



2025

Research Symposium
Abstracts

Live and Virtual Presentations

Abstract #1

Quadruple metachronous primary malignancies with one recurrent neoplasia

Daniel Kim*, Samad Yousuf, Dr. Zekman

***Presenting author**

Multiple primary neoplasms (MPNs) are defined as two or more distinct histopathologic malignancies in the same individual. They can be categorized as either synchronous (diagnosed within 6 months apart) or metachronous (diagnosed greater than 6 months apart). Although previously considered rare, with improvements in cancer detection methods and patient survival, there is an increasing recognition of these cases. However, there are currently no clinical guidelines for the screening or treatment of MPNs. We report a case of 76 year-old Caucasian with a long tobacco smoking history and occupational exposure as a machinist who developed four metachronous malignancies - renal cell carcinoma (RCC), chronic lymphocytic leukemia /small lymphocytic lymphoma (CLL/SLL), squamous cell carcinoma of the lung, and adenocarcinoma of the colon. He also developed a local recurrence of this RCC. His RCC was treated with radical nephrectomy, his CLL/SLL was managed with bendamustine and rituximab, his lung cancer was treated with a partial lobectomy and adjuvant radiation due close margins on biopsy. His colon cancer was treated with a partial hemicolectomy and years later his locally recurrent RCC was treated with IR guided cryoablation. Lastly, given his multiple malignancies, he was given an extended course of immunotherapy maintenance composed of pembrolizumab and axitinib. This case highlights the multifactorial etiology of MPNs. Given his significant risk profile of tobacco smoking, occupational exposure, prior radiation and chemotherapy exposure, he may have benefited from more aggressive screening. Additionally, his malignancies shared multiple oncogenic pathways that were susceptible to his maintenance immunotherapy. As emerging immunotherapies continue to develop, they may provide a promising treatment approach to patients with multiple malignancies.

Abstract #2

Coronary Arterial Disease (CAD) and Pneumonia Length of Visit Outcomes: A Retrospective Analysis of Freeman Health System Patients

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***Presenting author**

In this retrospective observational study, we evaluated the effects of pneumonia and coronary artery disease (CAD) on the extended length of hospital stays at Freeman Health System. The primary objective of the study was to compare the proportion of patients with pneumonia and CAD. These patients spent ≥ 6 days in the hospital. We found that patients presented with pneumonia are correlated with having a prolonged length of stay when compared to non-pneumonia patients. When stratified by age, the distribution of prolonged stays was not significant in differences between both groups. Overall, no significant differences were found amongst age and gender groups as indicated by overlapping confidence intervals and no overlapping confidence intervals between PXG and POG. A correlation is found for patients with pneumonia and prolonged hospital stays whether they also have CAD. These results support the need for interventions aimed at decreasing the length of stay in patients with pneumonia and underlying CAD present. Such initiatives could potentially enhance healthcare quality. They may also improve patient outcomes as a result. This observational study suffers from limitations due to non-random selection of records which may restrict the generalizability of the results.

Abstract #3

Recurrent Postpartum Hemorrhage Caused by Anomalous Right Ovarian Artery, Uterine Dehiscence and Uterine Artery Pseudoaneurysm

Akansha Rao*

***Presenting author**

Postpartum hemorrhage (PPH) is a significant obstetric complication that accounts for approximately 27% of maternal mortality worldwide, with numerous underlying causes. This case report examines a 21-year-old female who presented with recurrent episodes of postpartum hemorrhage following a primary cesarean section. The recurrent episodes were associated with a uterine artery pseudoaneurysm, uterine incision dehiscence, and anomalous ovarian artery vasculature. Management included Surgicel Fibrillar placement in the uterine artery during the primary c-section. Despite this intervention, PPH occurred two weeks later necessitating additional treatment with transcatheter uterine artery embolization with Surgicel Fibrillar placement with interventional radiology. Four weeks post-operatively, PPH recurred and a second transcatheter uterine artery embolization revealed anomalous right ovarian artery origination and persistent right uterine artery pseudoaneurysm, resulting in a life-saving hysterectomy. This case emphasizes the importance of early imaging, such as CT angiography and Doppler Ultrasonography to identify uterine artery pseudoaneurysms. Additionally, it highlights the need for thorough education and understanding of hemostatic agents used in surgical settings.

Abstract #4

A Comparative Review of Threaded vs. Non-Threaded Ultrasound-Guided Release Techniques for Carpal Tunnel Syndrome

Millie Shah*, Saif Memon, Alfeil Felipe, Yassine Lahlou, Brian Tran, Robert Steele

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Carpal tunnel syndrome (CTS) is a common focal mononeuropathy that results from the compression of the median nerve under the transverse carpal ligament. Manifestations of CTS include paresthesia, tingling, and pain in the first three digits of the hand and the base of the thumb. Common surgical approaches to carpal tunnel release include open and endoscopic techniques. Surgical complications include adjacent neurovascular or tendon injury, infection, and need for reoperation. In recent years, alternative surgical techniques utilizing ultrasound have emerged, aiming to reduce unintended harm. This review will compare threaded to non-threaded ultrasound-guided release interventions (USCTR). A thorough literature review was performed comparing threaded (TCTR) to non-threaded/blade (BCTR) ultrasound-guided release on these domains: evaluating postoperative recovery time, patient-perceived symptom and functional outcomes, electrodiagnostic changes, need for reoperation, complications, and patient satisfaction. The questionnaires, if applicable, were tracked in each study: Boston Carpal Tunnel Questionnaire (BCTQ) and variations of Disability of Arm and Shoulder and Hand (DASH). The studies showed that patients returned in work in 5.2 days with TCTR and in a range from 4-25 days for BCTR. TCTR has been shown to provide significant post-operative BCTQ symptom and function improvements. BCTR can provide significant improvements in symptom severity and functional outcomes in treating carpal tunnel syndrome, as measured by BCTQ-S, BCTQ-F, and DASH. TCTR demonstrates improved electrodiagnostic changes measured via nerve conduction studies. BCTR provides significantly improved nerve conduction variables, including distal motor latency and sensory conduction velocity, at 104 weeks post-operation. TCTR had almost no complications while BCTR had varying differences. Patient satisfaction was not uniformly calculated amongst the studies. Ultrasound-guided carpal tunnel release has a promising future with improved outcomes for both the surgeons operating and patients receiving the treatments. TCTR has proven to be safer, more effective, and with fewer adverse risks compared to BCTR.

Abstract #5

Infertility evaluation leads to diagnosis of rare Turner syndrome variant in an unsuspecting patient: a case report

Fiona Szniewajs*

***Presenting author**

This case review will report the clinical presentation, evaluation, diagnosis, and outcome of a 28-year-old female who presented for evaluation of infertility and was found to have a rare variant of Turner syndrome. Aside from infertility, the patient was relatively asymptomatic with perhaps only subtle clues suggesting a hormonal imbalance with a prior history of acne, male pattern hair growth, shorter stature compared to family members (although not considered short stature by US standards at 5'5"), and somewhat irregular menstrual periods. Unsuccessful trying for pregnancy for one year led the patient to seek further evaluation by a fertility specialist, who found that the patient had an extremely low Anti-Müllerian hormone, indicating a severely diminished ovarian reserve. In addition, the patient was determined to be a carrier of several X-linked genetic disorders. Karyotyping led to a diagnosis of a non-classical variation of Turner syndrome, with a rare karyotype of 47,XXX/45,X. Full clinical evaluation did not find any further comorbidities related to Turner syndrome, and the patient was recommended to undergo in-vitro fertilization (IVF) for desired pregnancies. The outcome of a potential pregnancy has yet to be determined, but the patient was recommended to initiate and maintain close monitoring of blood pressure as well as maintaining a regimen of Aspirin 81mg daily throughout any future pregnancy. Had the patient not sought evaluation for infertility, her condition of Turner syndrome may have gone undiagnosed. Patients with Turner syndrome are at significant risk for other systemic disorders and diseases that could have detrimental health outcomes without proper diagnosis and treatment, making early diagnosis important for these patients. This case study demonstrates the clinical presentation and evaluation of a patient with a rare variant of Turner syndrome that may enhance an early diagnosis as well as improved outcomes for patients with a similar diagnosis.

Abstract #6

Unmasking nasopharyngeal carcinoma in a patient with severe COPD: a case study

Brian Young*, Michael Evans

***Presenting author**

Chronic obstructive pulmonary disease (COPD) is a leading cause of morbidity worldwide, often presenting with episodic exacerbations of dyspnea. However, new or unusual symptoms in a patient with known COPD can signal additional underlying pathology. We report the case of a 62-year-old male with longstanding stage IV COPD who presented to the pulmonary clinic for routine testing but was found to be in acute respiratory distress. His history included a recent decline in respiratory status following COVID-19, as well as recurrent episodes of epistaxis, tinnitus, and right-sided headaches. Despite multiple emergency department visits for presumed COPD exacerbations and nasal bleeding, no comprehensive cranial imaging had been pursued initially. On this latest evaluation, the patient was admitted for acute COPD exacerbation. Notably, his persistent otolaryngological symptoms—tinnitus, headache, and recurrent nosebleeds—prompted further workup including computed tomography (CT) imaging of the temporal bones and a magnetic resonance imaging (MRI) study of the brain. These investigations revealed a large nasopharyngeal mass, subsequently identified as suspicious for nasopharyngeal carcinoma. Otolaryngology and oncology teams were consulted, confirming the need for biopsy and definitive management. This case underscores the importance of a broad diagnostic approach in patients with chronic respiratory disease who present with new or unexplained symptoms. Thorough evaluation beyond the presumed COPD exacerbation was critical for identifying a serious malignancy. Awareness of seemingly unrelated symptoms—such as recurrent epistaxis, chronic headaches, and tinnitus—can facilitate timely diagnosis, optimize patient outcomes, and guide appropriate multidisciplinary care.

Abstract #7

An uncommon rash from a common ingredient: shiitake flagellate dermatitis

Monika Ziogaite*
***Presenting author**

Shiitake flagellate dermatitis is a rare cutaneous reaction triggered by ingestion of raw or undercooked shiitake mushrooms. A thermolabile polysaccharide, lentinan, is implicated in this self-limited inflammatory process. Clinically, patients present with intensely pruritic, linear, erythematous streaks—often referred to as “flagellate” lesions—appearing one to two days after ingestion. A 31-year-old previously healthy female developed a sudden-onset, severe, pruritic eruption on her trunk and arms two days before evaluation. The rash was unresponsive to moisturizers. The patient denied any known allergies, new medications, recent illnesses, or product changes. However, a detailed dietary history revealed that she had consumed shiitake mushrooms in a stir-fry the evening prior to rash onset. Physical examination showed multiple linear, erythematous, raised streaks across the trunk and upper extremities, with no systemic symptoms or other dermatologic findings. Diagnosis was made clinically; no laboratory tests were performed. Treatment involved topical corticosteroids for inflammation and oral antihistamines for pruritus. Although shiitake flagellate dermatitis typically resolves spontaneously within one to two weeks, recognizing this uncommon cutaneous reaction is vital to avoid unnecessary investigations and interventions. Thorough cooking of shiitake mushrooms, which inactivates lentinan, remains the most effective prevention strategy. Awareness of this rare yet distinct presentation allows for timely diagnosis, targeted counseling, and appropriate management, ultimately minimizing recurrence and optimizing patient outcomes.

Abstract #8

Inconsistent diagnostic findings leading to a delay in tuberculosis treatment: A case study

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Intro: Mycobacterium tuberculosis (TB) is a bacterial organism that spreads via respiratory droplets infecting a multitude of organs, most commonly the lungs.. As a physician, TB is a can't miss diagnosis due to high infectivity and significant mortality rate. Case: We present an 80 year old female admitted for back pain, shortness of breath, and delirium. She was hospitalized 6 months prior for back pain, with incidental findings of miliary lung nodules and a T8-9 lesion on CT. At this time interferon-gamma release assay was positive, while 3 acid fast bacilli (AFB) sputum smear/cultures and a T8-9 paraspinous tissue biopsy AFB smear/culture were negative. She was not treated for TB at the time and discharged. Her current hospitalization began with treatment for pneumonia, and was complicated by a lacunar stroke. Infectious disease was consulted on hospital day 22 due to a lack of improvement. Lumbar puncture and CT were ordered and showed concerns for possible TB meningitis. 3 AFB sputum cultures, cerebral spinal fluid (CSF) AFB smear, and CSF TB polymerase chain reaction (PCR) were all negative, however, the sputum TB PCR was positive. Patient was started on Rifampin, Isoniazid, Pyridoxine, Ethambutol (RIPE) therapy with adjunct dexamethasone and linezolid on hospital day 23. On hospital day 37 patient was put on comfort measures, passing later that day. Discussion: TB is a highly contagious disease that is a top 10 cause of mortality in the world. Prompt treatment is necessary to prevent disseminated disease, including TB meningitis which has a mortality rate as high as 70%. Utilizing both clinical skills and lab results are significant in making a prompt diagnosis. Conclusion: It is important to utilize clinical judgement along with testing when diagnosing tuberculosis to secure prompt treatment and prevention of further complications.

Abstract #9

Comparison of firearm-related YPLL and state preemption laws

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Introduction--Preemption laws are state-determined legislation that prohibits local municipalities from enacting their own firearm regulations. Only five states do not have firearm preemption laws, meaning that local governments can instate jurisdiction-specific firearm regulations. This project aims to compare years of potential life lost (YPLL) from firearm-related mortality in states with and without preemption laws. **Methods**--Aggregate mortality statistics were sourced from CDC WISQARS, an injury database. Data from all 50 states were analyzed for TIMEFRAME. Firearm-related YPLL were calculated using a life expectancy of 75 years. YPLL rates, defined as the total number of years of potential life lost per 100,000 people, were compared in states with and without preemption laws. A two-sample t-test was used to evaluate if there was a difference between YPLL rates in states with and without preemption laws. **Results**--State YPLL rates due to firearm-related mortality ranged from 101 to 1,046 years of life lost per 100,000 people. States without preemption laws had a mean YPLL rate of 169 per 100,000 people, while states with preemption laws had a mean YPLL rate of 548 per 100,000 people, an absolute difference of 379 firearm-related years of life lost per 100,000 people ($p < 0.01$). Five of the six states with the lowest YPLL rates were those without preemption laws. The YPLL rate in Missouri, a state with preemption laws, was 802 years of person life lost per 100,000 people, ranking 46th among all states. **Conclusions**--States with existing state preemption laws have higher rates of firearm-related YPLL than states that allow local jurisdictions to set their own firearm laws (states without preemption laws). Although firearm policy in the United States is a complex ecosystem, these findings describe an actionable target for firearm policy reform, eliminating preemption laws, which may help address the public health crisis of preventable firearm-related morbidity and mortality.

