prior MHC (37%) reported stress during pregnancy, compared to 17% without MHC ($p < 0.05$), regardless of race. Feeling overwhelmed by stress revealed a racial trend, with 75% of Black women reporting higher stress compared to 50% of White women and 33% of other races ($p = 0.56$). There was no significant effect of race on resiliency, nor did MHC predict resiliency scores.

Conclusion: This study emphasizes the importance of integrating stress management and resilience-building into care strategies for pregnant women, especially those with a history of MHC. Interventions should prioritize culturally sensitive stress management for all pregnant individuals, as racial disparities potentially impact maternal well-being. Despite racial trends in stress, resiliency appears consistent across racial lines, suggesting a universal aspect of coping. These findings advocate for comprehensive care approaches addressing individual needs within social-cultural contexts.



Day M, Daram N, Maxwell R, Reisinger-Kindle K

Poster 44

Enhancing Patient's Perceptions of Cesarean Indications Through Teach-Back Methods

Mentor: Keith Resinger-Kindle, DO and Rose Maxwell PhD, MBA

BSOM, Department of Obstetrics and Gynecology

Background: There has been an increasing prevalence of cesarean section (C-section) deliveries in the United States. This emphasizes a need for ensuring patient understanding regarding their c-section indications.

Objectives: We aimed to evaluate the effectiveness of a brief teach-back intervention, with the goal of improving patient's reporting regarding their C-section. An additional objective was to determine if there existed an influence of racial disparities on patient's ability to accurately report their C-section indication.

Methods: Sixty-five patients were randomized into counseling or teach-back intervention groups. In-person and phone interviews were used to capture data immediately and 2 weeks postoperatively. Chi square and Fisher's Exact tests were used to assess discordance rates between the indication reported in the EMR and the patient recollection of the reason for their C-section.

Results: 32.3% of patients were noted to have discordant reporting of their reason for C-section compared to documented reason during their hospital stay. At the 2-week mark, patients in the teach-back group demonstrated lower discordance compared to the control group (6.3% vs 23.5%, respectively). There were no significant disparities in patient reporting of documented C-section reason based on race.

Conclusion: This study suggests that the teach-back intervention may have short-term benefits in improving patient reporting of C-section indications. This research contributes to ongoing efforts to reduce health disparities, emphasizing the importance of tailored communication strategies in maternal healthcare.

Arnett B, Fallini S, Manger J

Poster 45

Suicide Rate Disparities in Appalachian Counties of Ohio

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

It has been well documented that the Appalachian region of the United States experiences a largely disproportionate amount of health disparities when compared to non-Appalachian regions within the nation. These disparities have prompted an ever-growing effort to not only highlight these issues but to research other potential disparities not already documented. The objectives of this study are to highlight the unique disparity of suicide rates found between Appalachian and non-Appalachian counties in Ohio,

compare statistics for Ohio with surrounding Appalachian counties in Pennsylvania and Kentucky, and identify potential predicting variables for abnormal suicide rates.

Secondary focus was to find associations between resource insecurity and substance use history, stigma, and various forms of discrimination.

Methods: Eligible participants (N=52) of this cross-sectional study were 50+, identified as Black or AA, diagnosed with HIV, and living in Ohio. Food insecurity was assessed using the Household Food Insecurity Access Scale and housing insecurity was defined as not having stable housing. Resource insecurity was categorized into food and housing secure, food or housing insecure, and food and housing insecure.

Results: Almost half (48.1%) of participants reported housing insecurity, with approximately 58.0% experiencing food insecurity, and 38.5% facing both. Current substance use, particularly opiates, showed significant association with resource insecurity (OR = 5.54; 95% CI = 1.91 – 17.30). Moreover, experiences of everyday (OR = 1.19; 95% CI = 1.10 – 1.30) or major forms (OR = 1.75; 95% CI = 1.33 – 2.39) of discrimination, as well as HIV stigma (OR = 1.24; 95% CI = 1.01 – 1.55), were also linked to increased odds of resource insecurity among participants.

Conclusions: Findings highlight how social factors contribute to resource insecurity among older AA PWH. Understanding the factors offers insight for targeted intervention in the fight against HIV transmission.

Day M, Ramirez Y, Jensen L, Maxwell R

Poster 43

Addressing Educational Gaps in Prenatal Care at Five Rivers Health Centers Women's Health

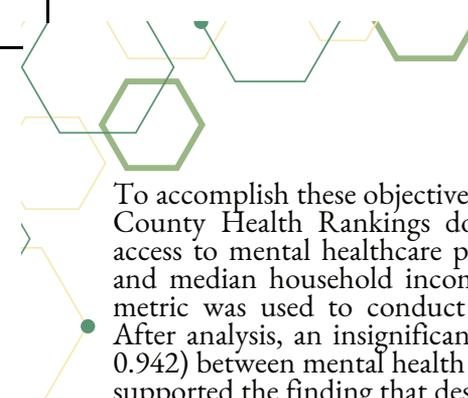
Mentor: Rose Maxwell, PhD, MBA and LilaRose Jensen, CNM

BSOM, Department of Obstetrics and Gynecology

Background: Five Rivers Health Centers Women's Health (FRHCWH) offers obstetrical and gynecological services tailored to the needs of underserved women in the Dayton community. Prenatal care stands as a cornerstone of our services, catering to a diverse array of expectant mothers. However, we've identified a significant educational gap in the prenatal care provided to our patients. Certain crucial topics remain either inadequately addressed or are repeated excessively during visits, resulting in an uneven distribution of essential educational information among our patients.

Objectives: We aim to address the existing health education gap in prenatal care through the following initiatives: Develop a comprehensive list of educational topics essential for prenatal visits and create educational materials in multiple languages, tailored to different reading levels, to effectively cover the identified topics.

Methods: We accessed 20 patient's charts based on inclusion criteria. This inclusion criteria included patients with a variety of gestational ages, patients who spoke English or Spanish, and care provided by both midwives and residents. We identified there was no consensus on the information patients were receiving, regardless of gestational age. To address this disparity, we plan to collaborate, through the use of an interdisciplinary team of midwives, residents, medical students, attendings, social workers at FRHCWH, by creating educational materials appropriate for the community. We plan to execute this change with 15-20 patients receiving prenatal care.



To accomplish these objectives, recent data provided by the County Health Rankings documenting rates of suicide, access to mental healthcare providers, alcohol abuse rates, and median household income down to the county-level metric was used to conduct multiple statistical analyses. After analysis, an insignificant correlation ($r = 0.014$, $p = 0.942$) between mental health providers and rates of suicide supported the finding that despite having a proportionately higher ratio of mental health providers in Appalachian Ohio counties ($N=31$), these counties experience significantly higher rates of suicide in comparison to their non-Appalachian ($N=56$) counterparts ($t = -3.857$, $p < 0.001$). None of the measured variables were accurate predictors of suicide rates. Furthermore, there was no significant difference in the rates of suicide between each evaluated state within its Appalachian counties ($p = 0.130$). These findings highlight the complex mental health crisis within the Appalachian Region, a multifaceted matter which requires extensive future research.

Nguyen E, Singh S

Poster 46

Cultural Identity's Protective Role: Characterizing Services Addressing Intimate Partner Violence in Asian-American Community Organizations

Mentor: Sachika Sign, MA

Mayerson Center, Cincinnati Children's Hospital Medical Center

Causes of intimate partner violence (IPV) are complex, commonly impacted by cultural norms, income and education level, and immigration status. These associated factors vary greatly by Asian-American subgroups, suggesting that factors that inform prevention and response efforts – such as risk and protective factors – may also vary by subgroup. Information regarding variances by subgroup is limited, as Asian-Americans are commonly analyzed as a monolith. While cultural identity can be both a risk and protective factor, few services harness it as the latter. To identify strengths and gaps in efforts addressing IPV within Asian-American communities, this project characterizes services offered by Asian-American-serving community organizations in this field. Using qualitative analysis, grounded theory, and a social-ecological framework, organizations and their services are characterized by the type of essential service provide and risk and protective factors addressed. This data can bolster efforts to provide culturally-relevant, strength-based care to Asian-American victims of IPV.

Nguyen, E, Bridges, C, Marathe, K

Poster 47

Case Report: DRESS Syndrome in a Young Male Induced by Iodinated Contrast Component Ioversol

Mentor: Kalyani Marathe, MD

Cincinnati Children's, UC Department of Pediatrics

Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) syndrome is an uncommon, but severe drug reaction with potentially life-threatening complications. Iodinated contrast media (ICM) is not commonly known to cause DRESS syndrome with only a few cases being reported in the literature.

Skin testing for hypersensitivity reactions to ICM can identify safe alternatives for possible re-exposure, with an overall negative predictive value (NPV) of 93%. However, NPV for skin testing in ICM-induced DRESS syndrome has not been well-studied due to limited cases. We describe a case of DRESS syndrome in a young male from the ICM component ioversol, confirmed by skin testing. This is the third reported case of DRESS syndrome from ICM in a young patient.

Kaul S, Stechschulte A, Nahhas R, Silverstein S, Daniulaityte R

Poster 48

Buprenorphine Prescription History and Sources of Non-Prescribed Buprenorphine Based on Insurance Status in Dayton, Ohio

Mentor: Sydney Silverstein, PhD

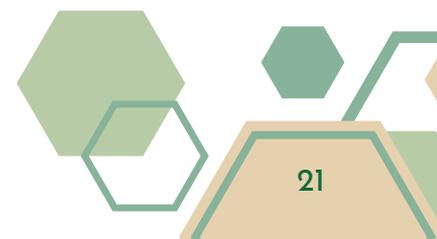
BSOM, Department of Population and Public Health Sciences

Introduction: Despite policy expansion efforts, access to buprenorphine pharmacotherapy remains uneven and use of non-prescribed buprenorphine (NPB) remains prevalent. Little is known about the relationship between insurance status and access to both prescribed buprenorphine and NPB in the wake of Medicaid expansion.

Methods: 356 participants were recruited in Dayton (Montgomery County). A chi-squared test ($n = 301$) was used to compare the proportion prescribed buprenorphine between insured and uninsured participants. Wilcoxon Rank Sum tests were used to compare, among those prescribed buprenorphine ($n = 78$), the number of times prescribed, and the longest time staying on prescribed buprenorphine between the insured and uninsured.

Results: 83% of participants had insurance. Current insurance status was not associated with whether participants had ever received a buprenorphine prescription from a physician ($p = 0.921$); however, nearly all participants who were prescribed buprenorphine 3+ times had insurance. Neither was insurance status associated with times prescribed ($p = 0.751$). Participants prescribed buprenorphine who were currently insured used their prescribed buprenorphine longer, on average, than those who were uninsured (289 days vs. 234 days), however this difference was not statistically significant ($p = 0.912$).

Conclusions and Discussion: No significant differences in participants' history and frequency of buprenorphine prescriptions were found between insured and uninsured participants using prescribed or illicit buprenorphine. Insurance enrollment efforts may be ineffective in preventing patients from obtaining illicit buprenorphine. Expanding insurance coverage for buprenorphine, however, may mitigate risks associated with obtaining medication from unsafe sources and may affect the likelihood of physicians prescribing more extended, but not short-term, treatment.



Stechschulte A, Kaul S, Nahhas R, Silverstein S, Daniulaityte R

Poster 49

ACEs, Age, and Frequency of Illicit Drug Use in an Overdose Epicenter

Mentor: Sydney Silverstein, PhD

BSOM, Department of Population and Public Health Sciences

Adverse childhood experiences (ACEs) endured by individuals under 18 years old are correlated with substance use disorders. Although it has been documented that ACEs can increase the risk of substance use on the impact of specific ACE combinations on the disorder (SUD), there have been few studies of the impact of specific ACE combinations on age of first use and specific drug use frequency.

Methods: The study recruited 356 participants in the Dayton area with the following criteria: 1) 18 years or older, 2) moderate/severe opioid use disorder (DSM-5), and 3) past 6-month non-prescribed buprenorphine use. Participants were grouped by the ACE they experienced: None; emotional (E); physical (P); sexual (S); emotional and physical (EP); emotional and sexual (ES); physical and sexual (PS); and emotional, physical, and sexual (EPS).

Results: The average age of first use of an illicit drug amongst all participants was 16.7 years. The average age of first of first illicit drug use increased in age in the following order: PS (15.6) < E < P < ES < EPS < EP < None < S (17.9). There was a significant association between ACE type and non-prescribed benzodiazepine usage (p-value=0.004). The S type (79%) had by far the highest proportion of use on 1 or more days per week, compared to 39% of those with no ACEs.

Discussion: There was a significant association between ACE type and non-prescribed benzodiazepine usage (p-value=0.004). Understanding the impact of ACEs may help identify those at risk for SUD, treat people with SUD, and prevent illicit drug use altogether by serving as contraindications.

Hycz DaCosta Neto M, Aviles J

Poster 50

Regional Disparities in Hispanic/Latino Health Outcomes: A Comparative Analysis of the Midwest and Top Hispanic Population State

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Background: Hispanic/Latino communities in the United States face significant health disparities compared to non-Hispanic white populations, but whether these inequalities are more pronounced in certain regions remains unclear.

Research Question: We investigated whether counties in Midwest states (Ohio, South Dakota, North Dakota – OH/SD/ND) with smaller Hispanic/Latino populations exhibit higher rates of health inequalities and poorer outcomes compared to counties in states with the highest percentages of Hispanic/Latino residents (California, New Mexico, Texas – CA/NM/TX).

Methods: Utilizing the County Health Rankings dataset, we compared health outcomes and examined predictors of county health rankings between the two groups through t-tests and multiple regression analyses.

Results: Counties in the high Hispanic/Latino population states had significantly poorer Health Outcomes rankings than Midwest counties (p<.001). Latino populations showed significant increases from 2016-2022 in both the high (p<.001) and low (p<.001) percentage states. In CA/NM/TX counties, higher median income ($\beta=-.372$, p<.001) and greater college education rates ($\beta=-.290$, p<.001) were associated with better rankings, while a higher Latino percentage ($\beta=.155$, p=.002) predicted poorer rankings. For OH/SD/ND counties, only income and education emerged as significant predictors. A positive correlation was found between Latino population percentage and uninsured rates ($\rho=.166$, p=.002), but not primary care physician ratios or preventable hospitalizations. CA/NM/TX counties had significantly higher uninsured rates (p<.001) and lower physician access (p=.009) compared to Midwest counties.

Conclusion: We conclude that Hispanic/Latino communities experience regional disparities in health outcomes, influenced by socioeconomic factors and barriers to healthcare access like insurance coverage and physician availability. Targeted policy interventions are critically needed to address these inequities.