Abstract #10

Revascularization of a calcified LAD bifurcation stenosis using orbital atherectomy and intravascular lithotripsy: a case report

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***Presenting author**

Introduction: Calcified coronary artery disease (CAD) complicates percutaneous coronary intervention (PCI) by limiting stent expansion, increasing the risk of thrombosis, neointimal hyperplasia, vessel dissection, and repeat interventions. Newer techniques, orbital atherectomy (OA) and intravascular lithotripsy (IVL), modify calcified plaques. **Case:** A 64-year-old female with a 20-year history of poorly controlled hypertension presented to Wockhardt Hospital, Rajkot, Gujarat, with chest pain associated with right arm and occasional bilateral discomfort for the past 2 months. She was taking no medications at home, no tobacco or alcohol history, and no CAD risk factors. Initial evaluation, including EKG and labs, was largely unremarkable except for a marginally elevated troponin. Coronary angiography revealed 80-85% stenosis at the bifurcation of the left ascending artery due to calcification. Given the lesion's severity, a combined approach was used: OA ablated and modified the calcified plaque to enable stent expansion, followed by IVL with a balloon catheter to further demolish the plaque before stent deployment. **Discussion:** Severe calcification complicates PCI due to technical challenges, lesion preparation, stent expansion, and procedural risks like dissection and perforation. OA and IVL together improve revascularization success. OA modifies superficial calcium through continuous debulking, while IVL desiccates both superficial and deep calcium, aiding stent expansion. IVL carries less risk of injury and is easier to use, but OA remains widely utilized due to extensive research. For long-term management, the patient received antihypertensive therapy, lifestyle education, and dual antiplatelet therapy. **Conclusion:** The combined use of OA and IVL effectively modifies calcified plaques, enhancing stent deployment and PCI outcomes. Early recognition and tailored interventions are key to managing complex calcified coronary lesions.

Abstract #11

Strategies for Implementing AI-Based Recommendations in Precision Medical Education

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***Presenting author**

Precision Medical Education (PME) represents a growing facet of competency-based medical education and emphasizes the use of technology to customize learning experiences and enhance educational outcomes. The implementation of PME hinges on the effective analysis and application of vast datasets to personalize education. As artificial intelligence (AI) evolves, its integration into PME presents limitless possibilities. One aspect of AI integration can be achieved through various AI-driven recommender systems, including collaborative filtering, content-based filtering, knowledge-based filtering, and hybrid systems. These systems require the development of sophisticated algorithms, weighing factors, triggers, and rules for prioritizing educational content to optimize its relevance and utility for learners. This scholarly perspective reviewed the current AI recommender system methodologies applicable to PME, identified potential triggers for selecting tailored educational content, and discussed methods for prioritizing this content effectively. It also explored the implications of different user interface tools to create intuitive use. As PME systems continue to evolve, ongoing research will be essential to evaluate the impact of AI on the effectiveness of these systems, including the analysis of triggers, prioritization strategies, and user interface designs. Further studies are also needed to assess the long-term effects of PME on educational outcomes, ensuring that these technological advances benefit learners in a measurable way.

Abstract #12

A before and after comparison of a novel device for electrocardiogram

Nicolas Sesno*, Christian McClung, MD, MPhil, Stephen Dunphy, MD

***Presenting author**

Accurate ECG interpretation is crucial for diagnosing cardiac conditions, yet electrode misplacement can lead to errors affecting patient care. This study evaluates a novel 12-lead ECG device that utilizes screen-printed electrodes, anatomical markers for alignment, and a single connection terminal to enhance accuracy. In this case-control human factors study, licensed paramedics and emergency nurses performed a traditional 12-lead ECG followed by ECG acquisition using the novel device on the same subject. A 7-point Likert scale survey assessed ease of use, mental effort, patient safety, and confidence in electrode placement. Still images were analyzed for positioning accuracy, and intra- and inter-operator agreements were statistically evaluated using STATA. Among 22 EMTs and RNs, traditional ECGs resulted in 60 misplaced electrodes compared to only 3 with the novel system ($p < 0.001$). Participants reported strong agreement (median, IQR: 7, 7-7) regarding ease of use, reduced mental effort, improved patient safety, and better electrode positioning. Inter-rater agreement for placement was significantly higher with the novel device ($\kappa = 0.82$) versus traditional electrodes ($\kappa = 0.24$, $p < 0.001$). These findings suggest that the novel device enhances electrode placement reliability and is preferred by providers for its ease of use and safety benefits. Despite this, participants reported confidence in traditional placement, despite observed misplacements, underscoring the need for further investigation into unrecognized errors in electrode positioning.

Abstract #13

Osteoid Osteoma Mimicking SCFE in a Pediatric Patient: A Diagnostic Challenge and Minimally Invasive Management with Radiofrequency Ablation

Kaan Sevgi*, Matthew McCrosson, Crystal Guillen, Halee Lair, Dr. Kiran C. Patel
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Osteoid osteoma is a benign but painful bone tumor that often affects young individuals. Its diagnosis can be challenging, especially when it mimics other conditions, such as slipped capital femoral epiphysis (SCFE). Advanced imaging and minimally invasive treatments, such as radiofrequency ablation (RFA), have revolutionized its management. **Methods:** We present a case of a 14-year-old female with persistent right hip pain, exacerbated at night and relieved by NSAIDs. Initial radiographic findings suggested SCFE, but further evaluation with computed tomography (CT) confirmed osteoid osteoma in the femoral neck. The patient underwent CT-guided RFA, a minimally invasive approach known for its precision and rapid recovery. **Technology (if applicable):** RFA was performed under CT guidance using standardized protocols to ensure accurate nidus targeting while minimizing damage to surrounding tissues. **Results:** The patient experienced complete pain resolution within 24 hours post-procedure. Follow-up at six months showed no recurrence, consistent with reported high success rates of RFA. Compared to traditional surgical excision, RFA provided superior outcomes, including reduced morbidity, shorter recovery time, and preservation of anatomical structures. **Conclusions:** This case highlights the diagnostic challenge of osteoid osteoma mimicking SCFE and demonstrates the efficacy of RFA as a first-line treatment. RFA offers a minimally invasive alternative to surgical excision, improving patient outcomes and recovery. Advanced imaging and multidisciplinary planning are crucial in ensuring accurate diagnosis and optimal management.

Abstract #14

Uncommon Pediatric Patellar Osteomyelitis: Diagnostic and Therapeutic Challenges of a Rare Bone Infection

Kaan Sevgi*, Crystal Guillen, Matthew McCrosson

***Presenting author**

Patellar osteomyelitis is an extremely rare infection in the pediatric population, often presenting with nonspecific symptoms that lead to delayed diagnosis and increased risk of complications. Early recognition and targeted treatment are essential to prevent long-term morbidity. **Methods:** We report the case of a 10-year-old girl with anterior knee pain, swelling, and difficulty bearing weight. Initial radiographs were unremarkable, but MRI revealed marrow edema and a soft tissue abscess. Bone aspiration confirmed *Staphylococcus aureus* infection. The patient was treated with a six-week antibiotic regimen, including intravenous cefazolin followed by oral cephalexin. **Results:** The patient demonstrated rapid clinical improvement within five days of antibiotic therapy, with normalization of inflammatory markers. No surgical intervention was required. Follow-up at six months confirmed full recovery with no recurrence. **Conclusions:** This case highlights the diagnostic and therapeutic challenges of pediatric patellar osteomyelitis, emphasizing the need for clinical suspicion, advanced imaging, and microbiological confirmation. Timely antibiotic therapy can lead to successful outcomes without surgical intervention in select cases.

Abstract #15

Advancing Total Knee Arthroplasty: Precision Techniques, Innovations, and Outcomes for Enhanced Patient Care

Kaan Sevgi*, Matthew McCrosson

***Presenting author**

Background: Total Knee Arthroplasty (TKA) has evolved significantly with advancements in surgical techniques, fixation methods, and patient-centered rehabilitation strategies. Innovations such as robotic-assisted surgery, cementless fixation, and multimodal pain management aim to enhance precision, recovery, and implant longevity. **Methods:** This review synthesizes recent advancements in TKA, focusing on surgical precision, fixation strategies, pain management, rehabilitation, and emerging technologies. Comparative analyses of cemented vs. cementless fixation, robotic vs. conventional surgery, and various pain control techniques provide insight into optimizing patient outcomes. **Technology (if applicable):** Robotic-assisted systems and augmented reality improve surgical accuracy and reduce revision rates. Personalized 3D-printed implants enhance fit and longevity, while multimodal pain management strategies—such as adductor canal blocks, local infiltrate analgesia, and cryotherapy—reduce opioid dependence and support faster recovery. **Results:** Robotic-assisted surgery improves alignment accuracy by 20%, reducing revision rates. Cementless fixation is superior for younger, active patients, lowering aseptic loosening rates, while cemented fixation remains ideal for elderly patients with compromised bone quality. Advanced pain management strategies decrease opioid use by 30%, improving early mobilization and functional recovery. **Conclusions:** Tailored approaches in TKA, incorporating patient-specific surgical techniques, advanced pain management, and personalized rehabilitation, optimize clinical outcomes. While emerging technologies offer promising benefits, challenges such as cost and accessibility require further research. Future studies should focus on long-term outcomes and the broader implementation of innovative strategies.

Abstract #17

Septic Arthritis in a Patient with Metastatic Squamous Cell Carcinoma: A Case Report and Literature Review

Kaan Sevgi*, Matthew McCrosson

***Presenting author**

Septic arthritis is a rare and serious condition that often occurs in the setting of comorbidities. This report discusses a unique case of septic arthritis in a 78-year-old male with metastatic squamous cell carcinoma (SCC) and coronary artery disease, complicated by bacteremia with methicillin-sensitive *Staphylococcus aureus* (MSSA). The patient presented with a swollen, painful right knee requiring arthroscopic washout. Despite treatment with antibiotics and surgery, the course was complicated by recurrent infection and cognitive decline, ultimately linked to metastatic SCC. This case highlights the diagnostic challenges and management complexities of septic arthritis in immunocompromised patients. Imaging, synovial fluid analysis, and histopathology were key in diagnosis, while arthroscopy and systemic antibiotics were utilized for treatment. Reviewing the literature, we contextualize this case within similar presentations of metastatic SCC involving musculoskeletal and systemic infections. Prior studies demonstrate how SCC metastases to uncommon sites, such as the carpal bones or knee, can mimic septic arthritis or osteomyelitis, complicating diagnosis and treatment. This report underscores the importance of recognizing atypical presentations of metastatic cancer, particularly when compounded by infection, and provides insights into the clinical management of similar cases. Collaborative decision-making between oncology, orthopedics, and infectious disease teams is emphasized for optimal outcome.

Abstract #22

Personalized Multidisciplinary Management of Refractory Orthostatic Hypotension in Chronic Kidney Disease with Severe Blood Pressure Variability

Crystal Guillen*, Kaan Sevgi
***Presenting author**

Background: Orthostatic hypotension (OH) is a significant but underrecognized complication in patients with chronic kidney disease (CKD), contributing to falls, cardiovascular instability, and increased morbidity. The interplay between autonomic dysfunction, volume shifts, and polypharmacy complicates management, necessitating a multidisciplinary approach. **Methods:** We report the case of a 72-year-old male with stage 3 CKD, hypertension, and type 2 diabetes, who presented with recurrent dizziness and syncope upon standing. Orthostatic blood pressure measurements confirmed OH, and further evaluation revealed autonomic dysfunction as a contributing factor. The patient's antihypertensive regimen was adjusted by reducing diuretics and introducing midodrine. Non-pharmacological interventions, including gradual postural changes and increased sodium intake, were also implemented. **Results:** Following tailored therapy, the patient experienced a significant reduction in symptomatic episodes, while maintaining stable renal function. Ambulatory blood pressure monitoring facilitated precise adjustments, optimizing both blood pressure stability and kidney health. **Conclusions:** This case underscores the complex relationship between CKD and OH, emphasizing the importance of individualized management strategies. Regular screening, personalized pharmacotherapy, and a multidisciplinary approach are essential to balancing blood pressure control with renal protection. Future research should explore ambulatory monitoring and novel therapies to refine treatment paradigms for CKD patients with OH.

Abstract #23

Thyroid Storm in a Refractory Hyperthyroid Patient - A Case Report

Crystal Guillen*

***Presenting author**

Background: Thyroid storm is a rare but life-threatening endocrine emergency characterized by severe thyrotoxicosis and multi-organ dysfunction. Prompt recognition and aggressive management are essential to reducing morbidity and mortality. This case highlights the complexities of managing refractory thyroid storm and the role of advanced therapeutic interventions. **Methods:** A 45-year-old female with Graves' disease presented with fever, tachycardia, confusion, and vomiting following an upper respiratory infection. She had a history of medication non-compliance and multiple prior hospitalizations for thyrotoxicosis. Laboratory findings confirmed thyroid storm, and she was treated with beta-blockers, thionamides, corticosteroids, and iodine. Despite initial stabilization, persistent thyrotoxicosis and worsening hepatic dysfunction necessitated advanced interventions, including plasmapheresis. **Results:** Plasmapheresis resulted in rapid clinical improvement by removing circulating thyroid hormones. A multidisciplinary approach was crucial in stabilizing the patient and preventing further complications. She was transitioned to maintenance therapy, highlighting the importance of long-term adherence to prevent recurrence. **Conclusions:** This case underscores the need for early recognition, multidisciplinary management, and tailored interventions in refractory thyroid storm. Plasmapheresis can be a life-saving therapy when conventional treatment fails. Future research should explore optimizing treatment strategies, including emerging targeted therapies, to improve outcomes in severe thyrotoxicosis.

Abstract #24

Epidemiology of joint pain and associated risk factors in rural communities of Guatemala

Carmen Tong*, Alfeil Felipe, Leah Wu, Tyler Perleberg, Gautam Desai, DO

***Presenting author**

Introduction: Musculoskeletal pain significantly impacts the rural Guatemalan population. Reliant on physically demanding work from farming to weaving, rural Guatemalans are particularly vulnerable to musculoskeletal disorders like osteoarthritis, soft tissue disorders, rheumatoid arthritis, and low back pain. Limited research exists on joint pain prevalence and its risk factors in these communities. **Objective:** This cross-sectional study conducted during KCU's Global Health Outreach in February 2025 aimed to identify risk factors for joint pain among adults over eighteen years old, with the goal of guiding targeted strategies for pain prevention. **Methods:** After KCU IRB approval, participants presenting to clinic in rural Guatemala who wished to participate and met the criteria were asked to complete a survey, capturing occupation, lifestyle, and body measurements. **Results:** The results showed a high prevalence of joint pain among homemakers (45.83%, n=11), farmers (20.83%, n=5), and cleaners (12.50%, n=3), with knee pain being the most frequently reported issue. Participants were mostly females (n=15/24), had an average BMI of 27.51, indicating overweight status, and an average age of starting work at 14 years old. **Conclusion:** These factors combined with strenuous manual labor contributed to persistent joint pain, especially in the knees. This study indicates that future outreach programs should focus on early patient education about healthy weight management, proper lifting techniques, and ergonomic practices to help reduce joint strains. One limiting factor could be that the patients who presented to clinic may overall be less healthy or more inclined to have symptoms than those who did not present. Future work could focus on populations currently not needing a clinic visit, as well as increasing the overall sample size.

Abstract #25

Evaluating the Impact of CRISPR-Cas9 scaRNA1 Genomic Editing on Spliceosome Function and Biochemical Modification

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Our lab has previously demonstrated that noncoding RNAs (ncRNAs) influence alternative mRNA splicing and are associated with congenital heart defects. However, the mechanisms underlying these effects remain unclear. Specifically, small Cajal body-specific RNA 1 (scaRNA1) directs the pseudouridylation of spliceosomal RNA at U89, potentially modifying spliceosome function and contributing to regulation of heart development. We hypothesize that reducing scaRNA1 expression alters spliceosomal activity leads to changes in mRNA splicing. To test this, we used CRISPR-Cas9 to introduce targeted edits in human embryonic kidney (HEK) cells. Clonal populations were identified using the T7EI assay and DNA sequencing to ensure that observed effects were not due to random variations in scaRNA1 levels. Edited clones were analyzed via qPCR and RNA sequencing (RNA-seq), with scaRNA1 levels assessed by CMC treatment. RNA-seq analysis revealed that the mRNAs of 354 genes had significant changes in splicing. Interestingly, 106 of these genes are involved in RNA binding, suggesting that reduced scaRNA1 has a potentially important impact on this pathway. Following scaRNA1 genomic deletion, multiple isoforms of eIF1 and eIF4G2 were detected. Eukaryotic Translation Initiation Factor 1 (eIF1) and Eukaryotic Translation Initiation Factor 4 Gamma 2 (eIF4G2) play crucial roles in translation initiation by binding the mRNA cap and facilitating ribosomal scanning. The functional consequences of these alternative splicing events, particularly their impact on translation initiation, should be investigated to identify their impact on heart development.

Abstract #26

Dietary palmitate as a neoadjuvant therapy: enhancing radiation sensitivity in head and neck cancer through lipid metabolism modulation

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Resistance to therapy is a significant problem in cancer patients. Earlier clinical trials in the USA and Europe using F-18 Fluorothymidine (FLT) positron emission tomography (PET) imaging demonstrated that head and neck squamous cell carcinoma (HNSCC) patients with high pre-therapy tumor FLT levels, indicating a high proliferative index (HPI), had better outcomes than those with lower levels. This correlation between tumor proliferative index and therapy outcome was also observed in vitro 2D and 3D cultures of HNSCC. Results from different HNSCC cell lines showed that HPI cultures were more sensitive to radiation compared to LPI cultures. Bioinformatic and genomic analyses indicated lipid metabolism to be the main factor responsible for LPI cells' therapy resistance. RNAseq and bioinformatics identified G0/G1 switch gene 2 (GoS2) as a potential regulator of radiation sensitivity, with GoS2 expression inversely correlating with overall survival in HNSCC patients. GoS2 negatively regulates ATGL activity, a cytosolic neutral lipase that controls lipolysis and free fatty acids levels. GoS2 expression is higher in LPI compared to HPI cells. To override GoS2 actions, dietary free fatty acid palmitate was used to sensitize HNSCC cells to radiation. Fluorescent cell cycle imaging showed that palmitate treatment increased cell proliferation (higher S+G2) compared to controls (higher G1), indicating that GoS2 regulates a G1-lipid checkpoint that palmitate can override. Palmitate treatment of LPI led to significant radiation sensitization in HNSCC cells. These results suggest that dietary palmitate (fatty acids) is (are) a potential neoadjuvant therapy in HNSCC patients to enhance standard of care outcomes.

Abstract #27

Genetic modification of diatoms for the production of biosilica nanomaterials

Hope M. Keane*, Nicole R. Ford, PhD

***Presenting author**

One way to create silica-based nanomaterials (e.g., biosensors for detecting pathogens, allergens, or other medically relevant substances) is by co-opting the intricate, porous silica-based cell walls (frustules) of diatoms. Therefore, we aim to genetically modify the diatom species *Thalassiosira pseudonana* to express a fusion protein consisting of a functional protein (e.g., green fluorescent protein, biosensor, etc.) and a silica-targeting peptide (i.e., Sil3T8, a fragment of a *T. pseudonana* frustule protein Silaffin 3). To modify the silica frustule with our functional protein, we will employ an interspecies conjugation protocol between diatoms and bacteria. This method utilizes a two-plasmid system: a conjugative plasmid to initiate the process and a cargo plasmid to carry our silica-targeted functional protein gene. My project goal is to identify the most compatible *E. coli* strain for this interspecies conjugation. To this end, I tested various *E. coli* strains to address challenges related to cargo plasmid self-recombination and the selective tolerance of *T. pseudonana* to bacterial partners. To accomplish this goal, *E. coli* strains containing both conjugative and cargo plasmids are conjugated with *T. pseudonana*. After selection with nourseothricin, individual diatom lines are screened by multiplex PCR to verify cargo plasmid transfer. Additionally, using green fluorescent protein as the functional protein enables rapid screening of protein expression. Finally, as with any new protocol in a nonstandard system, many facets need optimization. Our next focus likely will be to fine-tune construction of the cargo plasmid system by reducing complexity and/or increasing promoter efficiency.

Abstract #28

Targeting lipolysis in aging fibroblast enhances wound healing activity by suppressing pro-inflammatory phenotype

Mahogany Mcknight*, Elise Freij, Kami Pearson, Spoorthi Hiremagalore

***Presenting author**

Aging leads to reduced cellular repair, increased inflammatory responses, and an overall decline in wound healing capacity. Fibroblasts are critical to wound healing, contributing to tissue formation and repair by forming a new extracellular matrix (ECM) and maintaining collagen structure along with associated cells. Previous research from our laboratory has demonstrated that aging fibroblasts exhibit impaired wound healing activity and altered lipid metabolism due to downregulation of G0/G1 switch gene 2 (GOS2), resulting in elevated free fatty acid (FFA) levels, a pro-inflammatory phenotype, and oxidative stress. GOS2 is a protein that regulates triglyceride storage by inhibiting adipose triglyceride lipase (ATGL), thereby controlling the lipolysis pathway and FFA levels. To address lipolysis in aging fibroblasts, we adopted a pharmaceutical approach aimed at suppressing the pro-inflammatory phenotype and enhancing wound healing. Acipimox (Olbetam-Pfizer), an FDA-approved drug for treating hyperlipidemia and used in Europe and Australia, was utilized in this study. We employed fibroblast cell lines derived from older patients, using an ELISA-based technique to measure FFA levels and a multiplex immunoassay technique (cytokine arrays) to assess the pro-inflammatory phenotype following acipimox treatment. Furthermore, real-time imaging techniques were utilized to evaluate wound healing dynamics, including the assessment of cellular migration rate, cell proliferation density, and the total duration required for complete wound closure. The results showed a reduction in FFA levels and decreased expression of nearly seventy inflammatory genes that correlated with improved wound healing activity where Acipimox increased cell density index within the wounded area by threefold, and the wound closure time was reduced by more than twenty-four hours. These findings suggest that repurposing Acipimox to target ATGL in aging fibroblasts may represent an effective strategy to enhance wound healing, ultimately improving the quality of life for the elderly population.

Abstract #29

Targeting arachidonic acid lipoxygenase-12 (ALOX12) in the pancreatic ductal adenocarcinoma tumor microenvironment to suppress cancer cell proliferation and enhance therapy outcomes

Alexis Paynter*, Dr. Ehab Sarsour, Adora Klinestiver, Gretchen Nelson, Katiana Hebbert, Dr. Prabhat Goswami, Dr. Ted Holman

***Presenting author**

Pancreatic ductal adenocarcinoma (PDAC) has a dismal 5-year survival rate of around 6%, largely due to its resistance to therapy. Research indicates that the tumor microenvironment, particularly fibroblasts expressing arachidonic acid lipoxygenase-12 (ALOX12), plays a critical role in this resistance. ALOX12 overexpression leads to high levels of 12(S)-hydroxyeicosanoic acid (12(S)-HETE), which promotes cancer cell proliferation. This study hypothesized that inhibiting ALOX12, in combination with chemotherapy, could suppress PDAC proliferation and enhance therapy effectiveness. Using the ALOX12 inhibitor Slug001, 12(S)-HETE production was significantly reduced in normal human fibroblasts (NHF) from individuals over 50 years old. An ELISA assay confirmed up to 90% inhibition of 12(S)-HETE with Slug001 treatment. A co-culture system of NHFs and Mia PaCa-2 PDAC cells, engineered with the fluorescent ubiquitination cell cycle indicator (FUCCI) system, was used to observe real-time effects on cancer cell growth and cell cycle progression. The combination of Slug001 and chemotherapy resulted in the lowest growth index of PDAC cells, up to 60% inhibition when compared to chemotherapy alone, suggesting Slug001 reduces resistance to therapy. Further, phosphorylation assays showed decreased activity in several pro-proliferative pathways upon Slug001 treatment, indicating an inhibitory effect on cancer cell proliferation. These findings support the hypothesis that targeting ALOX12 within the PDAC tumor microenvironment can significantly enhance the efficacy of chemotherapy, offering a promising adjuvant treatment strategy.

Abstract #30

Transcriptomic analysis reveals differential alternative splicing of CD4+ effector T-cells in narcolepsy type 1 patients

Makeen Thanawalla*, Dang Nguyen, Andrea Gaona Romero, Douglas Bittel MSc, PhD, Julie Koester, Joseph Shaffer PhD, Nataliya Kibiryeveva M.D.

***Presenting author**

Narcolepsy Type 1 (NT1) is a chronic neurological disorder associated with the loss of orexin-producing hypothalamic neurons. NT1 is characterized by excessive daytime sleepiness and cataplexy. While the exact cause of neuronal destruction that leads to NT1 remains unclear, strong evidence suggests a T-cell-mediated autoimmune response. Recent research indicates that alternative splicing may play a role in T-cell regulation and immune function. Given the importance of CD4⁺ T cells in immune responses, transcriptomic analysis of NT1 and healthy donors was performed to better understand alternative splicing effects on CD4⁺ Effector T-cell involvement in NT1. We identified multiple transcripts from the gene Killer Cell Lectin-Like Receptor D1 (KLRD1) that had significant changes in alternative mRNA splicing in NT1 samples. These results provide insights that warrant further research into the role of alternative splicing in NT1.

Posters

Abstract #31
Program: Osteopathic Medicine
Category: Basic Science

Poster Session: J-1

The usage of targeted protein degraders for hemoglobinopathy treatment

Sanjana Arji*, Ziyang Shen, Ernie Lee, Hannah Lee, Ekaterina Konshina, Sabrina Welch, Ayana Bahadur, Fadila ElMahdaoui, Jun Liu, Li Chai

***Presenting Author**

Sickle cell disease (SCD) and thalassemia are hemoglobinopathies, or blood disorders arising from defects in adult hemoglobin. Standard treatment protocols focus on treating associated symptoms and conditions like anemia and vaso-occlusive events. Curative options utilizing stem cell transplants and gene therapy are available. These treatments, however, are limited due to accessibility issues, cost, or associated complications. To combat this issue, interest has been generated in creating hemoglobinopathy treatments that utilize molecular compounds called targeted protein degraders (TPDs). The unique mechanism of TPDs allows for the permanent degradation of traditionally “undruggable” proteins such as transcription factors, thus leading to greater drug efficacy with smaller doses. Recent advancements in hemoglobinopathy TPDs involve the development of proteolysis-targeting chimeras (PROTACs), molecular glues, and nanobodies. These bifunctional molecules work by binding to gamma-globin gene repressors (i.e., BCL11A and ZBTB7A) and recruiting components of proteosomal or lysosomal degradation within the host cell. Differences in their mechanism and components offer a variety of advantages and disadvantages. In this review, we aim to provide an in-depth discussion on the hemoglobinopathy TPDs in preclinical and clinical trials as of 2025, with an emphasis on clinical status, rational design, and foreseen challenges and benefits. Overall, we hope to offer a better mechanistic understanding and provide a guide to improve curative TPD development for SCD and thalassemia.

Abstract #32
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

Anatomical and Demographic Correlations in Carpal Tunnel Structures: Insights into CTS Risk

Simran Aulakh*, Dr. Farida Mehrhoff, M.D., Talyn Smith, Vincent Schmidt, M.S., Morgan Stewart, M.S., , Julia Kirkland, M.S.

***Presenting Author**

The anatomical structures forming the carpal tunnel play a crucial role in the likelihood of developing median nerve compression, commonly known as carpal tunnel syndrome (CTS). While the flexor retinaculum (FR) is widely acknowledged for its involvement in CTS, the influence of the extensor retinaculum (ER), palmar carpal ligament (PCL), and carpal bone morphology has been largely overlooked, particularly in Midwestern populations. Demographic factors such as height and age may also impact wrist anatomy, affecting susceptibility to CTS. Without considering both anatomical and demographic variations, early diagnosis and prevention remain challenging. This study examined ligamentous structures and carpal bone dimensions in 28 human cadaveric upper limbs (15 females, 13 males) from the Midwestern U.S. Standardized dissection techniques preserved the integrity of the FR, ER, PCL, and carpal bones. Measurements of width, thickness, and length were recorded using digital calipers ($\pm 0.01\text{mm}$ accuracy) and a ruler. High-resolution images with standardized rulers ensured accurate calibration. Descriptive statistics, including mean and standard deviation, were calculated. Results showed that ER length on the right side increased with age, with the medial side consistently longer than the lateral, revealing structural asymmetry. PCL length on the left radial side positively correlated with age, while height correlated with ER and FR length on the left radial and ulnar sides. Carpal bone width increased with height, whereas carpal arch width decreased with age. No significant correlation was found between BMI and ER size. These findings suggest that age-related changes and body size contribute to wrist anatomy variations, impacting carpal tunnel biomechanics. The decrease in carpal arch width with age may increase CTS risk, while inherent structural asymmetries in the ER could influence tunnel dynamics, highlighting the need for further research on CTS development.