Aballe Mosqueda V, Garza A

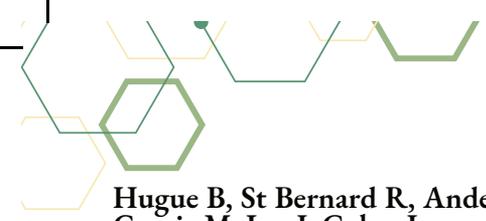
Poster 51

Health Outcomes of Air Pollution in Ohio

Mentor: Jennifer Lee, DO

BSOM, Department of Family Medicine

In recent years, air pollution has become a major topic of discussion not only because of its effects on the environment but also because of the detrimental impact pollution can have on overall health. Specific causes and mechanisms underlying the negative impact of air pollution on human health have previously been established; however, the aim of this study was to specifically look at how air pollution affects the health of Ohioans. A few interesting and contradictory conclusions were drawn from this study which leaves more questions than answers. One finding was the weak negative correlation between years of potential life lost (YPLL) and the amount of particulate matter in the air. Based on previous research, we should have seen a positive correlation. Furthermore, we found that smoking was a much greater predictor of a shortened lifespan than air pollution. In an attempt to determine a potential cause of Ohio's higher-than-national average air pollution, we looked at the relationship between air pollution and traffic volume and found there to be no significant correlation. This finding indicates that other factors such as industrial plants are larger contributors to air pollution in Ohio. Finally, we determined that the number of poor physical health days increased in Ohio from 2016 to 2022 which could be due to a number of variables including air pollution; however further studies looking at specific diseases related to pollution should be done to elucidate the relationship more clearly between pollution and poor health.



Hugue B, St Bernard R, Anderson S, Foster C, Craig K, Grocic M, Lee J, Coker I

Poster 52

Identifying Barriers to Breastfeeding Among Black Mothers with a Lifestyle Medicine Assessment: A Pilot Study

Mentor: Jennifer Lee, DO

BSOM, Department of Family Medicine

Breastfeeding is known to have optimal health benefits for mother and baby; however, rates are lower among Black mothers than their racial counterparts both nationally and locally. In Montgomery County zip code, 45406, only 56.1% of Black/African American mothers initiate breastfeeding, compared to 59.5% of White mothers, obscuring the state racial disparity of exclusive breastfeeding at hospital discharge of 35% (black) vs 56% (white). Contributing factors include interpersonal issues, lack of support in the workplace, cultural beliefs, limited access to breastfeeding education, and challenges in accessing lactation support due to racial disparities and segregation. Low-income and minority communities often face barriers to accessing breastfeeding resources and culturally sensitive care.

To assess interpersonal factors that contribute to this disparity, we will investigate how personal lifestyle factors contribute to individual breastfeeding goals by incorporating Lifestyle Medicine. Lifestyle Medicine (LM) is a robust discipline whose influence can be practically applied in daily wellness. According to the American College of Family Physicians (AAFP), LM focuses on five main domains: connectedness, movement, nutrition, recovery, and substance use. There is growing evidence on the benefits of LM however there is limited data on how LM can influence breastfeeding. This study will use the AAFP LM assessment as a foundation to further assess the perceived barriers to breastfeeding in Black mothers.

Choudry B, Crawford T, Khalil N

Poster 53

Association Between Longer Duration of Exposure to External Airborne Agents and Increased Odds of Autoimmune Disease: NHANES 2011-2012

Mentor: Timothy N Crawford, PhD, MPH and Naila Khalil, MBBS, MPH, PhD

BSOM, Department of Population and Public Health Sciences

Objective: Autoimmune diseases (ADs) are a group of conditions caused by dysregulation of the immune system, resulting in damage to structures of the body. The role of genetic and environmental factors in contributing to autoimmunity is still unclear, with current research aiming to better understand the pathogenesis and risk factors for ADs. The purpose of this study is to explore whether EAA exposure (organic dust, mineral dust, exhaust fumes, and/or other fumes) and length of exposure contribute to AD development.

Methods: This study has a cross-sectional design using data from NHANES 2011-2012, including 5,081 participants.

Any AD was defined as rheumatoid arthritis, psoriatic arthritis, psoriasis, or celiac disease. Logistic regression, with stabilized inverse probability weights, were conducted to examine the relationship between any EAA exposure, duration of exposure (years), and AD.

Results: Of the participants, 2,586 (50.9%) had been exposed to any EAA, and 365 (7.2%) had any AD. After adjusting for confounding, exposure to organic dust, (AOR=2.02, 95% CI: 1.74-2.29) and exposure to non-exhaust fumes (AOR=1.31, 95% CI: 1.07-1.55) were significantly associated with increased odds of developing ADs. A 1-year difference in duration of organic dust exposure (AOR=1.03, 95% CI: 1.01-1.04), mineral dust exposure (AOR=1.02, 95% CI: 1.00-1.03), exhaust fume exposure (AOR=1.03, 95% CI: 1.01-1.05), and other fume exposure (AOR=1.03, 95% CI: 1.02-1.05) were significantly associated with increased odds of ADs.

Conclusions: In this study, exposure to EAA was associated with increased prevalence of AD. This evidence supports the need for further studies to explore this relationship.

Yakich N, Choudry B, Pascoe J

Poster 54

Is Restless Legs Syndrome More Common in Young Women 17-19 than Other Demographics?

Mentor: John Pascoe, MD, MPH

Dayton Children's Hospital, Department of Pediatrics

Restless Legs Syndrome (RLS) involves a strong urge to move one's legs and is linked to low iron levels. Prior research notes lower iron stores in women than men but lacks comparisons of RLS prevalence among young women, men, and girls. This study builds on previous work by the investigators with a statewide sample to compare the prevalence of RLS in a large sample of young women compared to young men and younger girls.

Data were collected from 2,984,107 patients between 5 and 19 years old seen at hospitals across Ohio in the past 10 years. Study subjects' EPIC electronic health records were analyzed using SlicerDicer software.

The prevalence of RLS for boys and young men was stable across age subgroups. The prevalence of RLS in girls and young women varied from .75% in girls 5-12 years to 1.06% for young women 12 - 16 years, to 1.24% among young women ages 17-19 years. The relative risk (RR) for RLS for girls 17-19 years vs girls 5-12 years was clinically important and statistically significant (RR=1.687, p< 0.00001). The RR for RLS for girls 17-19 years vs girls 5-12 years was clinically important and statistically significant (RR=1.6510, p< 0.00001). The RR for RLS for girls 17-19 years vs boys 17-19 years was clinically important and statistically significant (RR=1.5118, p< 0.00001).

These findings support earlier observations that menstruating young women have higher rates of RLS compared to girls or young men.



Johnson H, Kelva M, Sessler D

Poster 55

Continuous Low Tidal Volume Ventilation with Hyperoxia Avoidance During Cardiopulmonary Bypass (CPB) and Postoperative Outcomes (FOCUS Trial)

Mentor: Marta Kelava, MD

Cleveland Clinic, Department of Cardiothoracic Anesthesiology

Background: Postoperative pulmonary complications (PPCs) after cardiac surgery are frequent with an incidence ranging from 3-50%. Low tidal volume ventilation (LTVV) of the lungs using low FiO₂ during CPB may potentially be protective as opposed to apnea or ventilation with high FiO₂, but supportive clinical evidence is currently limited, and the available evidence is conflicting and inconclusive. We hypothesize that LTVV could reduce the effect of atelectotrauma that can occur during CPB and has been identified as a contributing factor for PPCs. Previous studies have suggested the benefit of ventilation maintenance during CPB but were underpowered and did not address the effect of FiO₂ during ventilation and potential for hyperoxia-induced lung injury.

Methods: The FOCUS trial is a multi-institutional, prospective, pragmatic, cluster, randomized control trial comparing continuous LTVV with FiO₂ of 21%, FiO₂ of 100%, and apnea. 5502 patients will be randomized weekly to one of the above groups with specific parameters for settings such as tidal volume, respiratory rate, and positive end-expiratory pressure (PEEP) during CPB. Statistical analysis will assess the treatment effect with a confounder adjustment to control for potential confounding effects. Sensitivity analysis will assess the relative risk of the common effect across composite outcome components and the heterogeneity of treatment effect.

Results: The trial is still currently ongoing and is projected to finish mid-2024.

Conclusion: The trial's primary aim is to reduce mortality, respiratory failure, and PPCs. This trial hopes to provide a definitive answer on what ventilation approach during CPB is associated with the best patient outcome.

Herr M, Johnson H, Maxwell R, Candela Z, Barhan S

Poster 56

Postpartum Management of Gestational Hypertensive Disorders Using Furosemide: A Randomized Controlled Trial

Mentor: Rose Maxwell, PhD, MBA

BSOM, Department of Obstetrics and Gynecology

Objective: To compare blood pressure outcomes for patients with gestational hypertensive disorders receiving labetalol alone versus labetalol + furosemide during postpartum hospital stay.

Method: Patients were randomized to receive labetalol alone (starting dose of 200 mg) or labetalol + furosemide (starting doses of 200mg and 20mg, respectively) on Day 0 after baseline blood pressure values were obtained. Labetalol dose was escalated as needed per standard of care to control blood pressure.

Blood pressures were recorded until discharge. Follow up occurred up to 14 days after discharge at a postpartum visit. Results: Thirteen patients were enrolled. Seven patients received labetalol alone and 6 patients received labetalol + furosemide. Two patients in the labetalol+furosemide group had missing blood pressure data and were not used for analyses of blood pressure outcomes. Groups did not differ on blood pressure outcomes comparing Day 0, Day 1, and Day 2 for average systolic, diastolic, and mean arterial pressure. Three patients in the labetalol+furosemide required dose increases compared to zero patients in the labetalol alone group.

Discussion: Outcomes for patients receiving labetalol+furosemide did not differ from outcomes for patients receiving labetalol alone. Contrary to expectations, patients receiving labetalol+furosemide required labetalol dose increases while none of the patients receiving labetalol alone had dose increases. In this small sample, the addition of furosemide did not reduce labetalol dose escalation.

Burton M, Barker T, Piscitani F, Burnett Z, Seidt J, Flanigan D

Poster 57

Mechanical Properties of Tibialis Tendon Grafts are Unchanged by Soaking in Tobramycin

Mentor: David Flanigan, MD

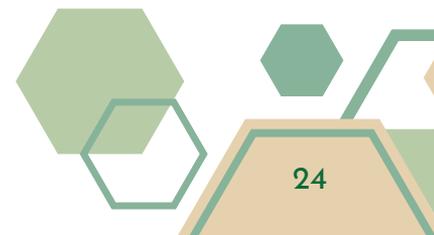
Ohio State University, Department of Orthopaedic Surgery and Sports Medicine

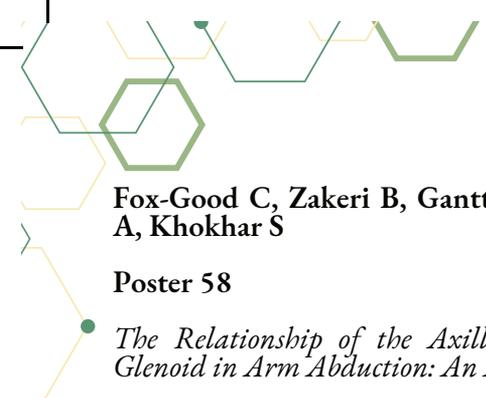
Introduction: Research has shown that anterior cruciate ligament (ACL) reconstruction involving intraoperative tendon graft soaking with vancomycin significantly reduces surgical infection rates without modulating graft mechanical properties. Despite positive findings, lack of vancomycin availability and presence of vancomycin resistant organisms merit investigation of alternatives, such as tobramycin. Tobramycin prevents infection at low concentrations and is a cost-effective alternative, but it is unknown if tobramycin alters graft mechanical properties. The purpose of this study was to investigate the effects of tobramycin soaking on tendon graft mechanical properties.

Methods: Thirty tibialis tendon grafts were wrapped in gauze swabs containing saline (control, n = 10), vancomycin (n = 10; 5.0 mg/mL), or tobramycin (n = 10; 1.0 mg/mL) for 10 minutes. Grafts were then removed from the wraps and mechanically tested under uniaxial tension loading conditions. Grafts were pulled at a rate of 10-mm/min to failure. Force and displacement data from each test was used to calculate Young's modulus, ultimate tensile strength, and elasticity limit.

Results: Young's modulus (552 ± 108 , 583 ± 98 , and 660 ± 237 MPa; $p = 0.62$), ultimate tensile strength (91.5 ± 20.8 , 96.6 ± 17.8 , and 99.7 ± 33.3 MPa; $p = 0.85$), and elasticity limit (51.7 ± 16.4 , 53.2 ± 13.8 , and 52.3 ± 15.3 MPa; $p = 0.98$) were not significantly different between control, vancomycin, and tobramycin groups, respectively.

Conclusion: Soaking of tibialis tendon grafts with tobramycin does not appear to alter mechanical properties of the tendon graft under uniaxial load.





Fox-Good C, Zakeri B, Gantt C, Lundqvist K, Froehle A, Khokhar S

Poster 58

The Relationship of the Axillary Artery to the Inferior Glenoid in Arm Abduction: An Anatomical Study

Mentor: Andrew Froehle, PhD, and Anil Krishnamurthy MBBS

BSOM, Department of Orthopedic Surgery

Introduction: Iatrogenic injury to the axillary artery in anterior shoulder surgery may progress to harmful complications and disability. The possibility of these negative patient outcomes warrants further classification of the axillary artery's course.

Objectives: The primary objective of this study was to evaluate the position of the axillary artery in relation to the inferior glenoid while in various degrees of arm abduction.

Materials and methods: Dissection of 12 shoulders was performed. The axillary artery position was measured at a perpendicular angle from the inferior glenoid in a downward direction while the arm was in 0°, 60°, and 90° of abduction.

Results: Adult cadavers were used. Measurements recorded in 0°, 60°, or 90° of abduction did not significantly differ between the right and left arm ($P = 0.652$, $P = 0.076$, $P = 0.224$, respectively), therefore, right-left asymmetries were not accounted for in the main analysis. The mean axillary artery-inferior glenoid distance in 0°, 60°, and 90° of abduction measured 11.0 ± 1.0 , 9.2 ± 1.4 , and 4.5 ± 1.1 mm, respectively. The difference when comparing 0° vs. 60°, 0° vs. 90°, and 60° vs. 90° of abduction was statistically significant ($P < 0.001$, $P < 0.001$, $P < 0.001$, respectively).

Conclusion: The axillary artery travels significantly closer to the inferior glenoid as the arm is placed in increasing degrees of abduction. This may put the axillary artery at risk of iatrogenic injury and emphasizes the importance of having a thorough understanding of the axillary artery's position during surgery.

Gladkiy Y, Boyes D, Faddoul D, Kassas M, El Diasty M

Poster 59

Radiomics of Epicardial Adipose Tissue and Atrial Fibrillation

Mentor: Mohammad El Diasty, MD

Harrington Heart and Vascular Institute, Department of Cardiac Surgery

Atrial fibrillation (Afib) stands as a prevalent cardiac arrhythmia affecting 1-2% of the US population, with a substantial lifetime risk of 1 in 4 for individuals over 40 years. Recently, the role of epicardial adipose tissue (EAT) in Afib pathogenesis has garnered attention, given its proximity to the myocardium and pulmonary veins, potentially influencing arrhythmogenesis through paracrine signaling, structural remodeling, adipocyte infiltration, and autonomic nervous system dysfunction. Computed tomography (CT) scans have indicated associations between EAT and arrhythmias like Afib.

The emerging field of radiomics, an image analysis technique extracting quantifiable features, has shown promise in studying EAT's involvement in various cardiac disorders, including Afib. This review aims to synthesize current evidence on radiomic analysis of EAT and Afib. A systematic electronic database search identified 8 studies exploring the role of radiomics in predicting postoperative Afib after cardiac surgery. Utilizing machine learning techniques such as random forest, linear regression, cox regression, logistical regression, and Least Absolute Shrinkage and Selection Operator regression, these models encompassed both Afib diagnosis and post-operative prognosis. Reported models exhibited receiver operating characteristic curve areas ranging from 0.73 to 0.94, specificity from 0.59 to 0.97, sensitivity from 0.63 to 0.93, and accuracy from 0.64 to 0.89. Clinical risk factors (e.g., age, total cholesterol, body mass index) and CT characteristics (e.g., left atrial end-diastolic dimension, EAT volume) were considered. Despite limited evidence suggesting the potential of radiomic machine learning models to predict Afib based on EAT analysis, the heterogeneity among studies and the absence of external validation hinder their routine clinical application.