Abstract #33
Program: Osteopathic Medicine
Category: Quality Improvement

Poster Session: J-1

Addressing systemic barriers in mental health care: Evaluating benefits of Urgent care clinic.

Walee Baig*, Rayhan Shaikh, Niki Gharavi, Farell Mahmud, Lakshminarayana Chekuri MD, PhD, Nauman Ashraf MD

***Presenting Author**

Despite robust efforts to engage people with mental illness in health care services, perceived barriers to access remain significantly high. Urgent care clinics (UCC) provide walk-in health care services in ambulatory care settings without the need for traditional appointments / referrals, thereby mitigating some of the perceived system level barriers to health care access. However, to what extent UCCs impact mental health care outcomes is yet to be evaluated. This proposed study aims to compare two groups: (1) individuals receiving care solely from a community mental health clinic and (2) individuals who also utilized mental health services from an associated UCC. Key measures include socio-demographic profiles, patterns of all-cause mortality, severity of mental illness, medication adherence, medical comorbidity, catastrophic life events, prevalence of non-suicidal self-injurious behaviors, health services utilization, psychosocial functioning, prevalence and recurrence of alcohol and other substance use disorders, and treatment dropout rates. Statistical analysis will involve Odds ratios and logistic regression. We hypothesize that individuals who received mental health care services from a traditional community mental health care clinic and UCC (intervention group) had better health care outcomes and lesser utilization of emergency room and inpatient services compared with individuals who solely received mental health care services from the traditional community mental health care clinic (usual care recipient group) during study period (2020-2024). We anticipate that findings from this study will provide important insights and help design more accessible mental health care settings as well as address systemic barriers in mental health care.

Abstract #34
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

A Retrospective analysis of pneumonia and thrombosis on hospitalization in southwest Missouri

April Clark*, Noah Wood, Matias Erickson, Luke Brogan, Robert Arnce, MD, Nova Beyersdorfer, Kerry Johnson, EdD, John Paulson, DO, PhD

***Presenting Author**

Background: Respiratory disease is a significant cause of hospitalization and death worldwide, and lower respiratory tract infections, including pneumonia, are a leading cause. Additionally, when hospitalization is warranted, thromboembolism is a major reason for debilitation and mortality. While variance among individual hospital courses is often the result of multifarious factors present during the stay and at the time of admission, the length of hospital stay may be marginally predictable based on admission diagnosis. In this study, we compared an extended length of stay of those admitted to the hospital with pneumonia, thrombosis, or combined conditions. **Methods:** This was a retrospective cohort study with data collected from a Southwest Missouri Regional hospital system from January 1, 2019, through December 31, 2022. Wald's methods and two-sample proportion testing were used to compare the differences between pneumonia, thrombosis, and combined groups. The population was then further stratified into age and sex subgroups. **Results:** Our results concluded patients with both pneumonia and thrombosis were associated with a higher percentage of extended length of stay visits compared to pneumonia without thrombosis and thrombosis without pneumonia groups. Age and sex were found to follow the same pattern as the general population. **Conclusion:** The percentage of extended length of stay was higher among patients with both comorbid pneumonia and thrombosis compared to patients with just pneumonia or thrombosis. Additionally, pneumonia groups generally had a higher percentage of extended length of hospital stay compared to the non-pneumonia groups. When stratified among age and sex, the evidence collected kept continuity by following the same trend as the general population.

Abstract #35
Program: Osteopathic Medicine
Category: Medical Education

Poster Session: J-1

Perceptions of body fat in the anatomy lab: exploring gender differences and self-perceptions of weight

Ishita Dhiman*, Niki Gharavi Alkhansari, Melissa Zolnierz
***Presenting Author**

Anatomy lab is typically many medical students' first exposure to cadaveric dissection, yet little research has explored how attitudes toward adiposity evolve throughout this experience. Numerous research has been conducted on the proper instruction of anatomy education in relation to course structure and student learning methods, yet a paucity of information remains for adiposity perceptions in this setting. This study aimed to investigate how opinions on weight change over the first year at Kansas City University (KCU), analyzing data collected before dissection, after the musculoskeletal (MSK) block, and following final cadaveric dissections. An optional survey gathered demographic data and responses from the classes of 2027 and 2028, where students rated their perceptions as 'positive,' 'negative,' or 'neutral,' and responded to statements on a 5-point scale (1 = complete disagreement, 3 = neutral, 5 = complete agreement). Using comparative analysis, we investigated trends between the classes of 2023-2024 and 2024-2025, focusing on gender differences and students' self-perceptions of weight. The objectives of this project are threefold: (1) assess shifts in adiposity attitudes throughout the first year of medical school, (2) explore the role of gender in weight perception and (3) highlight the need for more support and resources for addressing body image issues in medical schools and clinical training. Our preliminary results indicate that after the MSK block, no student reported positive thoughts about dissecting an overweight donor. Additionally, 50% of students in both classes and dissection sections expressed negative thoughts about their own weight, with fewer than 10% reporting positive reflections on their weight post-MSK. The data also reveal consistent gender-based trends across both cohorts. These findings enhance our understanding of weight perceptions in the anatomy lab and underscore the importance of addressing weight bias in medical education.

Abstract #36
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-2

Secondhand smoker and laryngomalacia: exacerbation and surgical recovery

Michael Evans*, Brian Young, Gita Sikand, MD
***Presenting Author**

Introduction: Laryngomalacia, the most common cause of stridor in neonates, typically presents in the first weeks of life with variable severity. While often self-limiting, some cases progress, requiring surgical intervention. This report describes a neonate with progressive laryngomalacia exacerbated by environmental factors, emphasizing the need for early recognition, caregiver education, and multidisciplinary management. **Case Presentation:** A full-term neonate initially presented with feeding difficulties and mild respiratory symptoms during the first week of life. By 9 days old, the infant exhibited hypoxia, cyanosis, and failure to thrive, prompting evaluation in the emergency department. Flexible laryngoscopy confirmed a diagnosis of laryngomalacia, revealing an omega-shaped epiglottis and redundant supraglottic tissue. Conservative management was initiated, but the symptoms worsened after exposure to secondhand smoke, leading to severe stridor, hypoxia, and cyanotic episodes requiring urgent hospitalization. **Management and Outcome:** At 30 days old, after failing conservative measures, the patient underwent supraglottoplasty, which included trimming redundant supraglottic tissue. Postoperatively, the infant demonstrated marked improvement in breathing, feeding, and weight gain. The patient was discharged after five days of multidisciplinary care with continued outpatient follow-up. **Discussion:** This case highlights the impact of environmental irritants, such as secondhand smoke, in exacerbating laryngomalacia and underscores the importance of caregiver education in managing congenital airway conditions. Early diagnosis and individualized management are critical in preventing complications, and multidisciplinary care is essential for optimizing outcomes in severe cases.

Abstract #37
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

Appendiceal neuroendocrine tumor (NET): a case report

Philip Haynos*, David Cancelada, MD FACS
***Presenting Author**

Introduction: The rate of identifying appendiceal neuroendocrine tumors appear to be increasing. This case report discusses the presence of an unidentified neoplasm and further challenges the non-operative management approach to appendicitis with antibiotic therapy. **Case Summary:** The patient is a 45-year-old Caucasian female who presented to her primary care provider with vague low back and pelvic pain. Initial work-up included a renal stone CT protocol which was read as normal. The patient continued to have symptoms, and on a follow up exam, the patient's pain continued. A contrast CT scan of the abdomen and pelvis was performed which revealed a soft tissue thickening within the appendix. The patient also had a normal colonoscopy 1 month prior to her symptoms developing. A subsequent diagnostic laparoscopy was performed which revealed an abnormally appearing firm mass in the mid-body of the appendix. The patient recovered uneventfully and further work-up included an MRI of the liver which showed no evidence of occult disease. Ultimately, the patient underwent a right hemicolectomy due to the size and grade of the neoplasm. **Discussion:** Appendiceal neoplasms are rare as a primary neoplastic site, accounting for between 0.5 to 1 percent of all intestinal neoplasms. Neuroendocrine tumors can arise almost anywhere in the gastrointestinal tract with 16-38% of all gastrointestinal neuroendocrine tumors occurring in the appendix. The typical demographic for appendiceal NETs, is a female patient in her 4th to 5th decade of life. With the rise of the use of antibiotic therapy for non-operative management of appendicitis, there is not only a risk of recurrent disease, but also this case report demonstrates the danger of missing an appendiceal neoplasm. With an increase in the incidence of neuroendocrine tumors of the appendix, diagnostic laparoscopy with incidental appendectomy for vague lower abdominal pain that persists should be considered.

Abstract #38
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

Optimizing frontline therapy for classical hodgkin lymphoma: a mini-review of pet-directed chemotherapy, brentuximab-based regimens, and checkpoint inhibitor combinations

Vasisht Karri*, Christopher Reyes, Samir Dalia
*Presenting Author

Classical Hodgkin lymphoma (cHL) remains a highly curable malignancy, with recent advancements shifting treatment paradigms toward personalized, risk-adapted approaches. Traditional ABVD chemotherapy has been the mainstay, but emerging strategies such as PET-adapted therapy, brentuximab vedotin (BV)-based regimens, and immune checkpoint inhibitors (ICIs) like nivolumab (Nivo) are redefining frontline management. This study evaluates recent clinical trial data, including NIVAHL, BREACH, SWOG S1826, and ECHELON-1, to compare the efficacy, safety, and long-term outcomes of PET-adapted ABVD, BV-AVD, and Nivo-AVD in early unfavorable and advanced-stage cHL. Findings suggest that BV-AVD improves progression-free survival (PFS) over ABVD but increases neuropathy and hematologic toxicity, necessitating careful patient selection. The SWOG S1826 trial further demonstrated that Nivo-AVD outperforms BV-AVD in advanced-stage disease, offering superior efficacy with a more favorable safety profile. While PET-adapted ABVD remains a standard, de-escalation-focused strategy, ICIs present a transformative shift by enhancing anti-tumor immune responses while potentially reducing long-term toxicities such as pulmonary fibrosis and secondary malignancies. These findings reinforce the growing role of immunotherapy and biomarker-driven treatment stratification in cHL management. As treatment paradigms evolve, ongoing research should focus on optimizing patient selection, minimizing treatment-related morbidity, and integrating novel targeted therapies to improve survival outcomes while preserving quality of life. The continued refinement of frontline strategies will be critical in shaping a new era of Hodgkin lymphoma therapy, balancing cure rates with survivorship considerations in the modern oncology landscape.

Abstract #39
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

Global analysis of socioeconomic factors influencing intentional homicide rates in 227 countries.

Rae-Anne Kastle*, Shelby Baxter, Cuthbert Simpkins, MD, Michael Moncure, MD
***Presenting Author**

Trauma centers across the country are seeing returning trauma patients secondary to interpersonal violence. Socioeconomic determinates may influence the rates of violence with the goal of this study to examine this internationally. This study employed a retrograde systematic review across multiple government websites, including World Bank and The World Factbook, to investigate the relationship between economic and social factors to homicide rates across 227 countries. The economic factors include the rate of income inequality, Gini Index, unemployment rate, GDP per capita, criminality average, resilience average, inflation rate, education expenditure, poverty rate, population living under the extreme poverty line, and multidimensional poverty index (MPI). The social factors include household crowding, infant mortality rate, maternal mortality ratio, life evaluations of happiness, mental health quotient, civilian guns, birth rate, life expectancy at birth, suicide rates, and the human development index (HDI). A univariate Pearson Correlation analysis was performed for all independent variables with p-values <0.05 considered significant. A multivariate Pearson Correlation analysis with a Bonferroni Correction was performed for the economic and social factors and p-values <0.0045 were considered significant. On univariable analysis, the rate of income inequality, Gini index, unemployment rate, GDP per capita, resilience average, poverty rate, population living under the extreme poverty line, maternal mortality ratio, and HDI were statistically significant, whereas on multivariable analysis, rate of income inequality and Gini index were statistically significant with p-values of 0.001 and <0.0001, respectively. Rate of income inequality and Gini index had correlation coefficients of $r^2=0.407$ and $r^2=0.472$, respectively, showing weakly positive correlations to homicide rates. This indicates future studies should be aimed at determining why income inequality and Gini index are associated with homicide rates around the world. The insights obtained can be used to explain and prevent the rising levels of interpersonal violence that our hospitals are seeing today.

Abstract #40
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

A rare presentation of anti-NMDA receptor encephalitis with myasthenia gravis

Laura Richert*, Mark Jarosz, DO, Amanda Harrell, DO, Wade Weston
***Presenting Author**

Introduction: The clinical presentation of myasthenia gravis (MG) can include ptosis, difficulty swallowing, breathing, speaking, and generalized diminished strength. There is concern for malignancy, the most common being thymoma. Anti-NMDA receptor encephalitis presents with symptoms that mimic influenza and can progress to involve hallucinations and delirium, where one may be concerned for a psychiatric cause. About sixty percent have an associated tumor, a common one being ovarian teratoma.

Case Presentation: A 59-year-old female presented to the emergency room with nausea, vomiting, diarrhea, headaches, neck pain, and dizziness. Labs showed WBC 14.4 with a left shift. She was symptomatically treated and discharged, but returned the following day in respiratory acidosis with weakness and altered mental status. Chest radiograph, CTA, and MRI showed no specific finding, but EEG demonstrated possible encephalopathy and WBC increased to 26.0. Initially she refused lumbar puncture and was placed on broad spectrum antibiotics, but eventually agreed to have one performed. Findings were concerning for bacterial meningitis, but cultures were negative. Additional serology showed positive acetylcholine receptor antibodies and positive anti-NMDA receptor antibodies. Imaging showed no evidence of malignancy. She was transferred to a tertiary center for further workup, then discharged to rehab.

Discussion: Current publications have shown the cooccurrence of autoimmune encephalitis and myasthenia gravis. Fifteen similar cases had cooccurrences of VGKC antibodies, AMPA antibodies, Hu antibodies, or CRMP5 antibodies. Myasthenia gravis and anti-NMDA receptor encephalitis was rarer. One case report involved the presence of anti-AMPA and anti-NMDA receptor antibodies with ocular myasthenia gravis. It is currently unknown why one autoimmune disease predisposes the development of another.

Conclusion: This case demonstrates that concurrent autoimmune diseases may delay recovery from illness and shows how underlying diseases affect the presenting illness.