Shiplett A, Almany Michael, Ellis C, Castle A, Crawford T, Almany Matthew

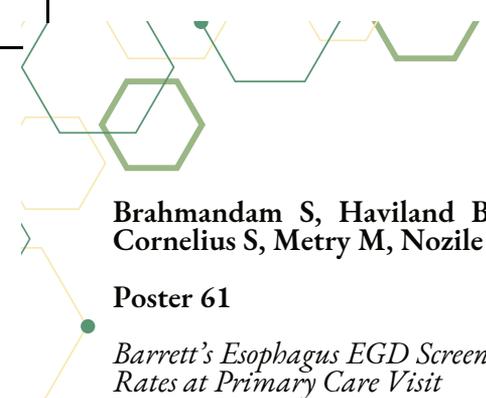
Poster 60

Exploring Patient Perspectives: Factors Influencing Satisfaction with Physical Therapy Treatment

Mentor: Corey Ellis, MD

BSOM, Department of Family Medicine

Rehabilitation is a commonly used word, and its perception varies greatly from person to person. Rehabbing from an injury, whether acute or chronic, consumes an incredible amount of energy for the patient, both physically and emotionally. Previous research strongly supports the use of physical therapy and its correlation with an increased independence in daily life. Previous studies also depict a correlation with therapy and decreasing pain. While the research for using physical therapy is strong, patients' adherence to complete their prescribed therapy course varies greatly. The current literature is lacking as it pertains to possible explanations of barriers for patient's reluctance or refusal to complete their course of therapy. This study sought out to examine a relationship between previous experiences in physical therapy and willingness to complete therapy again. Participants in the study included 100 sports medicine patients; participation in the research study was completely voluntary. Inclined patients were then surveyed to determine their cause for previous physical therapy prescription, their overall satisfaction with their therapy, and their willingness to complete therapy in the future. Data revealed that patients with a higher satisfaction of previous therapy sessions had a strong correlation with willingness to complete therapy again ($r_s = 0.429$; $p < .001$). Implications for this study can help practitioners understand a patient's reluctance to physical therapy referrals. Future research will look to further examine the patient-therapist relationship and other external factors that can alter a patient's physical therapy experience.



Brahmandam S, Haviland B, Almany M, Alslaiti Y, Cornelius S, Metry M, Nozile M, Wagner J, Sarvepalli S

Poster 61

Barrett's Esophagus EGD Screening Eligibility and Referral Rates at Primary Care Visit

Mentor: Shashank Sarvepalli, MD

Kettering Health, Department of Internal Medicine

Barrett's Esophagus (BE) is a precancerous condition associated with chronic gastroesophageal reflux disease (GERD) and is characterized by the replacement of normal esophageal epithelium with columnar epithelium. BE affects 5% to 15% of all patients with GERD and approximately 1% to 2% of people in the United States. Esophagogastroduodenoscopy (EGD) is currently the gold standard to diagnose Barrett's esophagus. Early detection of BE is crucial to mitigate the risk of progression to esophageal adenocarcinoma, a high mortality malignancy. There are set guidelines, notably from the American College of Gastroenterology, for BE screening that take into consideration patients' individual risk. However, debate continues surrounding the cost effectiveness of screening for BE, given the relatively low prevalence in the general population, and the \$2,750 average cost per endoscopy in the United States. While research supporting the use of EGD for definitive diagnosis is vast, the current literature is lacking when it comes to the utilization of the known risk factors of BE to refer qualified patients for EGD in the primary care setting. The goal of this study was to utilize a diverse local patient population, with 1,055 total patients, to examine the relationship between these known risk factors of BE, and the referral rate of these qualified patients for an EGD. Employing correlations using descriptive, univariable, and multivariable statistics, we were able to discover a significant gap in screening those at risk for developing BE and esophageal adenocarcinoma (EAC).

Metry M, Koroscil M

Poster 62

Birds of a Feather, Mystery Cough Together: Hypersensitivity Pneumonitis Case Series

Mentor: Matthew Koroscil, MD

BSOM, Department of Internal Medicine

Hypersensitivity Pneumonitis (HP) is a rare, often disabling, and potentially fatal interstitial lung disease. HP can further be characterized into non-fibrotic HP (NFHP) and fibrotic HP. Type III and IV hypersensitivity leads to bronchiolocentric alveolitis, which can be undetectable on chest x-ray. There are over 200 known antigen triggers for HP, including fungi, bacteria, industrial inorganic antigens and avian proteins which account for the majority of HP cases worldwide. Diagnosis is difficult and it is easily missed due to its non-specific and variable clinical presentations. Symptoms can mimic asthma or, as in our cases, laryngopharyngeal reflux. Pulmonary function tests are nonspecific, typically showing restrictive patterns. We present an unusual case series of HP involving a medical student and an internist who were son and mother.

They presented with chronic cough. They were successfully diagnosed when the mother noticed digital clubbing which led to CT chest imaging and classic NFHP findings. Clubbing is rarely observed in NFHP cases. This case series highlights the genetic propensity to HP, the fact that direct contact to the antigen is not required to develop this disease, the heterogeneity of presentations, as well as the species-specificity of HP, and the absolute necessity of early identification and elimination of inciting antigen. Familial clustering is reported to be under 17.5%. Reaching the correct diagnosis in a timely manner can be challenging. Our patients had accelerated diagnoses due to the fortuitous development of the mother's clubbing and medical background.

Wagner J, Ekeh A

Poster 63

Routine Screening for Deep Venous Thrombosis in Severe Trauma Patients. Is the Practice Justified?

Mentor: Akpofure Peter Ekeh, MBBS

BSOM, Department of Surgery

Background: Patients with severe traumatic injuries are at increased risk of developing venous thromboembolism (VTE), specifically deep venous thrombosis (DVT) and pulmonary embolism (PE), regardless of appropriate chemoprophylaxis. Despite this heightened risk, current guidelines recommend against routine lower extremity duplex ultrasound screening (LEDUS) in asymptomatic patients. We evaluated our institution's practice of routine LEDUS in all trauma patients still admitted after 7 days to identify the prevalence of VTE as well as identify any specific risk factors.

Methods: All patients admitted to the trauma service with a hospital stay \geq 7 days and underwent LEDUS over a five-year period (2019 – 2023) were identified. Patient demographics, types of injuries, the timing of DVT chemoprophylaxis and the results of the scans were extracted from the patient's medical records. Comparisons between DVT positive and negative patients were performed using a student's t-test.

Results: In the studied period, there were 3685 trauma patients admitted for 7 days or more. Lower extremity DVTs were found in 75 (2.1%) patients on routine scanning found on DUS screening. DVT positive patients were noted to have a longer hospital length of stay (24.5 vs. 14.4; $p < 0.001$) and higher injury severity scores (21 vs. 14; $p < 0.001$).

Conclusion: Routine LEDUS completed for asymptomatic trauma patients with an extended admission, demonstrated a prevalence of 2.1% despite chemoprophylaxis. Given the relative low cost of LEDUS and the negative sequelae of undetected untreated DVTs, routine screening of appropriate subsets of asymptomatic trauma patients should be considered.

Shiplett A, Kappeler B, Venkatesh M

Poster 64

Preceding Neuropsychological Symptoms of Superficial Siderosis of the Central Nervous System: A Case Report

Mentor: Mangala Venkatesh, MBBS

BSOM, Department of Neurology

Poster 66

Mapping Cutaneous Field Carcinogenesis of Nonmelanoma Skin Cancer Using Mesoscopic Imaging of Pro-Inflammation Cues

Mentor: Jeffrey Travers, MD, PhD

BSOM, Department of Pharmacology and Toxicology

Nonmelanoma skin cancers remain the most widely diagnosed type of cancers globally. Thus, for optimal patient management, it has become imperative that we focus our efforts on the detection and monitoring of cutaneous field carcinogenesis. The concept of field cancerization (or field carcinogenesis), introduced by Slaughter in 1953 in the context of oral cancer, suggests that invasive cancer may emerge from a molecularly and genetically altered field affecting a substantial area of underlying tissue including the skin. A carcinogenic field alteration, present in precancerous tissue over a relatively large area, is not easily detected by routine visualization. Conventional dermoscopy and microscopy imaging are often limited in assessing the entire carcinogenic landscape. Recent efforts have suggested the use of noninvasive mesoscopic (between microscopic and macroscopic) optical imaging methods to detect chronic inflammatory features to identify pre-cancerous and cancerous angiogenic changes in tissue microenvironments. This presentation covers major types of mesoscopic optical imaging modalities capable of assessing pro-inflammatory cues by quantifying blood hemoglobin parameters and hemodynamics. Importantly, these imaging modalities demonstrate the ability to detect angiogenesis and inflammation associated with actinically-damaged skin. Representative experimental preclinical and human clinical studies using these imaging methods provide biological and clinical relevance to cutaneous field carcinogenesis in altered tissue microenvironments in the apparently normal epidermis and dermis. Overall, mesoscopic optical imaging modalities assessing chronic inflammatory hyperemia can enhance the understanding of cutaneous field carcinogenesis, offer a window of intervention and monitoring for actinic keratoses and nonmelanoma skin cancers, and maximize currently available treatment options.

Art K, Colwell K, Dulan R

Poster 67

Food is My Medicine: A Novel Lifestyle Medicine Intervention

Mentor: Rachele Dulan, DO

Kettering Health, Department of Family Medicine

A virtual physician-led culinary education program was designed to promote healthy eating habits in patients with obesity and at least one chronic disease to determine whether nutrition education would impact patient health habits. The program, Food is My Medicine (FIMM), enrolled fifty participants that lived in a food desert, an underserved region lacking accessibility to nutritional foods. The program provided cookware, recipe manuals, and prepackaged food bags for two weekly meals for four weeks, which allowed the patients to follow along with eight nutrition-based online cooking episodes.

Superficial siderosis (SS) is a rare neurodegenerative condition characterized by iron-mediated deterioration in the central nervous system created by hemosiderin deposits. Deposition of iron in this condition typically occurs in the subpial layer of the brain and spinal cord, which then cascades into severe neuronal injury to the microglial cells. Improved magnetic resonance imaging (MRI) has increased the diagnostic abilities for SS, but psychological assessment of these patients needs more research. We present the case of a 57-year-old male who initially presented with concerns for impulse control and personality changes along with hearing impairment and ataxia. Multiple consultations across the country with different specialties were necessary before superficial siderosis was discovered. His neuropsychological evaluation initially showed concerns for frontotemporal dementia, given his severe and abrupt behavioral changes. The patient continues to suffer from post-traumatic stress disorder and anxiety, stemming from his prolonged hospital courses until SS was recognized. Recognition of variants to the typical presentation of SS can facilitate improved outcomes for patients and can prevent further psychiatric sequelae.

Fadell S, Hessemer R, Curry J

Poster 65

Evaluating the Utility of Kidney Biopsies in the Medication Management of Patients with Renal Disease

Mentor: Jarod Curry, DO

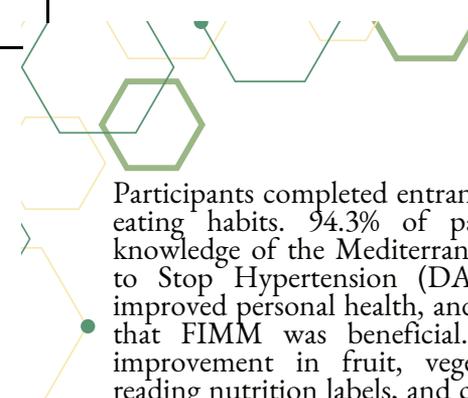
Kettering Health Radiologists

Introduction: Kettering Health Hospitals in Dayton, Ohio, perform numerous renal biopsies every year, with each carrying the potential for post-procedure pain and complications. Given many renal diseases involve identical treatment, our clinical observations led us to hypothesize that renal biopsies do not significantly alter patients' medication management.

Methods: This retrospective study included 169 patients who underwent renal biopsy at a Kettering Health Hospital in Dayton, Ohio, from 2015 to 2022. The patients with a prior renal transplant were excluded from the study given it was not a native kidney. The patients' ages, gauge of biopsy needle, adequacy of the biopsy sample, biopsy complications, biopsy diagnosis, and post-biopsy treatment changes were recorded. Statistical analysis included the FREQ procedure, Chi-square, and Fisher's exact test.

Results: Seven patients had non-diagnostic biopsy samples, 31 had unknown treatments, 82 had no medication changes, 41 had medication changes, and eight were referred for renal transplant evaluation. A significant relationship ($p=0.0001$) was found between biopsy results and changes in medication management. Twenty patients reported minor complications and two reported major complications. No patient deaths were recorded in this analysis. Non-symptomatic perinephric hematomas were excluded as a complication.

Conclusion: Renal biopsies significantly impact medication management in patients with renal disease while maintaining a low risk of complications. These findings support the safety and necessity of renal biopsies in optimizing patient outcomes.



Participants completed entrance and exit surveys regarding eating habits. 94.3% of participants reported greater knowledge of the Mediterranean and Dietary Approaches to Stop Hypertension (DASH) diets, 82.9% reported improved personal health, and 100% of participants agreed that FIMM was beneficial. Participants also reported improvement in fruit, vegetable, water consumption, reading nutrition labels, and cooking at home. Participants also reported a decrease in red meat and sugar-sweetened beverage intake. This investigation demonstrates the importance of nutritional outreach programs to facilitate access and awareness of healthy foods in order to prevent chronic illness.

Correll A, Correll T, Correll M

Poster 68

Literary Prescriptions: Applying Bibliotherapy in a Psychotherapeutic Context

Mentor: Terry Correll, DO

BSOM, Department of Psychiatry

Bibliotherapy, a relatively underutilized lifestyle intervention in psychotherapy, is a unique cost-effective avenue of treatment that empowers patients by integrating therapeutic reading into their treatment plan. This approach strategically uses empirically-validated cognitive-behavioral and self-help literature to facilitate the application of therapeutic topics outside of psychotherapy sessions. Bibliotherapy's range of administration styles highlights its potential as an adjunct to medication, psychotherapy, and/or healthy lifestyle interventions in a comprehensive treatment plan. Most meta-analyses conducted so far regarding bibliotherapy in a clinical setting consist of studies that use minimal patient interaction via short phone calls or emails. Despite this, meta-analyses show medium to large effect sizes that are comparable to traditional psychotherapy modalities for common disorders, most notably depression. This paper explores the practical implementation of bibliotherapy research via an example psychotherapy session with a patient who has a diagnosis of Major Depressive Disorder (MDD). An evidence-based reading list is proposed alongside a decision tree and actionable clinical insights for the effective implementation of bibliotherapy.

Cowsar K, Lewis J, Stanfield J, Merrill B, Patterson J, Gainer D, Quinn, A

Poster 69

Cognitive Predictors of Substance Use Disorder Treatment Retention: A Systematic Review

Mentor: Jeffrey Lewis, MD, PhD

BSOM, Department of Psychiatry

Cognitive functioning has been investigated as a predictor of substance use disorder (SUD) treatment outcomes, and cognitive remediation is a promising method to improve SUD treatment. Identifying cognitive domains impaired in individuals who drop-out of treatment may further drive targeted remediation strategies to improve outcomes.

We sought to identify studies with any SUD using validated cognitive tasks with the outcome of treatment retention or dropout, with a study duration of at least 3 months. We selected treatment retention and dropout as outcome measures of interest, reflecting the degree of treatment engagement. From inception, primarily searched MEDLINE, Web of Science, PsycINFO, and EMBASE, and searched the grey literature of conference abstracts and references from high-quality systematic reviews. Our protocol was registered in PROSPERO (CRD42022341346) before initiating our review. After deduplication, we screened 4059 citations, and 123 full-text articles, to include 10 studies using Covidence. The cognitive measures most used were the Wisconsin Card Sorting Test (WCST), Stroop Color Word Test, and Iowa Gambling Task; these measures were used in four studies. No measures were consistently predictive of treatment, retention, or dropout. However, the WCST, MicroCog, and Self-Regulation - Revised Strategy Application Test were each found to be significant predictors of treatment retention in different studies, and four studies showed no statistically significant cognitive measures. There was insufficient data to complete a meta-analysis. Since we switched from an adherence model to a treatment retention model, few studies have looked at cognitive domains in relation to treatment retention.

Stevens T, Reece M, Liederbach M, Yu S, Alwani M

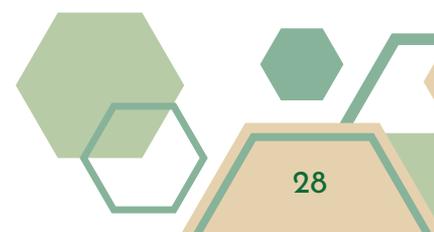
Poster 70

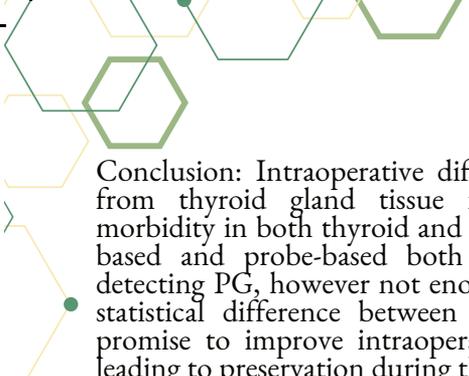
Intraoperative Parathyroid Identification: A Systematic Review and Meta-Analysis of Image-Based Versus Probe-Based Approach to Near Infrared Autofluorescence

Mentor: Mac Kenzie Reece, DO

BSOM, Department of Surgery

Background: Proper identification of parathyroid tissue is critical in surgery involving the thyroid and parathyroid gland (PG). The size and relationship with surrounding fat of the thyroid gland can make preservation a challenge. Relative to surrounding tissues, PGs demonstrate a strong native fluorescence at a specific wavelength with exposure to Ultraviolet (UV) light. This property has been exploited intraoperatively with two different systems, image-based or fiber probe-based technology. Our systematic review compares the efficacy of these modalities in localizing parathyroid glands during thyroid and parathyroid surgery. Methods: A comprehensive systematic literature review was conducted searching PubMed, Scopus, and MEDLINE, yielding 238 publications, from which five studies were enrolled following independent, blinded review. The primary outcomes compared device performance according to their accuracy, sensitivity, and specificity. Secondary outcomes included negative and positive predictive values. Results: Of the five studies enrolled, two were probe-based with 250 subjects, and three were image-based with 368 subjects. Our analysis found an overall accuracy of 96% and 93% (p=0.36) for the image-based and probe-based methods, respectively. Additionally, image and probe-based showed specificity of 92% and 87% (p=0.52), respectively, and sensitivity of 97% and 99% (p=0.49), respectively.





Conclusion: Intraoperative differentiation of parathyroid from thyroid gland tissue is essential to decreasing morbidity in both thyroid and parathyroid surgery. Image-based and probe-based both display high accuracy in detecting PG, however not enough data exists to conclude statistical difference between the two. Both modalities promise to improve intraoperative identification of PGs leading to preservation during thyroidectomy and complete resection during parathyroidectomy.

Jevnikar W, Gross M, Kerr H, Krishnamurthi V, Wee A, Lin Y, Eltemamy M

Poster 71

Intraoperative Transversus Abdominis Plane Blocks Reduce Post-Operative Opioid Usage: A Prospective, Randomized, Double-Blinded Trial

Mentor: Mohamed Eltemamy, MD

Cleveland Clinic, Department of Urology

Introduction: Pre-existing renal dysfunction often limits analgesic options for patients recovering from kidney transplantation. In this setting, opiates become the mainstay of post-operative pain management. Transversus Abdominis Plane (TAP) blocks provide abdominal wall analgesia and may reduce surgical site pain. We aim to determine the effectiveness of intraoperative surgeon administered TAP block for reducing post-operative opioid usage and pain in kidney transplantation patients.

Methods: Patients undergoing kidney transplantation were randomized intraoperatively 1:1 to TAP block or normal saline via an injection by the operating surgeon into the reflected abdominal wall prior to bringing the kidney into the field. Patients, treating team, and survey team were blinded to randomization. Post-operative opioid usage and patient reported pain via dedicated survey was recorded.

Results: From January 2022 to June 2023, 224 patients were recruited, randomized, and evenly distributed (Table 1). Median morphine milligram equivalents (MME) were significantly lower in patients receiving the TAP block (49 vs 75, $p < 0.001$). Average pain and maximum pain scores were significantly lower in the TAP block group (Table 1). 30 patients receiving a TAP block used no opiates while inpatient compared with 12 in the placebo arm ($p = 0.002$).

Conclusion: TAP blocks reduced post-operative opioid use by 35%. A quarter of patients receiving the TAP block required no opiates while inpatient, suggesting the possibility of opioid-free transplantation in select patients. Surgeon-administered TAP blocks are a worthy addition to a standardized transplant protocol with significant analgesic effect.

Abboud A, Schiebrel C, Nahhas R, Durkin S, Hua K, Redding H, Gainer D

Poster 72

Exploring Psychiatric Patients' Attitudes Toward Hallucinogenic and Non-Hallucinogenic Psilocybin for Mental Health Treatment

Mentor: Danielle Gainer, MD

BSOM, Department of Psychiatry

Background: With avenues opening for the exploration of hallucinogenic and non-hallucinogenic analogues, there is a gap in understanding psychiatric patients' preferences regarding hallucinogenic versus non-hallucinogenic psilocybin. The distinction is important, as the psychoactive effects of hallucinogenic psilocybin may not be suitable for all patients and non-hallucinogenic alternatives could offer a viable treatment option without the intense psychedelic experience. Our study addresses this gap by investigating psychiatric patients' attitudes and acceptance of both forms of therapy.

Methods: A cross-sectional survey study was conducted among psychiatric patients aged 18-65, with a diagnosis of mood, anxiety, psychotic, personality, or substance use disorder, at a community mental health center in Dayton, Ohio. The survey assessed attitudes, knowledge, and acceptance of hallucinogenic and non-hallucinogenic psilocybin therapies using a likert scale. Willingness to accept each therapy was assessed using a one-sided binomial proportion tests and agreement with use to treat depression was compared between therapies using a paired t-test.

Results: Of the participants, 62.4% were open to hallucinogenic psilocybin therapy ($p = 0.009$), and 60.4% were open to non-hallucinogenic analogs ($p = 0.023$). Participants were not equally interested in hallucinogenic psilocybin and non-hallucinogenic psilocybin for the treatment of depression, with greater agreement associated with the use of hallucinogenic psilocybin ($p = 0.010$).

Discussion: This study reveals an openness among psychiatric patients to both hallucinogenic and non-hallucinogenic psilocybin therapies, with a preference for the hallucinogenic form for treatment of depression. This finding suggests patients may perceive the hallucinogenic effects as central to psilocybin's therapeutic potential.

Ekeh B, Repas S, Dietz L, Graham C, Zayed O, Hellman E, Verbillion M, Murray B

Poster 73

Perspectives and Use of Supplements and Alternative Medicines Amongst Emergency Department Patients: A Cross-Sectional Survey

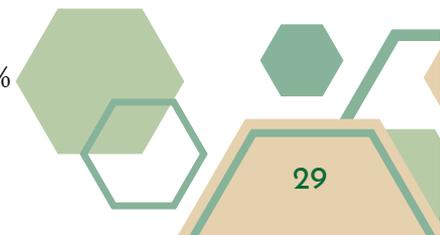
Mentor: Brian Patrick Murray, DO

BSOM, Department of Emergency Medicine

Background: Complementary and alternative medicine (CAM) refers to products and practices that do not align with biomedical science. Patients may turn to these practices for a variety of reasons. CAM may refer to Herbal or Dietary Supplements, Vitamins, Aromatherapy, Essential Oils, Chinese or Ayurvedic Medicine, Homeopathy, or Naturopathy. Harm may be from direct effects, delayed treatment/diagnosis, harmful adulterants, or drug-drug interactions.

Methods: We performed a cross-sectional survey of 201 emergency room patients utilizing a 48-question survey. The questionnaire asked the patients' attitudes, beliefs, use, and perspectives regarding different CAM modalities' efficacy, safety, risks, and toxicities.

Results: We discovered that 70.1% ($n=141$) of participants use vitamins and herbal supplements (VHS) and 27.4% ($n=55$) use Non-Western Medicine (NWM).



Mentor: Rebekah Lantz, DO

Premier Health, Department of Internal Medicine

The fever and widespread inflammation of sepsis can often mask signs of hemophagocytic lymphohistiocytosis (HLH). HLH has an incidence of 13 in 100,000 adults, most commonly, secondary to malignancy or infection. This case demonstrates a complicated course of HLH, highlighting the importance of prompt recognition to prevent rapid clinical decline and death.

A 68-year-old man presented to the Emergency Room (ER) with two weeks of unremitting fever, dysuria, bilateral flank pain and confusion. Lab-work was significant for sodium 128mEq/L, creatinine 1.5mg/dL, and microcytosis without anemia. Pyelonephritis was treated empirically with IV cefepime and vancomycin due to urine cultures growing *Morganella* sp. However, the patient developed progressive renal damage and persistent fevers. Despite adjustments to the antibiotic regimen, he required continuous renal replacement therapy and whole blood and platelet transfusions. Following antibiotic course completion, he developed sudden pancytopenia and neutropenia, prompting further investigation.

HLH was diagnosed after 7 of 8 criteria (≥ 5 required) were met: fever, splenomegaly, ≥ 2 cytopenias, hypertriglyceridemia and hypofibrinogenemia, hyperferritinemia, hemophagocytosis, and elevated CD25. The 8th criterion of NK cell count was not tested. Despite treatment with biweekly etoposide and daily dexamethasone, cell lines continued to drop. He developed shock with hypoxemia requiring 8L oxygen, and hypotension requiring vasopressors, followed by cardiac arrest and demise.

Although this patient initially presented with infection, the likely trigger of HLH was T-cell lymphoma. Here, persistent fevers were early and severe neutropenia late indicators of disease. Thus, early suspicion of HLH in a patient with sepsis may improve treatment response and outcomes.

Wang W, Blackburn K, Lantz R

Poster 76

Pins and Needles: What's the Cost?

Mentor: Rebekah Lantz, DO

Premier Health, Department of Internal Medicine

Introduction: Healthcare costs in the United States (US) exceed those of comparable nations without yielding better outcomes. Factors contributing to this include lack of cost transparency, limited outpatient resources due to primary care provider shortages, and high patient volumes, where patients are not educated on differentials and the stepwise process of workup. Addressing these issues could curb unnecessary hospitalizations and expenses.

Case: A 31-year-old woman with hypertension, alcohol use, anemia, and obesity experienced paresthesias, commonly referred to as "pins and needles," in September 2022. At her first visit, the exam was consistent with decreased bilateral plantar sensation however there was no weakness or gait abnormality. This was not consistent with a focal neurologic distribution.

This study found that 75% of participants found VHS safe compared to 2% who felt they were unsafe. Results were similar regarding NWM, with 35% believing they were safe opposed to 11% who thought they were unsafe. Additionally, only 5% and 10% of respondents thought VHS and NWM, respectively, were ineffective. Our study found 89.1% of those who use NWM also use vitamins and supplements; however, just 36.3% of participants who use VHS also use NWM.

Conclusion: Our study demonstrated that most patients believe VHS are safe. Patients may trust VHS more than prescription medicine, and while participants may hold some concern regarding the potential for contamination in alternative therapies only a small portion believed that these therapies could cause harm or death.

Patel A, Ayyar S, Sukharutski E, Guzan G, Dale J, Ellison H

Poster 74

Impact of Telemetry Best Practice Advisory Implementation on Healthcare Spending

Mentor: Henry Ellison, MD

Houston Methodist Hospital, Department of Internal Medicine

In 2017, the American Heart Association (AHA) released updated guidelines for telemetry of hospitalized patients to address issues such as misuse of telemetry and alarm management. Overuse of telemetry is a prominent practice – telemetry is ordered for non-AHA guideline indications in as high as 65% of admissions. In some studies, implementation of a Best Practice Advisory (BPA) emphasizing AHA guidelines reduced average telemetry hours by up to 19.5%.

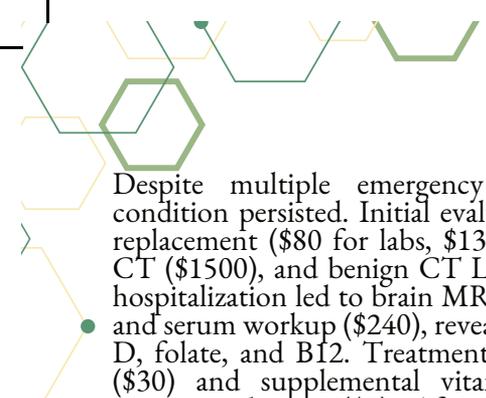
From April to August 2023, telemetry volume at Houston Methodist Hospital (HMH) was measured. A BPA for telemetry orders was implemented on July 10, 2023. The changes to the telemetry order included (1) a default length of 5 days, (2) the addition of a BPA at the time of ordering and prior to expiration of telemetry orders, and (3) updated requirements for telemetry orders. Data was gathered on the volume and length of each telemetry order. Healthcare cost reductions were estimated using an average of \$53.44 per patient per day determined by prior studies based on machine costs and nursing time. The BPA significantly reduced the average length and number of telemetry orders by 0.57 days and 14.5%, respectively, resulting in a combined estimated savings of \$123,886/month. This translates to yearly savings of \$2,536,800 at HMH alone.

While adverse outcomes were not assessed, prior research has shown that the incidence of arrhythmias on days when telemetry was not indicated was low and clinically insignificant. Overall, implementation of these changes throughout an entire hospital system and nationwide has the potential for widespread healthcare savings.