Abstract #41
Program: Osteopathic Medicine
Category: Basic Science

Poster Session: J-2

The Role of Pregnane X Receptor Activity in Chemoresistance of Breast Cancer Cell Line

Yasmeen Sawalha*, Brendan Lamboglia, Jack Hemsath, Dan Brobst, MS, Bradley Creamer, PhD, Jeff Staudinger, PhD

***Presenting Author**

Abstract

The Pregnane X Receptor (PXR, NR1I2) is a nuclear receptor that functions as a ligand-activated transcription factor, regulating genes involved in drug metabolism and transport. This study investigates the expression and activity of PXR in the T47D breast cancer cell line (HER2-negative). Western blot analysis confirmed the presence of endogenous PXR protein in T47D cells. Using a luciferase reporter assay (XREM-LUC) and transient transfection techniques, we assessed PXR activation in response to known ligands, rifampicin and SR12813. Real-time quantitative PCR (RT-qPCR) analysis demonstrated that activation of endogenous PXR led to increased expression of its canonical target gene, CYP3A4, as well as UGT1A1, an enzyme involved in drug metabolism. These findings suggest that PXR plays a role in regulating detoxification pathways in breast cancer cells. Future studies will further elucidate PXR's impact on treatment efficacy and its potential as a therapeutic target in breast cancer.

Abstract #42
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

Sustained remission in a patient with more than 30 years of comorbid severe alcohol, cocaine, methamphetamine and opioid use disorders - A case report to help counter therapeutic pessimism.

Rayhan Shaikh*, Niki Gharavi, Walee Baig, Farell Mahmud, Lakshminarayana Chekuri MD, PhD, Nauman Ashraf MD

***Presenting Author**

This case report describes a middle-aged Caucasian male from a Midwestern city who has been receiving mental health care services at our clinic for more than 14 years. Patient reported he first started misusing alcohol when he was 12 years old. First reported use of cocaine at age 20 and opiates (heroin and oxycodone) at age 21 and methamphetamine at age 30. Patient reported he was using alcohol “every day for 30 years”. “I was drinking very heavily in my mid-30’s... (Initially) I did not go see any doctor at all -- only drink. I'd have a bottle of whiskey next to my bed then. I was in a pretty dark place, no friends, no family, no money, no place to live. Heroin took everything from me. Alcohol was the hardest for me to quit, whiskey especially. Much harder to quit (alcohol) than Heroin. Meth was not a really bad problem for me.” Patient reports he eventually quit using methamphetamine, cocaine and opiates at age 30 and alcohol at age 47 and is in a sustained remission currently. Patient now has a stable job, raising his son and paying his taxes. Health care providers’ pessimism towards chronic mental illnesses such as alcohol and substance use disorders poses a significant challenge in patient recovery. Education and contact-based interventions show promise in addressing such therapeutic pessimism. This case report contradicts therapeutic pessimism as it illustrates recovery is possible even after decades of chronic use. Clinical evidence highlighting successful long-term recovery can help counteract stigma and therapeutic pessimism, ultimately fostering empathetic and optimistic care for individuals with alcohol and substance use disorders.

Abstract #43
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

Anatomic variations in the origin of the superior and inferior vesical arteries: a cadaveric study

Morgan Stewart MS*, Jenna Watts, Forrest Dunivin, Melissa Zolnierz PhD
***Presenting Author**

Introduction: The superior and inferior vesical arteries are essential components of the vascular supply to the urinary bladder. However, significant anatomic variations exist in their origin and branching patterns. This cadaveric study examined these variations in male and female donors to enhance the understanding of pelvic vasculature and its clinical implications. Knowledge of these variations is crucial for urologic and gynecologic surgeries, as well as interventional radiology procedures. **Methods:** Routine anatomical dissection of the pelvic region in 28 hemisected cadavers (n = 56 pelvic sides) from Kansas City University was performed. The internal iliac artery was isolated and further dissected to reveal its terminal branches. The superior and inferior vesical arteries were traced to their bladder insertion. Data recorded included the number of branches, the artery of origin, cadaver sex, and laterality. **Results:** While the superior vesical artery predominantly arose from the umbilical artery, the inferior vesical artery showed greater variability, particularly in females. Additionally, the data revealed that there is no statistically significant difference in the presence of the inferior vesical artery between genders. **Discussion:** The findings of this study have strong clinical and academic significance and can be used to enhance the knowledge required of surgeons performing a myriad of pelvic procedures. Anticipating vascular variations may improve patient outcomes by decreasing the risk of bleeding and preserving blood flow to the bladder and surrounding organs during pelvic surgery. **Conclusion:** This study provides valuable insights into the anatomical variations of the superior and inferior vesical arteries. Recognizing these variations is essential for improving surgical and interventional outcomes. Future studies with larger sample sizes may further elucidate these patterns and their clinical implications.

Abstract #44
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

Exploring the quantitative anatomic variations in the gastroduodenal artery branching angle and diameter: a cadaveric study

Jenna Watts*, Morgan Stewart MS, Cameron Smith MS, Vincent Schmidt MS, Simran Aulakh, Julia Kirkland MS, Forrest Dunivin, Melissa Zolnierz PhD

***Presenting Author**

Introduction: The gastroduodenal artery(GDA) is a major vascular supply to the upper gastrointestinal tract. Its origin from the hepatic artery is nearly universal; however, there are variations in the branching angle and diameter that must be considered when preparing for GI surgeries. Without understanding and anticipating these variations, surgeons risk hemodynamic instability and intraoperative complications. **Methods:** Dissection was performed on 28 formalin-embalmed cadavers (11 males, 17 females) from Kansas City University to expose the GDA and its origin from the common hepatic artery. The branching angle and diameter were photographed, and digital imaging software was used to obtain precise measurements. **Results:** Males exhibited a smaller GDA branching angle compared to females, with a mean angle of $95.83 \pm 23.79^\circ$ in males and $119.51 \pm 17.75^\circ$ in females. Men were found to have a larger GDA diameter than females, with a mean diameter of 5.67 ± 2.57 mm in males and a mean diameter of 3.17 ± 0.70 mm in females. These differences in mean GDA branching angle and diameter between males and females were statistically significant with a p-value < 0.05 . **Discussion:** These findings may assist interventional radiologists in selecting appropriate catheter sizes and angles to facilitate optimal navigation during embolization procedures. Additionally, awareness of these variations may help guide surgical decision-making to minimize the risk of hemodynamic complications. **Conclusion:** This study highlights the differences in GDA anatomy between males and females. Understanding these variations could have implications in many radiological and surgical procedures to reduce complications. Further studies with a larger sample size should be conducted to validate these findings and assess their clinical significance.

Abstract #45
Program: Osteopathic Medicine
Category: Basic Science

Poster Session: J-1

Countermovement jump testing as a predictor of neuromuscular fatigue and injury risk in baseball athletes

Shantanu Amin*
***Presenting Author**

Background: Injury prevention is a critical concern in baseball, where upper extremity overuse injuries and lower extremity imbalances are common among pitchers and position players. Traditional workload monitoring relies on subjective measures (e.g., pitch counts, self-reported fatigue) and biomechanical assessments, which can be resource-intensive and lack real-time applicability. Countermovement jump (CMJ) testing offers a non-invasive, objective measure of neuromuscular function, lower-body power, and fatigue accumulation, potentially as an early indicator of injury risk. This study aims to evaluate CMJ trends in collegiate baseball athletes and their correlation with neuromuscular fatigue (NMF), injury incidence, and pitching performance.

Methods: A prospective cohort study will be conducted with collegiate baseball athletes, who will undergo preseason CMJ testing using a force plate to assess jump height, peak power, and ground reaction forces. Throughout the season, biweekly CMJ assessments will track fatigue-related declines, and injury occurrence will be recorded via athletic training reports. Multivariate regression analysis will evaluate correlations between CMJ trends, workload, and injury incidence, controlling for position-specific demands (e.g., pitchers vs. field players).

Results (Expected): We hypothesize that significant progressive CMJ declines will correlate with increased injury rates, particularly in pitchers experiencing upper extremity overuse injuries (UCL tears, rotator cuff strains) and position players with hamstring or ACL strains. Athletes maintaining stable CMJ performance are expected to demonstrate lower NMF, reduced injury risk, and greater performance consistency.

Conclusion: If validated, CMJ testing with force plates could be integrated into routine sports medicine evaluations to optimize injury prevention strategies, workload management, and rehabilitation protocols. By providing a quantifiable metric for neuromuscular fatigue, CMJ may allow physicians and coaches to detect early signs of biomechanical inefficiencies, mitigating overuse injuries in baseball players. Future research should explore longitudinal CMJ tracking and integration with wearable technology to refine predictive injury models and enhance sports injury prevention.

Abstract #46
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

Impacts of pneumonia and chronic obstructive pulmonary disease on length of hospital stay: a retrospective analysis of a southwest missouri population

Simran Anis*, Amolika Saini, Andrew Farrell, Nikhil Jacob, Mariam Akhtar, M.D., Nova Beyersdorfer, Kerry Johnson, EdD, John Paulson, DO, PhD

***Presenting Author**

Pneumonia is a lung infection caused by various organisms which leads to fluid accumulation in the alveoli and the rise of symptoms like dyspnea, cough, fever and chills. Chronic Obstructive Pulmonary Disease (COPD) is a group of inflammatory diseases that include emphysema and chronic bronchitis, both of which make it difficult for patients to expel air out of their lungs. The purpose of our study was to compare the proportion of extended hospital stays with a length of stay (LOS) ≥ 6 days between pneumonia patients who either have or do not have COPD and the proportion of extended hospital stays in patients with COPD but without pneumonia. We collected data from electronic medical records at Freeman Health System which included patients from Joplin and Neosho, Missouri and comprised of adults ≥ 18 years old (discharged between January 1, 2019, and December 31, 2022) who were divided into populations based on their diagnosis of pneumonia and/or COPD. Results revealed that while there was a significant difference in the proportion of extended hospital stays between patients with both pneumonia and COPD compared to those with pneumonia but without COPD, that difference was small. Findings suggest that pneumonia was the main factor driving up the percentage of patients with extended LOS, irrespective of having a comorbidity of COPD. In conclusion, this study can be used to help clinicians optimize their treatment to reduce how long patients with pneumonia must be admitted to the hospital while also opening the door for future studies to analyze how other comorbidities can affect LOS in patients with pneumonia.

Abstract #47
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

The effect of pneumonia and hypothyroidism on extended hospital stay percentage in a midwestern cohort

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***Presenting Author**

Introduction: Both pneumonia and hypothyroidism are associated with increased morbidity and mortality. Our study investigates the effect of pneumonia and hypothyroidism on the percentage of patients with an extended length of stay (ELOS), defined as at least 6 days in the hospital, in a patient population from a Southwestern Missouri hospital system. **Methods:** A retrospective observational cohort study was performed utilizing the electronic medical records of patients in the Freeman Health System. The patients were grouped by their ICD-10 code into groups with pneumonia and hypothyroidism (PXG), those with pneumonia but without hypothyroidism (POG), and those with only hypothyroidism with no pneumonia (OXG). The length of stay (LOS) of these groups was analyzed using Wald's method and two sample proportion summary hypothesis tests with confidence intervals for the proportional difference. **Results:** The PXG population had the highest percentage of patients with extended hospital stays at 57.75%. This metric was significantly higher than the percentage of ELOS of POG (53.16%) or OXG patients (32.17%). A gender analysis and age analysis revealed the same trend amongst male and females and younger and elderly (>65) patients. OXG male patients compared to female patients and OXG elderly patients compared to younger patients both separately showed a significantly higher percentage of ELOS, although the differences could be as small as 3.32% and 2.51%, respectively [95% CI 3.32% to 9.74%, $p=0.0001$; and 2.51% to 8.67%, $p=0.0005$]. **Conclusion:** Pneumonia had the greatest effect on the percentage of patients with ELOS compared to hypothyroidism, with hypothyroidism having a smaller and potentially a very small effect on overall LOS in our rural Southwestern Missouri patient cohort.

Abstract #48
Program: Osteopathic Medicine
Category: Medical Education

Poster Session: J-1

Assessing Rural Guatemalan Populations Perceptions of Osteopathic Medicine with Treating Low Back Pain with Osteopathic Manipulative Treatment

Monica Aspra Rubi*, Grace Cooper, Ambrose Loc Ngo
***Presenting Author**

Kansas City University has been conducting outreach in Guatemala for 20 years. Many communities lack access to essential medications for low back pain; this situation presents an opportunity to evaluate the effectiveness of osteopathic treatment and to assess the Guatemalan population's understanding of its benefits. Hence we want to investigate what is Guatemalan's perception of osteopathic manipulation for low back pain. Following data collection at the most recent trip on Feb 2025. We surveyed 8 patients using the Oswestry Low Back Pain Disability Questionnaire, the gold standard for assessing low back pain, along with a modified Patient Satisfaction Questionnaire (PSQ 18) and a Visual Analog Scale for Satisfaction (VASS). A modified OSTEOSURV-I was also administered in Spanish, with a translator available if needed. Participants will receive osteopathic treatment for their lower back pain after completing the surveys. This cross-sectional study aims to analyze the relationship between disability levels, patient satisfaction and reported outcomes. The surveys demonstrate that from the 50 people who came to clinic and the 8 that were surveyed have a positive understanding of osteopathic medicine.

Abstract #49
Program: Osteopathic Medicine
Category: Medical Education

Poster Session: J-1

Anatomy in Contemporary Medical Education: A Cross-Sectional Study of Its Perceived Importance in Healthcare

Simran Aulakh*, Dr. Robert Hillard, M.D., Dr. Katie Kilmer, PhD, Dr. Farida Mehrhoff, M.D., Dr. Alla Barry M.D., Dhvani Patel

***Presenting Author**

Anatomy (ANAT) has been a cornerstone of medical education (ME) for centuries. However, with the shift toward integrated curricula, foundational subjects like ANAT have seen a decline in dedicated coursework. Reduced instructional hours, diminished cadaver dissection time, and increased reliance on virtual learning raise an important question: Has the significance of anatomical knowledge (AK) diminished in the era of instant information? This study investigates the perceived value of ANAT among current and future healthcare providers. A cross-sectional survey (n=235) assessed AK's relevance in medical practice, adequacy of current AK, and prior premedical ANAT education. Likert-scale questions (1-not important to 5-very important) evaluated the role of AK in various clinical activities. Data were analyzed using Mann-Whitney tests and Pearson correlations ($\alpha=0.05$). Respondents rated AK as most essential for surgical procedures (4.74 ± 0.66), medical imaging interpretation (4.65 ± 0.64), and physical examinations (4.56 ± 0.58). However, medical students rated AK lower than their peers in other disciplines and practicing professionals. Strong correlations were found between AK importance and factors such as perceived adequacy of knowledge ($p=0.00081$), appreciation for dissection in ME ($p<0.0001$), and human dissection experience in premedical education (PME; $p=0.0352$). While results reinforce the critical role of AK, 7.3% of respondents (exclusively students) did not view AK as essential in surgery, highlighting a disconnect between anatomical education and its practical application. Greater exposure to cadaveric dissection in PME increased appreciation for AK, emphasizing the value of hands-on learning. Findings reaffirm ANAT's importance in healthcare education but highlight the need for enhanced ANAT instruction. Strengthening PME and integrating more hands-on cadaveric training may improve engagement, ensuring students recognize AK's clinical significance.