Ayyar S, Lantz R

Poster 75

Sepsis-Masquerading Mortal Hyperinflammation: A Complex Case of Secondary Hemophagocytic Lymphohistiocytosis



Despite multiple emergency room (ER) visits, her condition persisted. Initial evaluations included potassium replacement (\$80 for labs, \$13 for tablet), nonacute head CT (\$1500), and benign CT L-spine (\$2500). Subsequent hospitalization led to brain MRI/MRA head/neck (\$6700) and serum workup (\$240), revealing deficiencies in Vitamin D, folate, and B12. Treatment involved prednisone taper (\$30) and supplemental vitamins (\$35), with lifestyle recommendations (\$0). After evaluating CompuNet lab costs and equivalent market imaging prices, potential savings exceeding \$15,000 were identified through more focused and cost-conscious initial testing including Vitamin studies and outpatient management, reducing hospitalizations and imaging expenses.

Discussion: Rising healthcare costs in the US are driven by various factors yet fail to correlate with improved outcomes. Our case argues that enhancing access to primary care, promoting cost transparency, and educating patients on healthcare decisions are crucial for mitigating excessive spending.

Creighton A, Shecter J, Kruse M, Wascak K, Stierwalt J, Murray B

Poster 77

Effect Of an Opioid Use Disorder Grant and Training

On The Attitudes of Emergency Medicine Providers Towards Emergency Department Treatment of Opioid Use Disorder

Mentor: Brian Murray, DO

BSOM, Department of Emergency Medicine

Background: Opioid Use Disorder (OUD) remains a significant public health concern in the United States, claiming a staggering number of lives annually. Medication Assisted Treatment (MAT) with buprenorphine has emerged as an effective intervention. However, its utilization remains low, especially in Emergency Departments (EDs), due in part to bias against addiction. This study evaluated the impact of a grant to increase OUD treatment in the ED from the Ohio Department of Health on bias among ED providers.

Methods: A longitudinal survey of emergency medicine providers was conducted before and after grant implementation to assess attitudes and prescribing behaviors.

Results: While the grant increased the number of providers prescribing MAT and naloxone, it did not significantly alter attitudes toward OUD treatment in the ED. Providers overwhelmingly recognized addiction as a medical condition deserving empathy, but views on the appropriateness of EDs for addiction treatment remained unchanged.

Discussion: Despite increased MAT prescriptions and naloxone distribution post-grant, the study suggests that broader cultural shifts are needed to integrate OUD treatment into ED practice fully. Efforts to destigmatize addiction and enhance provider education may be necessary to address underlying barriers to OUD treatment acceptance in the ED setting.

Conclusion: This study highlights a critical gap between favorable attitudes toward OUD treatment and actual practice.

Although education and grant incentives led to increased MAT prescribing, most providers were hesitant to initiate ED treatment. Challenges included perceived lack of training, time constraints, and lingering stigma surrounding addiction

Li G, Uysal SP, Claytor B

Poster 78

Contrasting Clinical and Laboratory Features are Helpful in Diagnosing McArdle Disease

Mentor: Benjamin Claytor, MD

Cleveland Clinic Neurological Institute

Introduction: McArdle disease is a rare autosomal recessive myopathy due to myophosphorylase deficiency. Symptoms usually start in childhood or adolescence, but diagnosis is often delayed until adulthood.

Objective: To identify key clinical and laboratory features facilitating early diagnosis of McArdle disease.

Methods: A retrospective review was performed on 15 patients with McArdle disease. Diagnosis was made via genetic testing and/or enzymatic analysis of biopsied muscle. Collected variables include demographics, symptoms, physical exam findings, creatine kinase (CK) values, EMG, genetic testing, and muscle biopsy results, duration of diagnostic delay and misdiagnoses.

Results: Fifteen (9 males and 6 females) patients were included, with onset age from 6 months to 69 years (median 16-18 years). Common symptoms included exercise intolerance (n = 15), rhabdomyolysis (n = 14), myoglobinuria (n = 9), and second wind phenomenon (n = 8). Muscle strength examination and EMG were typically normal or only showed mild abnormalities. By contrast, CK values were elevated in 930/931 measurements (range 273 to 75,510 IU/L) and exceeded 3,000 IU/L in 14/15 patients. Significant fluctuations of CK (defined as maximum/minimum ratio >5) were observed in all patients (ratio range 5.4 to 276.6, median 20.4). Duration of diagnostic delay ranged from 1 to 30 years (median 11 years). Ten patients were misdiagnosed, the most common misdiagnosis being myositis (n = 4).

Summary/conclusion: In McArdle disease, muscle strength exam and EMG findings are typically uninformative. However, persistently abnormal and significantly fluctuating CK values without associated changes in muscle strength can suggest the diagnosis.

Holderby K, Kozak J

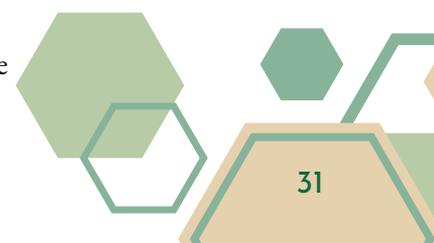
Poster 79

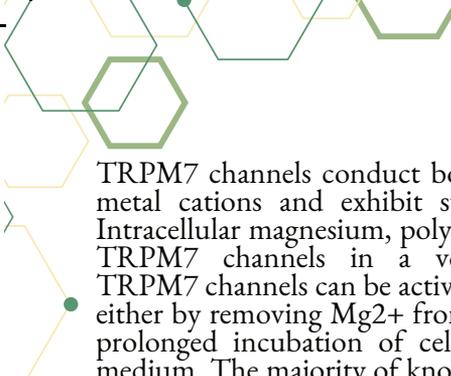
Using TEA and Tris Uptake for Blockade of TRPM7 Channels in Intact Cells

Mentor: J. Ashot Kozak, PhD

BSOM, Department of Neuroscience, Cell Biology and Physiology

TRPM7 is a bi-functional ion channel / protein kinase ubiquitously expressed in the human body. Its channel domain belongs to the transient receptor potential superfamily.





TRPM7 channels conduct both monovalent and divalent metal cations and exhibit strong outward rectification. Intracellular magnesium, polyamines and acidic pH inhibit TRPM7 channels in a voltage-independent manner. TRPM7 channels can be activated by depleting magnesium either by removing Mg^{2+} from intracellular solution or by prolonged incubation of cells in low Mg^{2+} containing medium. The majority of known channel inhibitors reduce current magnitude without voltage dependence. Tetraethylammonium (TEA) and tetramethylammonium (TMA) cations are quaternary ammonium compounds well-known for their ability to block various potassium channels. We previously demonstrated that cytosolic TEA and TMA can also block TRPM7 channels in T lymphocytes preferentially in the outward direction. Since TRPM7 is a strongly outwardly rectifying conductance, such voltage-dependent block may be useful for studying the function of this channel in various cell types. We found that incubating HEK293 and Jurkat T cells overnight in the presence of 20 mM TEA-Cl results in the complete blockade of endogenous TRPM7 outward currents. The blockade is reversible upon washout of intracellular solution. TEA uptake was also effective in blocking murine TRPM7 channels heterologously expressed in HEK293 cells. Additionally, we found that Tris is a blocker of outward but not inward TRPM7 channels. Incubation of cells with 20 mM Tris-HCl overnight resulted in its uptake and block of TRPM7 channels. To our knowledge blockade of ion channels by Tris has not been reported before. We propose that TEA and TRIS uptake can be used for blockade of TRPM7 channels in intact cells.

Fischer A, Stankewich M, Susuki K

Poster 80

Schwann Cell β II Spectrin Stabilizes Structures of Myelinated Nerve Fibers Exposed to Chronic Compression

Mentor: Keiichiro Susuki, MD, PhD

BSOM, Department of Neuroscience, Cell Biology and Physiology

Excessive mechanical stress causes various forms of compression neuropathy such as carpal tunnel syndrome. The tensile and compressive strength of myelinating Schwann cells is of high interest, as it has important implications in these conditions. Spectrins are a family of submembranous cytoskeletal proteins that regulate membrane deformability and mechanical stability. Schwann cell β II spectrin has been previously described to promote myelination and stability of nodes of Ranvier. However, the roles of β II spectrin during peripheral nerve compression are not well understood. To test if Schwann cell β II spectrin protects myelinated nerve fibers from mechanical stress, we utilized conditional knockout (cKo) mice lacking β II spectrin in Schwann cells and a compression neuropathy mouse model. Heterozygote control and cKo mice at 8 weeks of age underwent a surgery where a compression tube was inserted around the sciatic nerve. Two weeks after starting compression, motor nerve conduction velocity across the compression site was significantly slower in the cKo mice compared to the control. Immunohistochemistry showed that cKo sciatic nerves had more severely disrupted nodes of Ranvier than control after compression.

These findings suggest that Schwann cell β II spectrin plays an important role in stability of nodal structures during peripheral nerve compression and warrants further investigation of other promising glial cytoskeletal proteins such as β V spectrin to better understand their function.

Bhakta M, Sulentic C

Poster 81

AhR Expression Negatively Regulates IgH Gene Expression in a Human B-Cell Line

Mentor: Courtney Sulentic, PhD and Thomas L. Brown, PhD

BSOM, Department of Pharmacology and Toxicology

Aryl hydrocarbon receptor (AhR) mediates the immunosuppressive effects of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) in murine B cells. Our previous studies utilizing a human Burkitt lymphoma cell line (CL-01) demonstrated that AhR knock-down by siRNA or CRISPR/Cas9 gene editing resulted in a marked loss of IgG secretion, but IgM secretion remained unaffected. To determine if AhR regulates IgG transcription, we utilized the SKW 6.4 cell line, another unrelated human Burkitt lymphoma that lacks endogenous AhR expression. Compared to CL-01WT cells, CL-01AhR-KD cells, and SKW 6.4 cells produce significantly lower levels of IgG supporting a crucial role of AhR in IgG production. We hypothesized that the expression of AhR in SKW 6.4 cells would induce IgG expression. Therefore, we created an SKW AhR+ clone that stably expresses AhR (verified via RT-PCR and western blot). AhR activity was confirmed with a DRE-luciferase reporter. Induction of AhR expression in SKW AhR+ cells did not induce IgG production but inhibited IgM secretion compared to SKWWT cells. At the transcript level, we observed that the IgH expression was inhibited in SKW AhR+ cells compared to SKW 6.4 cells. Flow cytometry analysis showed that CL-01 and SKW 6.4 cells are different B-cell subtypes, which could explain varied AhR expression effects on antibody production. Overall, our study suggests that AhR has a ligand-independent effect on IgH gene expression and antibody production in human B cells, with differential effects in different B-cell subtypes.

Highlander M, Elbasiouny S

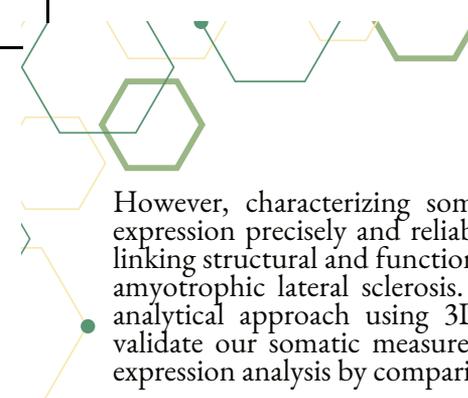
Poster 82

3D vs 2D Mononeuron Anatomical Reconstructions: Implications on Cell Characterization and Ion Channels Expression Analysis in Amyotrophic Lateral Sclerosis

Mentor: Sherif Elbasiouny, PhD

BSOM, Department of Neuroscience, Cell Biology, and Physiology

Relying on 2D representations of somas and considering only small portions of protein expression on the somatic membrane, existing methods for 60x immunohistochemistry morphological analysis are subject to sampling error and lack of repeatability caused by analyzer subjectivity.



However, characterizing soma size and somatic protein expression precisely and reliably is of great importance for linking structural and functional changes of ion channels in amyotrophic lateral sclerosis. Here, we present our novel analytical approach using 3D soma reconstructions and validate our somatic measurements and complete protein expression analysis by comparison to 2D analysis.

Deutsch A, Elbasiouny S

Poster 83

Dysregulation of Persistent Inward Currents in Spinal Motoneurons of Symptomatic SOD1-G93A Mice

Mentor: Sherif Elbasiouny, PhD

BSOM Department of Neuroscience, Cell Biology, and Physiology

Persistent inward currents (PICs) regulate the firing of spinal motoneurons (MNs). Past studies have reported conflicting results on how PICs are affected in Amyotrophic Lateral Sclerosis (ALS). Also, the PIC components have never been measured in ALS before. Mechanisms of disease progression can be studied using animal models, such as the high copy SOD1-G93A (SOD). We directly measured individual PIC components (sodium, calcium, and small-conductance calcium-activated potassium (SKL) currents) using electrophysiology voltage-clamp experiments. We show that all PIC components are altered in SOD mice, leading to an increased motoneuronal net PIC relative to wild-type (WT). Specifically, sodium and calcium PICs were upregulated, whereas SKL was reduced in disease. Together, our results fill a knowledge gap on how PIC components are affected in SOD mice.

Hamil AH, Elbasiouny S

Poster 84

Spinal Motor Neuron Excitability Changes in Aging

Mentor: Sherif Elbasiouny, PhD

BSOM, Department of Neuroscience, Cell Biology and Physiology

Over 40% of older adults (>65) have reported the loss of ability to perform daily tasks due to age-related weakness. While age-related weakness remains a significant public health issue, the exact etiology remains unclear. Age-related weakness has recently been perceived as multi-factorial, with factors stemming from the neurological system. Spinal motor neuron (MN) excitability plays a major role in muscle contraction. Small conductance calcium-activated channels (SK) are essential in MN excitability due to their critical role in regulating the after-hyperpolarization phase (AHP). The present study examines how spinal motor neuron (MN) intrinsic excitability is affected with age. In vitro intracellular recordings from MNs in male and female C57BL/6 mice across three age groups – young (3-4), middle-aged (12-14), and old (26+ months) – were used to investigate the MN's intrinsic properties.

MN excitability was assessed by measuring cell firing frequency vs. current. SK channel activity was examined using the AHP amplitude of the action potential. Our results show reduction in MN firing frequency and excitability in the older age group. In addition, our results demonstrate significant increase in AHP depth at the older age group. Significant sex difference in the older age group, with female mice having a larger AHP than the male mice, is present. Our findings indicate aging not only affects muscles; however, it also affects MNs, and MN reduced excitability could be contributing to motor weakness in aging. Ultimately, these findings provide insights to the membrane mechanisms underlying age-related weakness.

Ward S, Highlander M, Garrett T, Elbasiouny S

Poster 85

C-Bouton Changes Across Three Mouse Models of ALS

Mentor: Sherif Elbasiouny, PhD

BSOM, Department of Neuroscience, Cell Biology, and Physiology

Amyotrophic lateral sclerosis (ALS) is a progressive neurodegenerative disease affecting motor neurons (MNs) in the central nervous system leading to paralysis and death. MNs undergo hyperexcitability during ALS, warranting investigation of C-boutons, an excitable input. Fast MNs are most vulnerable to the disease, while slow MNs survive until later stages. Many mutations have been linked to the disease, including three of the most common mutations: C9orf72, SOD1, and TARDBP. Immunohistochemistry was used to label MNs in mouse lumbar spinal cord at symptom onset in three ALS mutations. Cell typing was performed using SK3 to determine whether cells were vulnerable or resistant to the disease. 2D and 3D MN size and cluster size measurements were collected from 60x confocal images using automated analysis. Our results show a decrease in C-bouton cluster size only in slow MNs in the C9orf72 mutation and the SOD1-G93A mutation indicating a decrease in excitatory input to disease resistant MNs. The TARDBP mutation showed no change in cluster size. This suggests similar C-bouton behavior across two ALS mouse models at symptom onset.

Gerber K, Garrett T, Elbasiouny S

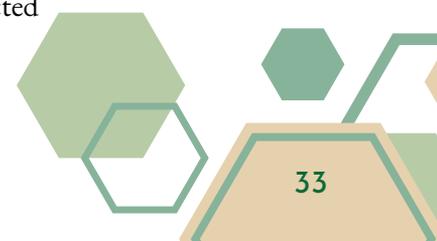
Poster 86

Spinal Motoneurons' Sex Dependent Size and Type Changes in Aging

Mentor: Sherif Elbasiouny, PHD

BSOM, Department of Neuroscience, Cell Biology and Physiology; WSU, Department of Biomedical, Industrial, and Human Factor Engineering

A well-known consequence of aging is muscle weakness, the cause of which has long been attributed to muscular atrophy. However, little research has been conducted to investigate if different alpha-motoneuron (α -MN) types experience anatomical changes during aging and whether these changes are sex dependent.



Mentor: Dr. Corey Smith, PhD

Case Western Reserve University, Department of Neuroscience

Sympathetic control of regional cardiac function occurs through postganglionic innervation from stellate ganglia and thoracic sympathetic chain. Whereas norepinephrine (NE) is their primary neurotransmitter, neuropeptide Y (NPY) is an abundant cardiac cotransmitter. NPY plays a vital role in homeostatic processes, including angiogenesis, vasoconstriction, and cardiac remodeling. Elevated sympathetic stress, resulting in increased NE and NPY release, has been implicated in the pathogenesis of several cardiovascular disorders, including hypertension, myocardial infarction, heart failure, and arrhythmias, which may result in sudden cardiac death. Current methods for the detection of NPY in myocardium are limited in their spatial and temporal resolution and take days to weeks to provide results [e.g., interstitial microdialysis with subsequent analysis by enzyme-linked immunosorbent assay (ELISA), high-performance liquid chromatography (HPLC), or mass spectrometry]. In this study, we report a novel approach for measurement of interstitial and intravascular NPY using a minimally invasive capacitive immunoprobe (C.I. probe). The first high-spatial and temporal resolution, multichannel measurements of NPY release in vivo are provided in both myocardium and transcavitary vascular space in a beating porcine heart. We provide NPY responses evoked by sympathetic stimulation and ectopic ventricular pacing and compare these to NE release and hemodynamic responses. We extend this approach to measure both NPY and vasoactive intestinal peptide (VIP) and show differential release profiles under sympathetic stimulation. Our data demonstrate rapid and local changes in neurotransmitter profiles in response to sympathetic cardiac stressors. Future implementations include real-time intraoperative determination of cardiac neuropeptides and deployment as a minimally invasive catheter.

Reynaga I, Abdul Halim I, Elbasiouny S

Poster 89

Lean Mass Changes During Aging

Mentor: Sherif M Elbasiouny, PhD

BSOM, Department of Neuroscience, Cell Biology and Physiology

Age-related weakness is heterogeneous, weakening many while barely affecting some. Developing a method to accurately measure strength is critical to deepen our understanding of age-related weakness. This study aims to assess the percentage of lean mass relative to the full body weight in male and female mice during aging. Specifically, mouse strength was measured via grip strength across two age groups - young (3 months) and old (24-27 months) - of C57BL/6 male and female mice. In addition, Nuclear Magnetic Resonance techniques were utilized to measure the composition of lean mass. At the time of strength testing, the lean and total mass of the mice were recorded. Strength was defined as the force generated by the mice relative to their lean mass and total mass. This metric was then monitored across the two age groups. Monitoring limb strength with respect to lean and total mass showed that as mice aged

To answer these questions, we measured the size and density of lumbar slow (S), fast fatigue-resistant (FR), fast-intermediate (FI), and fast-fatigable (FF) α -MN types in young (3-4 months), middle-aged (11-13 months), and old (>26 months) male and female C57BL/6 mice. The four α -MN types were identified using immunohistochemistry labels via novel protocols that we developed. α -MN soma size was measured from the largest 2D cross-sectional area (LCA), and cell density was measured as the number of α -MNs per unit tissue volume. Our results show that α -MNs undergo type and sex-dependent anatomical changes during aging. Specifically, while male and female young α -MNs have similar size, old female α -MNs are smaller than old male cells. For density, female α -MNs had lower cell density than male α -MNs. For α -MN types, larger fast cells, specifically FI, are the most vulnerable in both males and females with FI cells having declining density with aging. As the four α -MN types have never been co-labeled before in mice, these results provide novel data on the anatomical changes α -MN types undergo during aging in males vs. females and provide insights on the cellular mechanisms underlying motor weakness in aging.

Wynter Mitchell I, Highlander M, Elbasiouny S

Poster 87

Measuring Reproducibility for Quantification of Mononeuron Soma Morphology and Determining Optimum Parameters for Comparing Soma Size Between Subject Groups

Mentor: Sherif M Elbasiouny, PhD

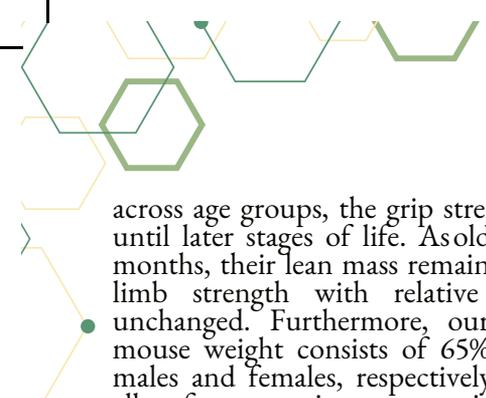
BSOM, Department of Neuroscience, Cell Biology and Physiology

Analyzer-to-analyzer variance is unavoidable when visually identifying and tracing the largest cross-sectional area (LCA) of motoneuron somas from stacks of immunohistochemistry images in available analysis software. Furthermore, using the LCA visually selected by the analyzer to estimate soma size is not only subjective, but also may misrepresent the true size of the soma since these measures contain no depth information and are affected by the random orientation of the cell morphology relative to the image. We hypothesize that we will improve reproducibility and precision of soma size quantifications by measuring soma volume and surface area from 3D soma traces. We determine reproducibility by comparing measurements of the same cells by two different analyzers. We also consider the correlations between 2D and 3D measurements and determine which size parameters are most appropriate for comparing soma size between groups. Ensuring reproducible and precise 3D soma characterizations also enables future work to analyze somatic protein expression over the entire somatic membrane and to characterize cells size changes between cell types or disease states.

Kluge N, Shyue-An C, Corey S, Jeffrey A, Kalyanam S

Poster 88

Rapid Measurement of Cardiac Neuropeptide Dynamics by Capacitive Immunoprobe in Porcine Heart



across age groups, the grip strength significantly decreased until later stages of life. As old mice aged from 24 to 27 months, their lean mass remained unchanged. In addition, limb strength with relative to lean mass remained unchanged. Furthermore, our results demonstrate that mouse weight consists of 65% and 62% of lean mass in males and females, respectively. Accordingly, these results allow for converting mouse weight to lean mass accurately in male and female mice during aging.

Stammen B, Thyagarajan A, Sahu R

Poster 90

The Significance of Platelet-Activating Factor-Receptor Expression as well as Its Associated Genes in Affecting the Clinicopathological Characteristics of Human Malignancies

Mentor: Ravi Sahu, PhD

BSOM, Department of Pharmacology and Toxicology

Platelet-activating factor receptor (PTAFR) is a G protein-coupled receptor known to play critical roles in metastasis, angiogenesis, tumor transformation, and anti-apoptosis in several cancers. However, its involvement in certain human malignancies has not been thoroughly investigated. Our objective was to identify those malignancies exhibiting significant levels of PTAFR expression and genes correlated with PTAFR that have functional significance in tumorigenesis to find biomarkers for possible future therapeutic targets. We examined the functional significance of genes that showed a significant survival profile and positive Pearson correlation with PTAFR. We identified five cancer types to have significantly higher expression of PTAFR in tumor samples as compared to normal samples: cholangiocarcinoma (CHOL), glioblastoma multiforme (GBM), kidney renal clear cell carcinoma (KIRC), stomach adenocarcinoma (STAD), and uterine corpus endometrial carcinoma (UCEC). Importantly, the gene neutrophil cytosolic factor 1C (NCF1C) exhibited significantly decreased survival in both GBM and UCEC, and the gene CD300C has a significant survival profile in both CHOL and KIRC. Of significance, these genes play crucial roles in regulating various oncogenic properties of tumor cells such as apoptosis, cell proliferation, ferritinophagy, tumor infiltration of macrophages, and T cell-mediated immune responses. As PTAFR modulates tumor cell properties, including apoptosis, cell proliferation, and T cell-mediated immune responses, the identification of PTAFR-associated genes that regulate such cancer cells properties can be explored as potential targets for the intervention of these malignancies. Importantly, our analyses showed the relevance of these important genes and their use as biomarkers that could be helpful for personalized therapy.

Reddy A, Fischer K, Valencia D, Nazir R, Schwartz B

Poster 91

Post-COVID-19 Discharge Trends Following Cardiac Procedures

Mentor: Damien Valencia, MD

Kettering Health, Interventional Cardiology

Background: There is limited data on discharge trends post mitral transcatheter edge to edge repair (M-TEER) with MitraClip. The MitraClip procedure is a minimally invasive technique to attach a small clip to the mitral valve to reduce regurgitation. Due to the COVID-19 pandemic and the need to conserve resources, there have been efforts to shorten the length of stay when possible. This study aims to evaluate the safety and feasibility of same-day discharge post M-TEER.

Methods: A retrospective review of patients undergoing M-TEER with MitraClip at Kettering Health between 2016-2023 was performed. The patients were divided into two cohorts, same-day and next-day discharge. The endpoints of this study were time to discharge (TTD) and postoperative complications.

Results: A total of N=96 patients underwent successful M-TEER with MitraClip. TTD was compared between cohorts. The same-day discharge cohort TTD was 0.95 days compared to next-day discharge with TTD of 1.89 days [p=0.0273]. Patients were safely discharged on the same-day with no statistically significant difference in 30-day readmission rates; although there was a trend towards less readmission in the same-day discharge group. There was no significant difference in 30-day deaths, 2.32% (same-day discharge) and 2.1% (next-day discharge) [p=0.9744]. There was no significant difference in 30-day adverse events.

Conclusion: Same-day discharge for M-TEER using the MitraClip device appears to be safe and can reduce resource requirements. Early discharge was not associated with increased complication rates, including 24-hour hospital readmissions or 30-day adverse outcomes.

Reddy A, Fischer K, Nazir R, Linares J, Sun M, Valencia D

Poster 92

Apple Watch Detection of Cardiac Events Other than Atrial Fibrillation

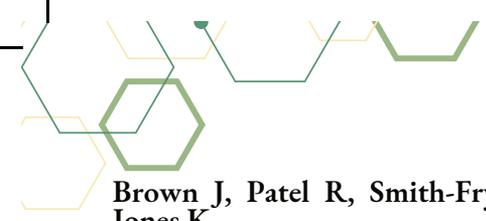
Mentor: Damien Valencia, MD

Kettering Health, Interventional Cardiology

Wearable smartwatches have been approved for the detection of atrial fibrillation but not other arrhythmias. Single lead electrocardiogram (ECG) tracings have diagnostic implications and can accurately capture other supraventricular tachyarrhythmias (SVT).

A 29-year-old female with no prior history presented with 4 years of palpitations, described as episodic elevations in heart rate associated with near syncope. Episodes were triggered by caffeine or exercise. Utilizing the Apple Watch Series 5 ECG feature, the patient captured multiple episodes of narrow complex, regular tachycardia (190 BPM). Episodes terminated spontaneously or with valsalva. Outpatient ECG and 24-hour Holter were unremarkable. Symptoms did not improve with beta-blocker therapy.

Decision made to proceed with electrophysiology study due to Apple Watch tracing causing concern for SVT. The study was positive for atrioventricular reentrant tachycardia (AVRT) with a cycle length of 340 ms and mapping consistent with a left lateral wall concealed retrograde conducting accessory pathway. Successful radiofrequency ablation was performed with complete resolution of symptoms and no recurrence six months post operatively. This case highlights the role of wearable smartwatch technology in accurately identifying arrhythmias other than atrial fibrillation.



Brown J, Patel R, Smith-Fry K, Ward M, Oliver T, Jones K

Poster 93

Genetically Engineered Mouse Model of Pleomorphic Liposarcoma: Immunophenotyping and Histologic Characterization

Mentor: Kevin B. Jones, MD

University of Utah, Huntsman Cancer Institute, Department of Orthopaedics

Pleomorphic liposarcoma is a rare and aggressive subset of soft-tissue sarcomas with a high mortality burden. Local treatment largely consists of radiation therapy and wide surgical resection, but options for systemic therapy in the setting of metastatic disease are limited and largely ineffective. This prompts exploration of novel therapeutic strategies and experimental models. As with other cancers, sarcoma cell lines and patient-derived xenograft models have been developed and used to characterize these tumors to identify therapeutic targets, but these models have inherent limitations. The establishment of genetically engineered mouse models represents a more realistic framework for reproducing clinically relevant conditions for studying pleomorphic liposarcoma. Trp53^{fl/fl}/Rb1^{fl/fl}/Pten^{fl/fl} (RPP) mice were used to reliably generate an immunocompetent model of mouse pleomorphic liposarcoma through Cre-mediated conditional silencing of the Trp53, Rb1, and Pten tumor suppressor genes. Evaluation of tumor-infiltrating lymphocytes were assessed with immunostaining for CD4, CD8, and PD-L1, and flow cytometry with analysis of CD45, CD3, CD4, CD8, CD19, F4/80, CD11b, and Nkp46 sub-populations. Mice reliably produced noticeable soft-tissue tumors in approximately 6 weeks with rapid tumor growth between 100 and 150 days of life, after which mice reached euthanasia criteria. Histologic features were consistent with pleomorphic liposarcoma, including widespread pleomorphic lipoblasts. Immunoprofiling and assessment of tumor-infiltrating lymphocytes was consistent with other soft-tissue sarcomas. Genetically engineered RPP mice reliably produced soft-tissue tumors consistent with pleomorphic liposarcoma, which immunological findings similar to other soft-tissue sarcomas. This model may demonstrate utility in testing treatments, including immunomodulatory therapies with and without traditional chemotherapy.

Williams B, Hicks C, Goswami T

Poster 94

Blood Based Biomarkers in Psychiatric Disorders: Assessing Their Potential for Clinical Use

Mentor: Tarun Goswami, DSc

WSU, Department of Biomedical, Industrial and Human Factors Engineering

Major depressive disorder (MDD) and post-traumatic stress disorder (PTSD) are both complex mental health disorders with pathophysiological processes still being explored.

Unlike some medical conditions where laboratory tests or imaging results can provide clear evidence of disease, PTSD and MDD are only diagnosed clinically, using a detailed history of illness and criteria outlined in the DSM-5. Currently, there are no measurable biomarkers used in the diagnostic process or assessment of the development of these disorders. However, studies have identified certain biomarkers that have been associated with each condition and suggest that they may be dysregulated in individuals with these disorders. The purpose of this study is to highlight the biomarkers identified from literature and assess their structure and physical properties to find the most promising biomarkers for potential clinical use. By understanding these biomarkers, we can begin to unfold the biological abnormalities that contribute to the development and progression of these disorders. Ultimately, these discoveries can lead to significant implications in patient care by reducing the potential for delayed diagnosis and tailoring treatment approaches to address their unique needs.