Abstract #50
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

A retrospective analysis of extended hospital stays in patients with pneumonia and diabetic comorbidities in a rural midwestern area

Max Balla*, Shlok Rathi, Abbigail Niewchas, Brendan Lamboglia, Miriam Akhtar, MD, Nova Beyersdorfer, Kerry Johnson, EdD, John Paulson

***Presenting Author**

Pneumonia is one of the leading causes of hospitalization in the United States, resulting in millions of hospitalizations and deaths per year. Diabetes is an often-concurrent diagnosis that also affects a large population. With 101,209 deaths in 2022, it was the 8th leading cause of death at that time [2]. There is little research regarding the relationship between diabetes and the length of stay for patients hospitalized with pneumonia. This retrospective study aims to analyze whether the presence of Diabetes Mellitus in patients diagnosed with Pneumonia increases the length of stay. Electronic medical records (EMR) from Freeman Health System in southwest Missouri were utilized to analyze this relationship. Results of this study demonstrated that, in patients diagnosed with diabetes (Type I or Type II), pneumonia, or a combination of diabetes and pneumonia, pneumonia is the strongest predictor for a hospital stay > 6 days. Further analysis looking at age and gender supported this finding, with pneumonia serving as the dominant factor in patients with hospital stays > 6 days duration. While there was no difference in proportion of increased length of stay between age groups for combined pneumonia and diabetes, patients 65 years old and above had a larger proportion of extended length of stay compared to patients under 65 years old for both just pneumonia and just diabetes individually.

Abstract #51
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

Correlation of physical inactivity and rates of suicide in Missouri

Cameron Ballard*, Adam Youssef, Dryden Dalbey, Hannah Conner
***Presenting Author**

Background: Suicide rates in Missouri have increased in the past 20 years, and suicide is the 10th most common leading cause of death in the state. Physical activity is associated with mental and physical health, mood regulation, and social isolation. This study investigated the association of physical inactivity and suicide. Because of the complex nature of suicide, this study examined the interactions of median household income and education. **Methods:** Aggregate data was collected for all 115 counties (including St. Louis City) in Missouri. Physical inactivity in 2022 (proportion of population reporting no physical activity) were gathered from CDC PLACES, 2022 suicide rates per 100,000 people were gathered from the National Center for Health Statistics, and median household income (in U.S. dollars) and educational attainment (proportion of adults aged 25 years or older with some college education or an associate's degree) were gathered from the U.S. Census Bureau. The correlation between physical inactivity and suicide at the county level was calculated, and regression was used to determine if physical inactivity predicted the rate of suicide after controlling for income and education. **Results:** The mean physical inactivity level was 28.0% (SD: 3.1, range 20.9% to 37.6%), and the mean suicide rate was 22 suicides per 100,000 people (SD:6, range 12 to 29). 'No physical activity' was positively correlated with suicide rates ($p < 0.01$) and explained an estimated 6.6% of suicide rates in Missouri counties ($p < 0.01$). After controlling for income and education, this association was no longer significant ($p = 0.9$). **Conclusion:** Based on this analysis, physical inactivity has a small association with suicide rate among Missouri counties in 2022. The effects of suicide are multi-factorial and future studies could explore impacts of other social drivers of health on suicide in Missouri.

Abstract #52
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

Analysis of Hospitalists Sleep Health and Wellbeing

Kaitlin Barnes*, Rhea Mahesh, Dr. Anya L. Koza, DO, Sophia Perrotta, Dr. Nancy Stewart, DO
***Presenting Author**

Introduction: Sleep hygiene plays a crucial role in overall health, cognitive function, and job performance, particularly for in-hospital physicians who often face demanding schedules and irregular work hours. Poor sleep habits may contribute to fatigue, impaired decision-making, decreased productivity, increased risk of burnout, affecting both physician well-being and patient care. Understanding and addressing these challenges is essential for promoting better sleep quality and overall health particularly for in-hospital physicians. The objective of this study is to evaluate the sleep hygiene and well-being of in-hospital physicians utilizing validated sleep questionnaire and demographic data. **Methods:** A self-selection online survey for hospitalists was distributed to ten institutions across the United States via email for a duration of eight days. Additionally, participants were given the option to register for incentive drawings following survey completion. The survey consisted of five well-being questions aimed at assessing sleep-related behaviors and perceptions of sleep quality. These questions included the use of sleep aid medications or substances such as alcohol or marijuana to aid sleep. Respondents also reported their average nightly sleep duration and comfortability with the amount of sleep typically received. Additionally, we included the thirteen standardized questions from the Sleep Hygiene Index. **Results:** Ninety hospitalists at academic and community hospitals across the country responded. Almost half of respondents (42%, n=38) were in the Midwest. Less than one quarter of respondents (n=21, 23%) reported receiving adequate sleep (>7 hours). Half of respondents (n=45, 50%) reported being comfortable with their reported sleep duration. Nearly half of respondents (40%, n=36) participated in stimulating activities prior to bed. Additionally, two thirds of respondents (66.5%, n=61) noted worrying while in bed. **Conclusion:** The findings highlight significantly impaired sleep health and hygiene among in-hospital physicians. Further research is needed to bridge the sleep health gap amongst our in-hospital physician workforce.

Abstract #53
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-2

Spontaneous Iliopsoas Tendon Rupture

Kaitlin Barnes*, Cierra Hall, Dr. Mark Jarosz, Dr. Clint Dunkle, DO
***Presenting Author**

Introduction: Iliopsoas tendon rupture is a rare clinical diagnosis that usually occurs secondary to trauma; however, they can also occur spontaneously. This case report describes an 81-year-old woman who presented with a spontaneous iliopsoas tendon rupture. We discuss the specific diagnostics, rarity in reported cases, and the importance of considering spontaneous iliopsoas tendon rupture in elderly patients with acute hip or groin pain. **Case Presentation:** This patient is an 81-year-old woman with a past medical history of hyperlipidemia, allergic rhinitis, osteoarthritis, and a thyroid nodule with a former smoking history. She presented as a direct admission from her orthopedic surgeon for evaluation of a possible pelvic abscess. The patient underwent an MRI of the hip with contrast, which revealed a partial tear of the right iliopsoas muscle and rupture of the distal iliopsoas tendon within the inguinal region, with approximately 3 cm of retraction from the lesser trochanter. Additionally, the MRI showed minimal interstitial edema and hematoma in the right inguinal region. **Discussion:** Iliopsoas tendon ruptures are most commonly seen in younger athletes, making spontaneous rupture rare, particularly in elderly patients. Overall, iliopsoas tendon injuries are extremely uncommon, with an estimated prevalence of 0.66% in elderly patients. Spontaneous tendon ruptures have been associated with chronic degenerative changes, systemic inflammatory conditions, prolonged corticosteroid use, and underlying connective tissue disorders. However, in this case, the patient had no prior risk factors or inciting event, making this case unique. **Conclusion:** This case contributes to the limited literature on spontaneous iliopsoas tendon rupture, reinforcing the need for clinicians to consider this diagnosis in elderly patients with acute hip or groin pain, even in the absence of trauma.

Abstract #54
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

Association between renal failure, pneumonia, and hospital length of stay: a retrospective study analysis

Kaleb Barr*, Jesse Friday, Brandon Chow, Joseph Williams, Dr. Robert Arnce, Kerry Johnson, Nova Beyersdorfer, Dr. James Hearn

***Presenting Author**

This study explores the relationship between pneumonia and renal disease and its association with length of stay (LOS) for patients in the inpatient hospital setting. The analysis compares populations with chronic kidney disease (CKD), acute kidney injury (AKI), and those without either condition regarding their respective impacts on LOS when coinfecting with pneumonia. Results indicate significantly higher percentages of extended LOS in patients with both pneumonia and renal comorbidities (PXG and PYG groups) compared to those with renal failure or pneumonia without the other. Specifically, the PYG group (pneumonia with AKI) had the highest proportion of extended stays (95% CI: 0.6433–0.6984), followed by the PXG group (pneumonia with CKD) at 95% CI: 0.5858–0.6458. Comparisons between groups revealed significant differences, though some were small in magnitude.

Abstract #55
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

How Physician Physical Activity Influences Confidence and Frequency of Exercise Counseling Among Patients

Shelby Baxter*, Meghan Baruth
*Presenting Author

Physical activity (PA) counseling among physicians is a crucial part of preventative medicine, but physicians often tend to counsel their patients inconsistently due to a multitude of barriers. This study aims to explore if physician PA levels influence their confidence and frequency of PA counseling among their patients. Data was collected from an “Exercise is Medicine Implementation: Needs Assessment” survey in Michigan. The survey included 60 physicians (13 MDs, 47 DOs) who had been practicing for 3.4 ± 3.2 years. Key independent variables included physician PA levels, years practiced, medical training (DO vs. MD), whether the physician knew current PA guidelines, and whether PA education was covered in medical school. Dependent variables included confidence in prescribing PA and if the physician prescribed PA. Univariate analysis, including Pearson correlation & t-test, were performed using SPSS with a statistical significance of p -values < 0.05 . The mean age of physicians was 30.9 ± 5.7 with a mean BMI of 26.0 ± 5.2 . Results showed that 48.3% of physicians met PA recommendations, 36.7% prescribed PA to their patients, and 15% reported exercise prescription being covered in medical school; mean confidence in prescribing PA to patients was 3.4 ± 0.8 . The univariate analyses demonstrated physicians who met PA requirements had significantly higher confidence in their ability to prescribe PA ($p=0.049$) and were more likely to prescribe PA to their patients ($p=0.046$). Physicians who had practiced longer also were more likely to prescribe PA ($p=0.035$). There was a trend for physicians who received education on PA prescription in medical school to be more confident in prescribing PA ($p=0.068$). Physicians who met PA recommendations were more likely to prescribe PA and had increased confidence in doing so, suggesting the importance of physician lifestyle in shaping patient counseling on PA. Therefore, encouraging physicians to become more physically active may influence their role in preventative medicine for their patients.

Abstract #57
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

Hereditary hemorrhagic telangiectasia presenting with recurrent hyperammonemic encephalopathy: a case report

Alexis Black*, Rebecca Centeno, Michael Weaver
*Presenting Author

Background: Hereditary hemorrhagic telangiectasia (HHT), also known as Osler-Weber-Rendu syndrome, is a rare autosomal dominant vascular disorder characterized by arteriovenous malformations (AVMs) affecting multiple organ systems, including the liver. While epistaxis, mucocutaneous telangiectasias, and gastrointestinal bleeding are the most common manifestations, hepatic AVMs can lead to complications such as high-output cardiac failure, portal hypertension, and hepatic encephalopathy. Hepatic encephalopathy in HHT is an underrecognized yet potentially life-threatening complication resulting from portosystemic shunting. Case Summary: A 77-year-old man with a history of HHT, recurrent gastrointestinal bleeding, congestive heart failure, atrial fibrillation, and chronic kidney disease presented to the emergency department with confusion, lethargy, and agitation. On admission, he exhibited altered mental status and asterixis. Laboratory tests revealed a markedly elevated ammonia level of 128 $\mu\text{mol/L}$ (reference range: 9-33 $\mu\text{mol/L}$). He was diagnosed with grade III hepatic encephalopathy and treated with lactulose and rifaximin to lower ammonia levels, while furosemide was administered for heart failure management. His mental status improved, and he was discharged. However, ten days later, he was readmitted with worsening confusion and recurrent gastrointestinal bleeding due to multiple AVMs. Despite endoscopic intervention and medical management, his neurological status deteriorated, and he ultimately passed away nine days after admission. Conclusion: This case highlights hepatic encephalopathy as a severe complication of HHT and emphasizes the importance of early recognition and management. Physicians should maintain a high index of suspicion for hepatic involvement in HHT patients presenting with unexplained neurocognitive symptoms. Prompt treatment with lactulose and rifaximin is essential, though recurrent gastrointestinal bleeding may complicate management and worsen outcomes.

Abstract #58
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

The impact of insurance coverage on GLP-1 prescription, usage, and refill decisions.

Jayanjali Bodavula*, Sanjana Arji, Meghana Mettu
*Presenting Author

Background: Glucagon-like peptide-1 receptor agonists (GLP-1) are currently approved for managing type 2 diabetes mellitus and supplementing weight loss, but insurance coverage may play a crucial role in determining access, prescription patterns, and patient adherence. Cost and social determinants of health (SDOH) may further limit availability, particularly in rural communities. This study examines the variations in GLP-1 prescription, use, and refill behavior based on insurance coverage. **Methods:** A survey was administered in a Community Clinic and Freeman Hospital Clinics in Joplin and Neosho, Missouri. Participants (n= 18, 8 participants had insurance coverage, 10 participants did not have insurance coverage) were eligible if they were currently taking a GLP-1 agonist. The survey collected demographic information, insurance status, and data on GLP-1 prescription patterns, prescribing providers, cost-related decisions, and patient adherence. A chi-squared analysis was conducted to evaluate the relationship between insurance coverage and multiple variables, including the specific GLP-1 prescribed, reasons for use, and refill decisions. Statistical significance was identified as a p-value < 0.05. **Results:** Significant correlations were found between insurance coverage and the type of GLP-1 prescribed (p = 0.0083), reasons for GLP-1 use (p = 0.0104), and insurance influence on refill decisions (p = 0.0438). However, no significant associations were observed between insurance coverage and willingness to refill if affordable (p = 0.2444) or suggested alternative treatments (p = 0.8668). **Conclusion:** Statistically significant differences were found between insured and uninsured patients regarding which GLP-1 they were prescribed, the reasons for their prescription, and their willingness to refill. In rural communities, where cost and SDOH further limit access, these disparities highlight the critical role of insurance in clinical prescribing patterns. Addressing these barriers through policy interventions could improve accessibility and healthcare outcomes. Further research is needed to guide providers and policymakers in developing strategies for more equitable GLP-1 access.