Hamilton L, Winkle, A

Poster 95

Complex Pulmonary Coinfection: Nocardia and Aspergillosis in Steroid-Treated COPD Patient

Mentor: Hari Polenakovik, MD

BSOM, Department of Internal Medicine

Nocardia and Aspergillosis coinfections are infrequently reported, typically occurring in immunocompromised individuals. This case report presents a 68-year-old male with chronic obstructive pulmonary disease (COPD) who, in contrast to the usual demographic, received extensive systemic steroids for COPD exacerbations. COPD, a common comorbidity in immunocompetent individuals with pulmonary nocardiosis, is associated with structural abnormalities in the respiratory system. The patient's history of prolonged steroid use, intended to alleviate acute COPD symptoms, underscores the intricate relationship between immunomodulation and opportunistic infections. The concurrent presence of an Aspergillus ball in the upper right lung cavity emphasizes the heightened risk in individuals with advanced COPD. Structural changes, including chronic inflammation and airway remodeling, create an environment conducive to coinfections involving Nocardia and Aspergillus. This case highlights the atypical vulnerability stemming from COPD and steroid use, emphasizing the complexity of respiratory health, immune modulation, and the susceptibility to dual opportunistic infections.

Agoro K, Hamilton L, Polenakovik H

Poster 96

Enterovirus-Associated Orchitis in Cystic Fibrosis

Mentor: Hari Polenakovik, MD

BSOM, Department of Internal Medicine

Background: Determining the underlying pathogenesis of isolated orchitis, a rare entity caused by bacterial or viral infection of the testes, can be challenging due to varied causes and vague symptoms, especially in individuals without a sexual or travel history.

Baker P, Murray B

Poster 98

Pseudocycis: The 40 Week Fibrotic Uterus

Mentor: Brian Murray, DO

BSOM, Department of Emergency Medicine

Pseudocycis is the false belief of pregnancy. Despite not being pregnant, patients will experience physiologic changes consistent with pregnancy including amenorrhea, abdominal enlargement, and the sensation of fetal movement.

A 39-year-old female, with multiple previous healthy births, presented to the Emergency Department with abdominal pain, cramping and vaginal bleeding. Symptoms started earlier that morning. Per her report, her last menstrual cycle was approximately 40 weeks previously. Over that time, she felt consistent fetal movement, morning sickness similar to previous pregnancies, and a progressively protuberant abdomen. She believed she was going into labor. On physical exam, she had a protruding abdomen that appeared consistent with a third trimester pregnancy. A bedside ultrasound was immediately performed which showed an enlarged, but non gravid uterus. Further lab workup and imaging was obtained. Nevertheless, the workup was inconclusive. Urine pregnancy test was negative, and all other lab workup was unremarkable. CT Abdomen and Pelvis showed a fibrotic, but non gravid uterus. Upon further questioning, the patient reported multiple previous ultrasounds and pregnancy tests that showed that she was not pregnant. However, she did not believe them. She was ultimately discharged after receiving a referral to a different Obstetrician for a second opinion. She continued to believe that she was pregnant.

This case illustrates the peculiar presentation of pseudocycis. Though likely psychologically derived, patients exhibit physiologic changes consistent with pregnancy. It is very difficult to convince patients they are not pregnant, and they often require extensive psychotherapy before resolution of symptoms.

Queenland N, Holmes M, Prather P, Murray B, Gil S

Poster 99

Survival After a Ilio-enteric Fistula and PEA Arrest in a Man who had Renal and Pancreatic Transplants: A Case Report and Review of the Literature

Mentor: Brian Murray, DO

BSOM, Department of Emergency Medicine

Background: Gastrointestinal bleeding (GIB) is a frequent cause for patients to seek emergency care, often stemming from benign origins. However, arterio-enteric fistulas (AEF) are rare but serious causes that are difficult to diagnose. Even with excellent care, patients with an AEF have approximately a 50% 30-day mortality.

Case: We present a 51-year-old male patient with a past medical history significant for diabetic retinopathy causing complete blindness and prior pancreatic and renal transplants, who presented to the Emergency Department (ED) complaining of generalized weakness, loose stools, and mild pressure-like lower abdominal discomfort worsening the past few days.

Recent research indicates enterovirus, particularly the Coxsackievirus-A6 strain, associated with Hand, Foot, and Mouth Disease (HFMD), may trigger orchitis. However, the strength of this association is questionable, particularly in patients with Cystic Fibrosis (CF). We present a unique case of enterovirus-associated orchitis in a CF patient.

Case: A 27-year-old male with CF (F508del homozygous, FEV1: 0.76), chronic MRSA and Pseudomonas airway infection, severe malnutrition (BMI: 17.87), on Trikafta but nonadherent due to depression presented with cough, sore throat, and week-long fevers. Testing confirmed rhino/enterovirus, and pneumonia on imaging. He was admitted for antimicrobial and pulmonary therapy. Two days into hospitalization, he developed a rash consistent with HFMD and acute right testicular pain on day 5. Imaging suggested right-testicular orchitis, likely triggered by enterovirus. Evaluation for alternative causes was unrevealing. After supportive care, he was discharged with resolved symptoms at four-month follow-up.

Discussion: In young men with CF and HFMD, testicular pain may signal viral orchitis from enterovirus. A thorough differential diagnosis is crucial when orchitis is identified to avert complications or misdiagnoses such as testicular torsion, which could prompt unnecessary interventions, including invasive surgery, improper antibiotic use, or unwarranted oncological concerns. Clinicians should be aware that enterovirus can trigger orchitis and differentiate it from other testicular pain etiologies.

Spencer E, Van Nostrand S, Arya S

Poster 97

Group B Streptococcus Brain Abscess in Neonate with Bilateral Otorrhea

Mentor: Shreyas Arya, MD

BSOM, Department of Internal Medicine and Neurology

Introduction: Group B Streptococcus (GBS) is the leading cause of bacterial sepsis and meningitis worldwide, but brain abscess secondary to GBS is extremely rare. While temporal brain abscesses have been described as a sequelae of otogenic infections in children and adults, such a presentation has not been described in neonates.

Case description: An 8-day-old infant presented with a fever and irritability along with the unusual finding of bilateral purulent otorrhea since birth. While maternal GBS screening was negative, delivery was complicated by chorioamnionitis. Work up revealed neutrophilic pleocytosis in the cerebrospinal fluid (CSF) and culture of the ear secretions was positive for GBS. Magnetic resonance imaging (MRI) showed a circular lesion with rim enhancement within the left temporal lobe concerning an abscess. The infant was treated with 14 days of intravenous (IV) vancomycin, cefepime and metronidazole followed by 10 weeks of IV ampicillin until discharge and hospital course was complicated by seizures and obstructive hydrocephalus which required multiple neurosurgical interventions.

Conclusion: Brain abscess can occur as a sequelae of GBS meningitis in neonates. Otogenic infections require prompt evaluation and treatment and can progress to serious central nervous infections in neonates.

Boeckley A, Seward E

Poster 101

Giant Mucinous Borderline Ovarian Tumor: A Case Report

Mentor: Eric Seward, MD

Mercer Health, Department of Obstetrics and Gynecology, and Women's Health

Borderline Ovarian Tumors (BOTs) are an uncommon, noninvasive, heterogenous group of epithelial ovarian tumors characterized by atypical epithelial proliferation without stromal invasion and, while thought to represent an intermediate between benign cystadenomas and malignant low-grade ovarian carcinomas, their pathogenesis and behavior remain uncertain. BOTs account for approximately 14-15% of primary ovarian neoplasms, of which the mucinous subtype comprises approximately 32%. If symptomatic, patients typically present with nonspecific symptoms such as abdominopelvic pain, bloating, constipation, or a palpable mass. While most have an excellent prognosis, the enigmatic pathogenesis, behavior, and uncertain malignant potential of these tumors warrants early detection and staging. We present a case of Mucinous BOT in a 49-year-old, previously healthy, premenopausal female. The patient presented with increasing left upper quadrant pain, nausea, bloating, weight gain, and irregular periods and was subsequently found to have a large, cystic, right adnexal mass on imaging with a mildly elevated CA-125 level. An intact 18.4 lb. multiloculated cystic ovary was removed and open total abdominal hysterectomy (TAH) with bilateral salpingo-oophorectomy (BSO) was performed. Histopathology revealed focal areas of cytologic atypia consistent with Mucinous BOT not originally seen on intraoperative frozen section. Our patient was referred to gynecologic oncology for a repeat peritoneal staging procedure involving laparoscopic omentectomy and biopsies of the lymph nodes and peritoneum, all of which were negative for invasive neoplastic implants. This case illustrates the diagnostic work-up and treatment of mucinous BOTs and the difficulty in distinguishing them from both benign cystadenomas and malignant carcinomas.

Begley T, Murray B

Poster 102

Convergence Spasm Following Mild Head Trauma

Mentor: Brian Patrick Murray, DO

BSOM, Department of Emergency Medicine

Disorders of extraocular movements can present in patients as a result of a plethora of acute and chronic pathologies. Therefore, emergency department providers must be able to identify various abnormalities in extraocular movements in order to formulate an appropriate differential diagnosis and diagnostic workup. This case report describes a patient presenting persistent blurry vision and headache after mild head trauma who was ultimately diagnosed with convergence spasm secondary to a mild traumatic brain injury.

Dried blood was on the patient's feet and perineal region. After a short delay owing to his comorbidity's holes in his history of present illness, he was ultimately diagnosed with an ilio-enteric fistula and a massive GI bleed. Despite initiating a massive transfusion protocol, the patient experienced a pulseless electrical activity (PEA) 3 times but achieved the return of spontaneous circulation after each arrest. Vascular surgery performed emergent stenting of his right common iliac, and the patient was transferred to a quaternary care hospital for further management.

Discussion: Evaluation of AEF is challenging and requires high clinical suspicion in patients with significant risk factors. Delays in care contribute to its high mortality. The Computed Tomography Angiography (CTA) is the preferred diagnostic test, but even this may not identify the fistula and be falsely negative. The patient discussed highlights this difficulty in diagnosis. Despite these challenges, delays, and multiple cardiac arrests, the patient has recovered without sequelae.

Walker H, Speers J, Kadakia S

Poster 100

Metastatic Oropharyngeal Squamous Cell Carcinoma to the Thyroid: A Case Report and Review of Literature

Mentor: Sameep Kadakia, MD

BSOM, Department of Orthopaedic and Plastic Surgery

Oropharyngeal squamous cell carcinoma (SCCA) with metastasis to the thyroid gland is exceedingly rare, and has not been extensively explored in the literature¹. This review aims to establish clearer ideas about the diagnosis and management of oropharyngeal SCCA with metastasis to the thyroid based on prior literature and a case at our institution. Between the years of 1984 and 2023, there were 40 published cases of head and neck SCCA with metastasis to the thyroid gland¹⁻⁵. The pathophysiology of such cases remains an unresolved topic, with speculation for lymphatic drainage channels between the thyroid and retropharyngeal lymph nodes⁶, as well as speculation for hematologic spread due to an increased rate of metastasis when thyroid blood flow is compromised⁷. Needle aspiration thyroid biopsy is a viable option for diagnosing malignancy in up to 90% of cases of oropharyngeal SCCA⁸. Management of metastases to the thyroid gland is multifactorial, and many will be treated with palliative care; however, considerations should be made for hemilobectomy and total thyroidectomy⁹.

A case of secondary SCCA to the thyroid at our institution was incidentally discovered during a surveillance positron emission tomography (PET) scan after undergoing R0 resection and completion of radiation therapy for SCCA of the palate. The patient underwent total thyroidectomy, along with bilateral, central, and mediastinal neck dissection, radical right-sided neck dissection with pectoralis major myocutaneous flap based on Thoracoacromial vessels. This case contributes to the existing literature by characterizing the mechanism, diagnosis, management, and prognosis of oropharyngeal SCCA with metastasis to the thyroid.



Clark C, Yoshinaga K, Tkachenko A, Murphy T

Poster 103

Case of Hyponatremic Hypertensive Syndrome with Neurological Sequelae Secondary to Unilateral Renal Artery Stenosis

Mentor: Thomas Murphy, MD

BSOM, Department of Internal Medicine

In cases of unilateral renal artery stenosis, acute exacerbations may present as hyponatremic hypertensive syndrome (HHS), a rare and highly morbid condition. Since its first description in 1965, few case reports and one small retrospective study (n=27) have incompletely described its epidemiology and clinical course. Its insidious nature, extreme rarity, and often counter-intuitive laboratory profile can delay diagnosis and worsen outcomes. Furthermore, complications including end-organ ischemia, poyelectrolyte derangement, and hypertensive crises can occur. Herein, we present a 62-year-old man with known renal artery stenosis who presented with HSS in hypertensive emergency with encephalopathy and rhabdomyolysis. Overaggressive blood pressure reduction resulted initially in an iatrogenic acute kidney injury, but continued management and electrolyte correction restored the patient's renal and neurologic function to baseline without lasting complications. In managing HHS, consideration of the underlying pathomechanism and careful fluid and electrolyte repletion can minimize complications and improve clinical outcomes in this highly morbid and precarious clinical syndrome.

Burrows J, Lantz R

Poster 104

A Fatal Compromise

Mentor: Rebekah Lantz, DO

Premier Health, Department of Internal Medicine

Background: Checkpoint inhibitor pneumonitis (CIP) is fatal in 3-5% of patients, at any duration of treatment. Respiratory symptoms may present as progressive cough, dyspnea, and fatigue. Among checkpoint inhibitors, CIP is higher in programmed death-1 (PD-1) inhibitors.

Case: An 82-year-old woman had a history of heart failure, obstructive lung disease, obesity, and right breast lobular carcinoma. Her ER+/HER2- cancer had been treated by partial mastectomy followed by adjuvant hormonal treatment and radiation in 2014. Cyclophosphamide, methotrexate, and 5-fluorouracil was followed by letrozole and abemaciclib therapy in April 2022. In April 2023, she presented to urgent care with dry cough and dyspnea. She was admitted to the hospital for 2L oxygen requirement and multifocal pneumonia.

Despite sepsis therapy with IV fluids and empiric antibiotics, she developed worsening oxygenation with 7L during the day to Bi-PAP that night. Repeat imaging showed acute respiratory distress syndrome (ARDS) and stress dose steroids were added. She was diagnosed with CIP and intubated on day 6.

After failure to pass extubation tests, family elected for do-not-resuscitate code status and she subsequently expired on day 12.

Discussion: CIP is rare but associated with fatal outcomes, especially when ARDS develops. Early recognition and initiation of treatment with steroids and cessation of the afflicting agent are essential. Patients should be educated on the importance of cancer treatment as well as the possible side effects and for the generalist to be aware as symptoms occur. Most patients do not survive this unfortunate progression of disease and it may be a fatal compromise.