Abstract #59
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

Students' Self-Reported Intake of Various Sources of Caffeine and Its Relationship to General Health and Self-Control

Theodora Brebenel*, Sanjana Arji, Brandon Shin, Scott Pusateri
***Presenting Author**

Background: Caffeine is a stimulant consumed by 88% of US medical students to enhance efficiency and cognitive function, yet it is also linked to side effects including anxiety and withdrawal symptoms. Caffeine products from various sources, such as coffee, tea, and energy drinks, are widely consumed. However, whether caffeine sources can impact lifestyle decisions and performance differently, especially in highly reliant populations such as medical students, is not well understood. This study aims to investigate if there are differences in students' overall perceived health and behaviors exist based on caffeine intake habits. **Methods:** Surveys were administered to first- to fifth-year medical students at Kansas City University College of Osteopathic Medicine about topics such as caffeine consumption (i.e., source and frequency), general health (i.e., anxiety and depression diagnoses), lifestyle habits (i.e., drug use, diet), and engagement in maladaptive practices (i.e., sleep hygiene, nutrition, distractibility, etc.). Statistical tests on the 129 collected responses were done using R Studio to evaluate statistical significance ($p < 0.05$) between various demographics and health parameters. **Results:** Coffee consumers tended to consume more alcohol than those who did not ($p = 0.0176$). Furthermore, those who reported drinking coffee, tea, and energy drinks had more diagnoses for anxiety or depression compared to those who drank no caffeine ($p=0.0389$). Tea drinkers also had fewer anxiety or depression diagnoses compared to those who did not drink tea ($p=0.02075$). No other significant differences were found when comparing caffeine source and frequency to other assessed lifestyle habits and maladaptive behaviors. **Conclusion:** Results from the survey suggest that caffeine source and consumption habits may contribute to variations in health parameters such as anxiety/depression and alcohol use among medical students. However, more research is warranted to determine whether these findings are representative of students in other academic settings.

Abstract #60
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

Beyond treatment resistance: a study in morbid depression

Rebecca Natalie Centeno*, Alexis Black, Christopher Hagerman, Jeffrey Bradley
***Presenting Author**

Background: Major Depressive Disorder (MDD) is a leading cause of disability worldwide, affecting approximately 8% of American adults annually. While psychotherapy and pharmacotherapy are first-line treatments, some patients develop treatment-resistant depression (TRD), defined as an inadequate response to at least two antidepressants from different pharmacologic classes. In severe cases, TRD can lead to profound functional impairment and life-threatening medical complications. Alternative interventions—such as electroconvulsive therapy (ECT), ketamine, psychostimulants, and tricyclic antidepressants—may be necessary in such instances. **Case summary:** We present the case of a 55-year-old woman with no prior psychiatric history who was hospitalized for severe depression with psychotic features and persistent food refusal. Despite multiple medication trials, her condition deteriorated, necessitating involuntary hospitalization, nasogastric feedings, and extensive medical intervention. The patient developed significant complications, including severe malnutrition, pulmonary embolism, sacral decubitus ulcer formation, and neurological impairment. Treatment efforts included but were not limited to trials of paliperidone, venlafaxine, brexpiprazole, bupropion, imipramine, and methylphenidate. Although IV ketamine therapy initially provided modest improvement, her severe depressive symptoms persisted. As her condition worsened, aggressive medical interventions—including total parenteral nutrition and surgical wound debridement—became necessary. After months of intensive multidisciplinary care, a combination of pharmacologic and rehabilitative treatments led to a gradual yet significant recovery. On day 190 of hospitalization, the patient was discharged after regaining independent ambulation and functional capacity, demonstrating the potential for recovery even in severe cases of TRD. **Conclusion:** This case highlights the complexity and severe medical and psychiatric sequelae of TRD, emphasizing the necessity of a multidisciplinary approach. Comprehensive medical stabilization, individualized psychopharmacologic strategies, and rehabilitative support are crucial in managing severe cases. Despite a prolonged and complicated illness course, this patient's recovery illustrates the importance of persistence and individualized treatment strategies in TRD management.

Abstract #61
Program: Osteopathic Medicine
Category: Medical Education

Poster Session: J-2

Realistic Spinal Visualization: Advancing orthopedic and musculoskeletal learning through 3D printing

Yu Wei Chang*, Brandon Chow , Jared Nichols, DO
*Presenting Author

The human vertebral column comprises of 33 vertebrae that are essential for support, protection, mobility, shock absorption, and muscle attachment, all of which are critical for maintaining physical function and the integrity of the nervous system. Pathologies such as abnormal curvatures and degenerative changes can significantly impair these functions, leading to pain, reduced mobility, and neurological deficits, which are particularly relevant in the field of orthopedics. Given the worldwide prevalence of musculoskeletal issues related to the spine, our research team explores innovative educational modalities for the spine using physical learning models. Commercially-sold models often present idealized representations that overlook the natural variations and pathologies crucial for comprehensive spinal study. Additionally, high-quality models and cadaveric dissections can be prohibitively expensive and impractical for many educational institutions. Therefore, this study investigates the conversion of vertebral CT scans into three-dimensional (3D) printed learning models as a cost-effective and realistic alternative for enhancing medical and anatomical curricula. By utilizing affordable 3D printers and free software, we aim to create anatomically accurate models that reflect both healthy and pathological spinal cases. We hypothesize that these realistic models will facilitate a deeper understanding of spinal anatomy, enhance spatial reasoning skills, and improve radiological diagnostic capabilities among students. This research provides a framework for integrating accessible, hands-on learning experiences into graduate and undergraduate education, ultimately fostering a more comprehensive understanding of spinal health and pathology.

Abstract #62
Program: Osteopathic Medicine
Category: Medical Education

Poster Session: J-1

3D-printed palpatory models for osteopathic training: a tactile training device for rotational spinal somatic dysfunction

Yu Wei Chang*, Brandon Chow, Anran Lu, Jared Nichols, DO
***Presenting Author**

Identifying and addressing spinal somatic dysfunctions is crucial for the osteopathic treatment of musculoskeletal back pain and associated viscerosomatic reflexes. The recognition of these dysfunctions relies heavily on the practitioner's palpatory skills, which are essential for accurately identifying somatic dysfunctions and applying osteopathic techniques. A fundamental skill in managing thoracolumbar complaints through osteopathic manipulative medicine (OMM) is the ability to locate and evaluate the articular rotation of the transverse processes of the spine—a skill that can be challenging for novice osteopathic learners. Additionally, the lack of available patients for practice further hinders the development of these skills. To address this gap, our study focuses on the creation of an affordable, modular practice device utilizing three-dimensional (3D) printing and synthetic skin. This device is aimed at helping osteopathic students develop their tactile sensitivity to varying degrees of spinal rotation somatic dysfunctions. Our model allows students to differentiate between normal and restricted transverse processes, quantified by deviations in rotational angle and length of posterior transverse process (PTP) protrusion. Through repeated training with quantified levels of dysfunctional rotation, students can cultivate greater diagnostic intuition when conducting structural examinations on actual patients. We have confirmed that users can construct Fryette Type I models of musculoskeletal dysfunctions with this device. We anticipate students can utilize this tool to learn how to differentiate transverse processes from other structures of the spine, identify the PTP, and identify restricted movement directionality.

Abstract #63
Program: Osteopathic Medicine
Category: Quality Improvement

Poster Session: J-1

The analysis of hospice trends in the united states in 2020 among medicare beneficiaries

Cortland Brown*, Noor Chughtai, Jordan Shelestak, Jared Nichols D.O.
***Presenting Author**

Hospice care plays a critical role in the healthcare system, providing terminally ill patients comfort and symptom management. While hospice care has many benefits, there is variability among the service throughout the United States. This study examines variations in the average length of hospice care among Medicare beneficiaries, specifically focusing on how geographic location and primary diagnoses influence these outcomes. Through analyzing these differences, this research aims to identify potential disparities in hospice care and influence positive change in end-of-life care. Public hospice care data from data.cms.gov were analyzed using R: The R Project for Statistical Computing to explore these trends. Findings indicate that Medicare beneficiaries in the South and West regions of the U.S. experience longer hospice stays, averaging 10 days above the national average of 75.05 days. In contrast, those in the Northeast and Midwest (including Alaska) reflected a 25% reduction from this benchmark. Notably, states with shorter hospice durations showed a higher proportion of neoplastic disorders as the primary diagnosis, while those with longer stays showed an inverse relationship with greater prevalence of circulatory system disorders and lower incidence of neoplastic diagnoses. Additionally, the analysis reveals a consistent decline in average hospice length with increasing age among patients aged 80-85 across all U.S. regions, as expected. These findings highlight regional and diagnostic factors that contribute to variations in hospice care duration. Ultimately, this study highlights the need for comprehensive patient data and qualitative research to better address the disparities in end-of-life care delivery.

Abstract #64
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-2

Thrombocytopenia, Pneumonia, and Length of Stay: A Retrospective Study of a Southwestern Missouri Hospital System

Tatum Dam*, Robert Hilliard, Chi Pham, Kayla Tran, Nova Beyersdorfer, Kerry Johnson, John Paulson
***Presenting Author**

Abstract Background: Managing in-patient pneumonia optimally is a concern for healthcare staff due to the prevalence of the condition and the wide range of potential outcomes for admitted patients. Prior studies show that thrombocytopenia as a comorbidity can complicate such outcomes. Our retrospective analysis seeks to examine the association between pneumonia with or without thrombocytopenia and an extended hospital length of stay (LOS) in a predominantly rural patient population from Southwest Missouri. **Methods:** Seven thousand and eighty-five unique patients admitted to Freeman Health System (Joplin, MO and Neosho, MO) were identified as having both pneumonia and thrombocytopenia (636 patients) or either condition individually (4,982 pneumonia without thrombocytopenia and 1,467 thrombocytopenia without pneumonia) per our International Classification of Diseases, Tenth Revision (ICD-10) criteria from the hospital system's electronic medical record database between January 2019 to December 2022. The proportion of each subpopulation (pneumonia with thrombocytopenia, pneumonia without thrombocytopenia, and thrombocytopenia without pneumonia) having an extended stay (> 6 days) was calculated and compared between each pair of subpopulations using a two-sample proportion test. Age and gender analyses were also performed for each group. **Results:** Our analysis revealed a significant increase in the likelihood of extended hospital stays when pneumonia and thrombocytopenia occurred together compared to either condition without the other present. This trend was consistent across age and gender analyses, indicating that concurrent diagnoses substantially heightened the risk of prolonged hospitalization irrespective of these demographic factors. **Conclusions:** Thrombocytopenia as a comorbidity is a serious concern for pneumonia patients due to its potential to complicate patients' hospital course. Based on the significant correlation we found between pneumonia with thrombocytopenia and extended LOS, our findings highlight the potential use of thrombocytopenia as a predictive marker for pneumonia patients' clinical progression in a predominantly rural Midwestern patient population.

Abstract #65
Program: Osteopathic Medicine
Category: Basic Science

Poster Session: J-2

Age-dependent metabolic vulnerabilities in lung cancer through mass spectrometry analysis

Ishita Dhiman*, Jaime L. Schneide, Liam Kelly, Brandon M. Gassaway, Zhanel Nugmanova, Shakchhi Joshi, Dan Shepard, James Han, Joao A. Paulo, Lecia V. Sequist, Steven P. Gygi, Marcia Haigis
***Presenting Author**

Aging heightens lung cancer risk, yet the molecular link between aging and lung tumorigenesis remains unexplored. Lung tumor biology has traditionally been explored in young organisms, highlighting the need to study lung cancer in a physiologically relevant microenvironment. Furthermore, metabolic changes are a hallmark of aging, but little is known about how aging impacts the metabolic states of cells that comprise the lung. This study proposes to interrogate how metabolic changes at the systemic level and in the tumor microenvironment with age influence lung tumorigenesis. By employing mass spectrometry techniques, we are investigating metabolic pathways that are altered with age using *in vivo* mouse models of lung tumorigenesis. The objectives of this project are to (1) detect metabolic alterations in the circulation in young and aged mice in the presence/absence of lung tumors and (2) explore how metabolic manipulation of redox metabolism influences the metabolic milieu of lung tumors with age. Our preliminary results indicate that redox handling is altered in aged animals at a systemic level and that these metabolic perturbations may influence the local tumor metabolic microenvironment. These findings advance our understanding of age-related cancer susceptibility and may lead to novel interventions and treatments in the future.

Abstract #66
Program: Osteopathic Medicine
Category: Basic Science

Poster Session: J-2

MET-induced activation of GUK1 contributes to resistance in oncogene-driven lung cancers

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***Presenting Author**

Lung cancer is one of the leading causes of death worldwide. Over the last two decades, clinical genotyping, translational research, and drug discovery efforts have enabled the molecular stratification of lung cancers – namely adenocarcinomas – based on the presence of oncogenic drivers and spawned the development of targeted therapies matched to the respective oncogene. The anaplastic lymphoma kinase (ALK) gene fusion defines one such molecular subtype of non-small cell lung cancer (NSCLC), comprising 4-6% of lung adenocarcinomas. ALK fusion-positive (or “ALK+”) lung cancers exhibit ALK dependency and are typically exquisitely sensitive to inhibition of ALK using tyrosine kinase inhibitors (TKIs). Despite the remarkable responses to ALK TKIs, almost all patients with ALK+ lung cancer relapse. This study seeks to delve into the rewiring of cellular metabolic pathways that occur during the development of acquired resistance to ALK TKIs. In our research, we pinpointed a crucial connection: oncogenic ALK phosphorylates guanylate kinase 1 (GUK1) at the Y74 site, fueling GDP biosynthesis and promoting tumor proliferation. However, the potential of GUK1 as a novel biomarker for resistance in ALK+ NSCLC remains unexplored. As a result, our primary objectives in this project are two-fold: (1) to uncover the resistance mechanisms associated with distinct oncogenic driver alterations in lung cancer and (2) to scrutinize how metabolic reprogramming contributes to the emergence of acquired resistance to targeted therapies. Preliminary findings indicate that alterations in the MET gene may play a pivotal role in driving ALK-TKI resistance by modulating pGUK1 levels. These discoveries expand our comprehension of metabolic transformations in NSCLC and may lead to developing novel therapies for patients grappling with TKI-resistant disease.

Abstract #68
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

Analysis of differences in extended length of stay for patients with hypotension, pneumonia, or both; a retrospective analysis

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***Presenting Author**

Introduction: Healthcare resources, allocation, costs, and patient outcomes are affected by the length of stay. We aim to understand the differences in the proportion of patients with an extended length of stay, defined as ≥ 6 days from admission to discharge, between groups with hypotension, pneumonia, and both diseases. **Objectives:** Determine the effect of pneumonia, hypotension, or both diseases on the proportion of extended length of stays, defined as time from admission to discharge of ≥ 6 days. **Methods:** This retrospective cohort study uses electronic medical records from Freeman Health System from 2019 to 2022. Patients were separated into three groups: pneumonia, hypotension, and or both and then statistical analysis was performed to determine proportions of each group and to compare intergroup differences in proportions. Significance was set at $p < 0.05$. **Results:** Of 5,618 pneumonia admissions, 12.2% had hypotension, with 68.0% of these experiencing a length of stay of ≥ 6 days, compared to 52.1% in those without hypotension. Of 2,661 hypotension admissions without pneumonia, 41.2% had a length of stay ≥ 6 days. The differences in extended length of stay were significant ($p < 0.0001$), with higher proportions in patients with both conditions compared to those with pneumonia without hypotension and hypotension without pneumonia. **Conclusion:** This study found that both pneumonia and hypotension had a significant increase in to number of length of stay > 6 days compared to those with pneumonia without hypotension and hypotension without pneumonia. The coexistence of these conditions exacerbates clinical outcomes, necessitating prolonged medical care. These findings underscore the importance of early identification and comprehensive management of patients with both pneumonia and hypotension to reduce hospital stay durations and improve patient outcomes.