Campbell Z, Murray B

Poster 105

Intentional Multi-Compound Ingestion causing Hydrocarbon Toxicity and hemorrhagic gastritis: A Case Report

Mentor: Brian Murray, DO

BSOM, Department of Emergency Medicine

Background: Hydrocarbons are a class of organic chemical compounds composed of elemental carbon and hydrogen. They are primarily found in natural gas products, aromatics, and oils. Hydrocarbon-associated toxicity (HAT) results in nervous and respiratory depression, similar to opioid and sedative-hypnotic toxidromes, although there is a more profound effect with shorter carbon chains. For volatile hydrocarbons, there is an additional concern for aspiration and pneumonitis. We present a case of HAT resulting from ingesting multiple detergents, fragrances, and toiletries.

Case: A 34-year-old male presented to the ED after he was found unresponsive in a yard from an unclear etiology. The patient was obtunded with a GCS of 3, diaphoretic, had frothy secretions, and likely aspirated. The patient experienced a respiratory arrest and was endotracheally (ETT) intubated. He was noted to have a high anion gap metabolic acidosis, acute kidney failure, and transient dysrhythmias. Patient was admitted to the ICU where he was noted to have diffuse corrosive damage in the GI tract and pneumonitis. Confirmation of his ingested was provided by the family with approximately a liter of products (eg., colognes and after shaves) containing isopropanol. Further testing in the ICU indicated an elevated osmolar gap and ethanol level.

Conclusion: This case demonstrates a severe HAT from isopropanol. This is a difficult toxidrome to diagnose. Isopropanol is a potent alcohol and hydrocarbon that can cause significant ketosis, elevated osmolar gap, but isn't known to cause acidosis. It is associated with hemorrhagic gastritis and can cause severe pneumonitis if aspirated.

Naboulsi W, Lantz R

Poster 106

Management Of Adrenal Deficiency and Shock in a Patient with Polyglandular Autoimmune Syndrome Type II

Mentor: Rebekah Lantz, DO

Premier Health, Department of Internal Medicine

Mentor: Jon P. Williams DO

BSOM, Departments of Endocrinology, Radiology and Neurology

X-linked adrenoleukodystrophy (ALD) is a peroxisomal disorder leading to neural and adrenal tissue deposition of very long chain fatty acids. We report 23-year-old monozygotic twins who presented with neuropsychiatric concerns, fatigue, gait difficulty, lower extremity muscle stiffness, and urinary and bowel incontinence. One twin reported difficulty with concentration and mood and had more advanced difficulty with gait and incontinence as compared to his brother. Neurological examination identified weakness in proximal lower extremity muscles, hyperactive deep tendon reflexes in all extremities, positive Babinski sign, and spastic gait of differing severity between the patients. Magnetic resonance imaging (MRI) of the brain revealed T2 hyperintensity in the splenium of the corpus callosum in each subject. MRI of the spine revealed normal signal in the cord, however the thoracic segment was asymmetrically atrophied. No pathological enhancement was appreciated. Further testing revealed primary adrenal insufficiency and elevated hexacosanoic acid. Genetic testing confirmed a pathogenic variant in the ABCD1 gene (c.796G>A (p. Gly266Arg), hemizygous). Neurological follow up has revealed a persistent difference in symptom severity between the patients, which does not correlate with imaging findings or other biomarkers, despite the patients having the same mutation. Two previous reports of monozygotic twins with ALD were notable for progressive cerebral demyelination in only one patient of each pair. Our report is unique in describing clinical and imaging variability in arrested cerebral ALD in these identical twins, underscoring the role of suspected non-genomic factors involved in pathogenesis of this symptomatically diverse entity.

Leon T, Hefelfinger H, Hefelfinger D, Nelson S

Poster 109

Rare White Epidermoid Cyst in a 38-year-old Patient Presenting With Isolated Headache: A Case Report

Mentor: Steve Nelson, MD, PhD

BSOM, Department of Surgery

Background: Intracranial epidermoid cysts comprise 0.5-1.5% of all primary intracranial tumors with only 3% of these classified as white epidermoid cysts. Patients commonly present with non-specific symptoms of local mass effects including headaches and seizures. They arise from ectodermal tissue retained during neural tube closure and are most often congenital, with some cases developing secondary to trauma.

Case Presentation: We present a case of a 38-year-old female with complaints of intermittent headaches present for the past year that worsened over the last 4 months. Her pain was localized to her bilateral temporal regions and the crown of her head and was described as pressure with a daily occurrence that improved minimally with Tylenol. The patient was neuro intact on physical examination and denied nausea, vomiting, vision changes or memory loss.

Magnetic resonance imaging (MRI) demonstrated a T2 hyperintense, T1 hypo/hyperintense mass effacing the left cerebellar hemisphere which appeared extra-axial.

Polyglandular autoimmune syndrome (PAS) is a rare disorder characterized by autoimmune destruction of multiple endocrine glands. PAS-II is most common of the PAS subtypes and is characterized by Addison's disease, autoimmune thyroid disease, and type I diabetes mellitus. Disease manifestations are predominantly in young adulthood with an emerging endocrine disorder, however a host of other autoimmune conditions can also be present before endocrine organ dysfunction. Due to the complex nature of presentation and management, an important consideration in patient care involves a multidisciplinary team with the addition of an endocrinologist.

Agoro K, Shaheen O, Lantz R

Poster 107

A Vague Presentation: Fatigue and Cell Line Dyscrasia

Mentor: Rebekah Lantz, DO

Premier Health, Department of Internal Medicine

Background: Symptoms of acute myeloid leukemia (AML) include weakness, fatigue, and dyspnea. An unfavorable prognosis is associated with deletions in chromosomes 5 and 7, with a 5-year relative survival rate of 31.7%. Individuals with genetic predispositions, coagulopathies, environmental exposures, certain medications, and white males have a higher incidence. Pancytopenia, having varied causes, necessitates workup. We present AML diagnosed from vague symptoms and pancytopenia.

Case: A 56-year-old man with a smoking history and alcohol cessation three months prior presented with dyspnea, leg edema, anorexia, weight loss, fatigue, and weakness. Vitals and physical exam were normal, except for pale appearance. Laboratory results showed pancytopenia and elevated liver enzymes, with negative viral and hepatitis screenings. Chest X-ray indicated pneumonia and effusions.

He received two units of whole blood and was started on fluconazole, valaciclovir, and levofloxacin. Following hematology consultation, bone marrow biopsy revealed hypercellular marrow (90%) with 30-35% blasts, indicating AML. Poor prognosis markers included deletions in 5q33 and 7q31, loss of RUNX1/21q, and positive next-generation sequencing for TP53. Initially, he consented to 7+3 daunorubicin and cytarabine induction therapy but later declined a bone marrow transplant, opting for outpatient palliative chemotherapy and do-not-resuscitate comfort care arrest status.

Discussion: Vague symptoms with pancytopenia should raise suspicion for AML, prompting early hematology and cytogenetic analysis. Chromosomal abnormalities are common (50-60% of cases). While the 7+3 regimen remains standard, stem cell transplants may benefit those with adverse markers. This emphasizes thorough diagnostic evaluation and timely treatment initiation in unexplained cytopenia cases for better outcomes in AML.

Leon T, Kluesner J, Nelson S, Williams

Poster 108

Clinical and Neuroimaging Variation in Monozygotic Twins with Arrested Adrenoleukodystrophy



A surgical excision was performed resulting in complete resolution of her symptoms.

Discussion: Histopathologic examination of these cysts demonstrates keratinizing squamous epithelium arranged in thin layers. Due to the broad differential diagnosis for extra-axial masses and the rarity of white epidermoid cysts, preoperative diagnosis is a therapeutic challenge. Preoperative diagnosis is important for surgical planning as they are prone to rupture, thus endangering surrounding structures or causing aseptic meningitis. With so few cases of white epidermoid cysts described in the literature, this case demonstrates the elusiveness and difficulty they pose on physicians to make a timely diagnosis and develop a treatment plan.

Benintendi I, Owens W, Johnson M

Poster 110

The Application of ReCell® "Spray on Skin" for Use in Traumatic Road Rash Injuries: A Case Series

Mentor: Michael Johnson, MD

Premier, General Surgery, Reconstructive Plastic

Split-thickness skin grafts (STSG) are the current gold standard when approaching partial skin defects that are unable to be closed in primary or secondary fashion. While this method has had good success historically, the LOS (length of stay), cost of care, donor site morbidity, and complications associated with STSGs must be considered. In 2018, an innovative "spray on skin" graft, ReCell®, was approved by the Food and Drug Association (FDA).

ReCell® is a medical device kit that processes skin into an autologous skin cell suspension (ASCS) that can be used to cover partial skin defects. This case series presents three patients who sustained superficial partial thickness road-rash burns secondary to motorcycle accidents that were treated with ASCS. All three patients reported unremarkable post-operative outcomes with the ASCS while preserving function and providing comparable aesthetic outcomes to the current gold standard (STSG). While STSGs have been effective in treating trauma patients, complications are common and result in graft failure.

Road rash is a common morbidity related to motor vehicle accidents and other traumatic events, therefore it is important to consider utilizing ASCS as a potential first-line treatment in appropriate partial thickness friction burn cases. ReCell® preserves functional and aesthetic outcomes while reducing LOS, postoperative complications, and donor site size.

Churchill A, Kaelin A, McKinley H, Murray B

Poster 111

Ultrasound Evaluation of Pediatric Esophageal Foreign Body

Mentor: Brian Murray, DO

BSOM, Department of Emergency Medicine

Ingested foreign bodies are a common presenting complaint in the emergency department, especially in the pediatric population. Pediatric cases pose unique diagnostic challenges, from limited histories to vague presenting symptoms, and complications from ingested foreign bodies can rapidly become life-threatening. Point-of-care ultrasound (POCUS) has been demonstrated to be effective in identifying both direct and indirect signs of foreign bodies, while remaining a quick and safe imaging modality. In the clinical case described, a 2-year-old female presented to the emergency department with decreased oral intake and drooling. POCUS promptly identified a linear, hyperechoic foreign body consistent with a metallic object within the esophagus. A chest radiograph confirmed ingestion of a coin. Radiography remains the clinical standard in initial evaluation of foreign body ingestion. This case contributes to the small, yet growing body of literature supporting the utility of ultrasound as an adjunct, and perhaps in the future, a viable alternative in diagnosing pediatric foreign body ingestions.

Corcillo J, Murray B, DeFlorio P

Poster 112

Prinzmetal Angina: The Elusive Stemi Mimic a Case Report of Confirmed Prinzmetal Angina in a Patient with Excessive Caffeine Use

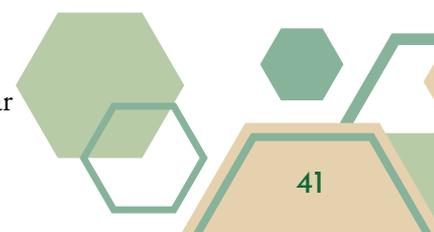
Mentor: Brian P. Murray, DO

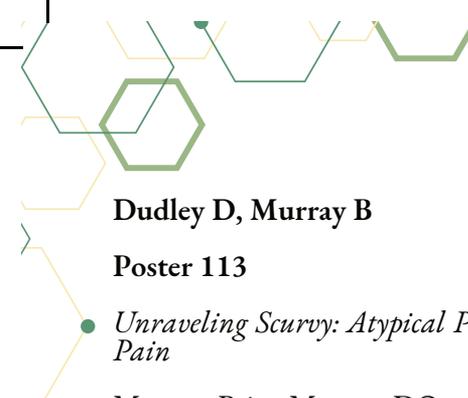
BSOM, Department of Emergency Medicine

Background: Variant, or Prinzmetal, angina is a form of reversible vasospastic angina characterized by a retrosternal pressure or squeezing sensation that typically occurs at rest, frequently occurs in individuals with normal coronary arteries without atherosclerosis. Several mechanisms are hypothesized to precipitate vasospastic events, including arterial wall dysfunction or vasoactive substances such as catecholamines, endothelin, and histamines.

Case: A 30-year-old previously healthy male firefighter presented with several hours of substernal chest pressure, which began late that night while he was at rest. His initial electrocardiogram enroute showed inferior ST elevations with dynamic changes on arrival to the Emergency Department (ED) with a rightward axis deviation, new T wave inversions, and elevated troponins, which prompted emergent evaluation by cardiac catheterization, which showed evidence of coronary spasm with partial perfusion. These findings resolved after the administration of intracoronary nitroglycerin. His supplement use history includes online testosterone supplementation and approximately 900 mg of caffeine daily. He has stopped using workout dietary supplements and has not had a recurrence of his symptoms.

Discussion: Dietary supplements are widely available, with poor oversight by the Food and Drug Association (FDA). Many have significant and potent pharmacologic activity, such as ephedrine and ephedrine-like compounds. Even if not listed as an ingredient, many supplements have adulterants. This is the first case of high-dose daily caffeine resulting in variant angina with symptoms at rest, and diagnosis made by coronary catheterization. Physicians should counsel patients about the risks associated with supplement use and be familiar with their complications.





Dudley D, Murray B

Poster 113

Unraveling Scurvy: Atypical Presentation with Hip and Leg Pain

Mentor: Brian Murray, DO

BSOM, Department of Emergency Medicine

Background: Vitamin C is an essential cofactor. A vitamin C deficiency causes symptoms classically known as Scurvy, including gingival bleeding, easy bruising, petechia, corkscrew hair, weakness, fatigue, muscle cramping, mood disturbance, cognitive impairment, delusions and depression, and anemia. While rare in the modern era, this case highlights a diagnosis of vitamin C deficiency presenting as joint pain and limp in a pediatric patient with extremely restrictive dietary habits.

Case: A 7-year-old female presented with progressively worsening left leg pain over 2-3 weeks. The patient refused to bear weight on the left hip and began crawling instead of walking. The patient is thin with grey discoloration of the teeth, friable gingival bleeding, and had precipitously dropped off of the growth curve, current 0.15th percentile down from 11th percentile. The family describes her eating habits as very picky, only eating one particular yogurt, one brand of cereal, goldfish crackers, and veggie straws. In addition to the standard workup for hip pain, vitamin C levels were obtained. The patient was admitted due to her state of malnourishment. Vitamin C levels returned as undetectable, and she was found to have sacroiliitis on MRI that was attributed to Vitamin C deficiency.

Conclusion: While vitamin C deficiency has become a rare disease in developed countries, it should be considered among at-risk populations, particularly pediatric patients with restrictive diets, autism, or other neurologic or psychiatric conditions affecting diet. It should also be considered for pediatric patients with musculoskeletal problems, as this may be the presenting complaint.

Wachal C, Huston M, Zingas N, Batisitg D, Marshall E, Allen G, Dusini N

Poster 114

Pericardial Effusion in the Setting of Myxedema Coma

Nicholas Zingas, MD

BSOM, Department of Internal Medicine

Myxedema coma (MC) is a rare but life-threatening complication of severe hypothyroidism. MC can lead to a plethora of additional complications and here we describe a case of MC leading to pericardial effusion and cardiac tamponade from increased vascular permeability requiring pericardiocentesis and subxiphoid chest tube placement in an 80 year old female. Due to the variety of different symptoms that patients may present with, prompt recognition, correct diagnosis, and aggressive treatment with glucocorticoids, thyroid hormone replacement, intravenous fluids and supportive management is critical. Clinicians must maintain a high index of suspicion for this condition in patients with unexplained cardiopulmonary failure and a low threshold for investigating thyroid function.



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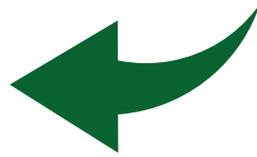
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