Abstract #69
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

Radiological and electrocardiogram findings among Danon Disease patients: A systematic review

Mitchell Fisher*, Andrew Simonsen, Nicholas Cauble, Taylor Geddes, Luke Brogan, William Nelson, Shane Miller, Josh Gwynn, Thomas Steen, Joseph Williams, Suporn Sukpraprut Braaten
***Presenting Author**

Context: Danon Disease is a rare X-linked dominant lysosomal storage disease characterized by a deficiency of the Lysosome-associated membrane protein-2. Patients typically present with a triad of cardiomyopathy, skeletal myopathy, and intellectual disability. This inheritance pattern can lead to advanced disease severity in males, making early detection key for favorable prognosis. Medical professionals lack a perfect understanding of the disease course along with its diagnosis and management. This makes this paper essential to the field of cardiology. Objective: The purpose of this study is to analyze electrocardiogram and radiological presentations of Danon Disease patients and compare the findings between male and female patients. Methods: This is a systematic review of all case reports found on PubMed within the last 10 years using the keywords "Danon Disease" and "Danon Cardiomyopathy". The inclusion criteria resulted in 78 articles and 124 total case reports. Cases were reviewed for relevant clinical data and analyzed accordingly. Results: Of the 593 articles found, 187 were case reports with 88 in the last 10 years. After review, 78 articles presenting 124 total cases were included. The average age reported was 19.9 years old \pm 12.1. Roughly 60 percent of the cases were male. Average age at first reported visit for males was 16.4 \pm 8.9, compared to 25.2 \pm 14.4 for females. Correlation analysis was performed on several radiological findings between males and females. 94 cases also reported electrocardiogram findings, and the most common patterns were Wolff-Parkinson-White (47.9%), premature ventricular contractions (15.9%), premature atrial contraction (11.7%), and inverted T waves (11.7%). Conclusion: Danon disease is rare but underdiagnosed due to the various diagnostic results. Clinicians with younger patients presenting with abnormal electrocardiograms or imaging should consider Danon disease in their differential, particularly with family history of cardiomyopathy.

Abstract #70
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

The emerging role of osteopathic manipulative medicine in enhancing the quality of life for bone cancer patients

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***Presenting Author**

Background: Osteopathic Manipulative Medicine (OMM) has long been recognized for its therapeutic benefits on the musculoskeletal system, but its potential role in oncology care is gaining attention. Patients with primary and metastatic bone cancer often experience significant pain, restricted mobility, and decreased quality of life due to both the disease and its treatments. This review explores the potential of OMM as a complementary approach to cancer care, emphasizing its role in symptom management and improving patient well-being. **Methods:** A literature review was conducted using PubMed and Google Scholar. Search terms included “osteopathic manipulative medicine and malignancies,” “osteopathic medicine with cancer,” “osteopathic treatment effects,” and “bone cancer.” Boolean operators (AND, OR) were used to refine search results. Additional studies were identified through reference lists of relevant articles. **Results:** Several studies suggest that OMM can improve pain, mobility, and fatigue in bone cancer patients. Techniques such as myofascial release for muscle tension reduction, lymphedema pumps for circulation enhancement, and craniosacral therapy for autonomic regulation have been associated with improved patient-reported outcomes. Evidence indicates that OMM may serve as a non-invasive adjunct to conventional cancer treatments, reducing reliance on pharmacological pain management. **Discussion:** OMM has the potential to provide significant clinical benefits for bone cancer patients by addressing both physical and emotional aspects of the disease. Its holistic approach aligns with patient-centered care models, making it a viable option for integrative oncology. However, the absence of standardized protocols and large-scale clinical trials limits its widespread adoption in oncology practice. **Conclusion:** OMM presents a promising adjunctive therapy for managing symptoms in bone cancer patients, offering improvements in pain relief, functionality, and overall quality of life. As a non-invasive intervention, it may help reduce medication dependence and enhance coping mechanisms. Further research is needed to establish clinical guidelines and validate its efficacy in oncology care.

Abstract #71
Program: Osteopathic Medicine
Category: Medical Education

Poster Session: J-1

Trends in adiposity attitudes among medical students: a longitudinal and cross-cohort analysis

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*Presenting Author

Background: Weight-related biases among healthcare providers can negatively impact patient care, yet limited research explores how medical education shapes these perceptions. This study investigates shifts in attitudes toward body weight among medical students, analyzing trends over time and comparing responses across cohorts. Additionally, we examined whether attitudes toward overweight and thin individuals were related, assessing whether students generalize perceptions of body type. Methods: Medical students from the 2023-2024 and 2024-2025 academic years participated in a longitudinal survey administered at three key time points: pre-dissection, post-musculoskeletal (MSK) dissection, and post-final dissection. Survey items assessed attitudes toward body weight using Likert-scale and categorical response formats. Pearson correlation was used to analyze Likert-scale data, while chi-square tests assessed categorical responses ($p < 0.05$). We compared responses across class years, demographic variables, and survey stages. Results: In the 2023-2024 cohort, perceptions of overweight donors became significantly more negative post-dissection ($p = 0.0036$), with a further shift observed at the post-final dissection stage ($p = 0.0076$). This suggests that repeated dissection exposure may influence implicit attitudes. Comparing class years, the 2024-2025 cohort demonstrated a stronger relationship between attitudes toward overweight and thin individuals ($p = 0.00027$) compared to the 2023-2024 cohort ($p = 0.0076$). This trend suggests a growing alignment in perceptions of different body types over time. Conclusion: Anatomy education appears to shape medical students' perceptions of body weight, with shifts occurring throughout the dissection process. The increasing correlation between attitudes toward overweight and thin individuals suggests that implicit biases may be reinforced rather than mitigated. Further research is needed to assess how these evolving perceptions impact clinical interactions and to develop educational interventions that promote weight-neutral patient care.

Abstract #72
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-2

Euglycemic dka in t2dm patients taking at home sgl2 inhibitors

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*Presenting Author

Diabetic ketoacidosis is a grievous complication of diabetes that occurs when there is a lack of insulin in the body, resulting in elevated blood glucose levels and the production of ketones (2). In this case, we discuss a 58 y/o female with PMH of T2DM on Jardiance who develops recurrent DKA. 58 y/o female with PMH of T2DM presented to the ER due to a syncopal episode and LLE swelling/discomfort for a few weeks. On day 2, LE Doppler US showed DVT in L anterior and posterior tibial vein and CTA with multiple b/l PE. Thrombectomy was performed. Patient was hyperglycemic, had high anion gap metabolic acidosis and beta hydroxybutyrate of 9. Patient was transferred to TCU to be initiated on insulin drip. On day 3, the anion gap decreased to 9, with subsequent increase in gap. The case was discussed with an endocrinologist who recommended IV fluids, carb diet, and to recheck beta hydroxybutyrate. On day 5, patient's anion gap closed and beta hydroxybutyrate levels came down. Patient was discharged with basal bolus insulin and close outpatient follow up with an endocrinologist. Diabetic patients on SGLT-2 inhibitors, specifically, empagliflozin carry the risk of inducing euglycemic DKA under certain circumstances such as acute illness, decreased carbohydrate intake, decrease in dose, or discontinuation of insulin (1). Our patient experienced a delayed EDKA secondary to at home Jardiance use. For patients with insulin resistance, BMI > 35, like in our patient, insulin infusion at a fixed rate of 2-3 units/hour is often necessary to fix acidosis. The chances of relapsing back into DKA are high if insulin drip is stopped prematurely or dose of basal insulin is inadequate. (3). SGLT-2 inhibitors can cause EDKA. Prevention includes discontinuing SGLT-2 inhibitors, monitoring and adjusting insulin therapy, and patient education on EDKA signs.

Abstract #73
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

Hemorrhagic pericardial effusion in the setting of multisystem comorbidities: a diagnostic challenge

Abhinav Kari*, Jacey Greek, Andrew Greek, Dr. Mark Jarosz, Dr. Ryan Longnecker
*Presenting Author

Intro: Hemorrhagic pericardial effusions are a rare but life-threatening condition involving the accumulation of blood in the pericardial sac surrounding the heart. Underlying causes are diverse and may potentially lead to cardiac tamponade. Prompt diagnosis and intervention are critical for patient survival. Case: 72 year-old male with a history of atrial fibrillation, coronary artery disease, hypertension, interstitial lung disease, recurrent pneumonia, and Hairy Cell Leukemia in remission with progressive dyspnea over one month and worsening for a week prior to admission. Initial workup suggested pneumonia with bilateral pleural effusions. Patient was treated with antibiotics and steroids, leading to symptomatic improvement prior to discharge. Two months later, he presented with severe dyspnea and was found to have an elevated BNP and incidental pericardial effusion on CT scan. Upon ICU transfer, the patient's condition rapidly deteriorated with an EKG suggesting STEMI and bedside ultrasound confirming a large pericardial effusion with tamponade physiology necessitating pericardiocentesis. 1200cc of hemorrhagic pericardial fluid was removed. Subsequent coronary angiography showed no significant obstructive coronary disease. Discussion: This case highlights significant considerations when diagnosing and managing pericardial effusions in patients with complex medical problems. A high index of suspicion is often required to make this diagnosis, especially in patients who present with dyspnea. Despite an initial presentation mimicking pneumonia or heart failure, the patient's rapid decompensation reiterates the importance of prompt recognition. This case also demonstrates the potential for pericardial effusions to mimic acute coronary syndromes on EKG. Conclusion: Hemorrhagic pericardial effusions should be considered in medically complex patients with unexplained dyspnea and hemodynamic instability. This case emphasizes the importance of a comprehensive evaluation to identify the underlying cause of hemorrhagic pericardial effusions. This report contributes to the literature on the presentation, diagnosis, and management of acute hemorrhagic pericardial effusions in complex medical cases.

Abstract #74
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

Utilizing artificial intelligence to identify comorbidity patterns in CHEK2 mutation carriers and breast cancer development

Jacey Greek*, Andrew Greek, Dr. Joseph Williams, Dr. Ty Adcock
***Presenting Author**

Background: The CHEK2 gene is a well-recognized moderate-risk susceptibility gene for breast cancer, yet the factors influencing cancer development among CHEK2 mutation carriers remain poorly understood. Comorbid conditions may play a role in modulating cancer risk, but their relationships with genetic predisposition require further exploration. This study proposes leveraging artificial intelligence (AI) to analyze large-scale patient databases and electronic medical records (EMRs) to identify correlations between CHEK2 mutations, comorbidities, and breast cancer onset. **Methods:** Using AI, we will extract data from a comprehensive patient database, stratifying individuals with a pathogenic CHEK2 mutation into two cohorts: (1) mutation carriers who remain cancer-free and (2) mutation carriers diagnosed with breast cancer. AI-driven natural language processing (NLP) and predictive modeling will be applied to EMRs to identify comorbid conditions and assess their prevalence within each cohort. Statistical and machine learning-based analyses will evaluate correlations between specific comorbidities and breast cancer development. **Expected Impact:** Identifying key comorbidities associated with breast cancer onset in CHEK2 mutation carriers could provide novel insights into potential risk modifiers. This research may enhance personalized preventative strategies, allowing for more tailored screening protocols and risk-reduction interventions. **Conclusion:** This study highlights the potential of AI in uncovering clinically relevant patterns in genetic predisposition and disease manifestation. By integrating AI-driven analysis into precision medicine, we aim to improve risk assessment and early intervention strategies for individuals with CHEK2 mutations.

Abstract #75
Program: Osteopathic Medicine
Category: Quality Improvement

Poster Session: J-2

Presence of spin in the titles and abstracts of Allergy and Immunology randomized controlled trials

Diana Hamdan*, Abbigail Niewchas, Ambrose Loc Ngo, Michael Weaver
***Presenting Author**

In scientific reporting, 'spin' refers to presenting neutral or negative outcomes in a manner that infers favorable results. This is often achieved by overemphasizing certain study aspects to create a misleading narrative. The application of spin can be especially problematic in the abstracts of randomized control trials (RCTs), which are frequently utilized by researchers, clinicians, and policymakers for a quick synopsis of study findings. An abstract with one or more elements of 'spin' present can lead to an incorrect interpretation of trial outcomes, potentially impacting subsequent studies, patient care plans, and policy decisions. Since the concept of spin was first introduced in 2010, it has been explored across a variety of medical specialties. One field awaiting review is Allergy and Immunology. The present study aims to evaluate the presence of spin in the abstracts of RCTs published in the top allergy and immunology journals between 2010-2023. Of the 1,248 articles retrieved, 332 were selected for further review, and 66 abstracts met full inclusion criteria. In total, 35 (53%) abstracts were found to contain one or more elements of spin, among which 11 (31.4%) had spin in the title, 29 (82.9%) in the results section, and 30 (85.7%) in the conclusion. Interestingly, industry-sponsored trials did not contain more spin compared to other funding sources ($p=0.62$). Amongst the journals included, the journal with the lowest impact factor was found to contain the highest number of articles with spin ($p=0.03$). Analyzing the presence of spin by the primary author's country of origin revealed that of the total RCTs, those conducted in Belgium contained the least spin, while those from China contained the most spin. These findings provide specific areas for scientific journals to investigate the presence of spin to ensure accurate and transparent reporting.

Abstract #76
Program: Osteopathic Medicine
Category: Basic Science

Poster Session: J-2

Novel nuclear receptor signaling pathways in cancer

Jack Hemsath*, Abigail Niewchas, Dan Brobst, Bradley Creamer, Jeff Staudinger
***Presenting Author**

Nuclear receptors (NR) have a wide range of implications in cancer and can be unique depending on cancer cell type, environmental factors, and cofactor availability. An NR can have a net anti-tumor role in one cell type while simultaneously having a pro-tumor role in another. PPAR γ has been identified as a potential drug target due to its wide array of gene targets that culminate in a net anti-cancer response through modulation of the immune landscape and activation of pro-apoptotic pathways. This work reveals SR12813 as a PPAR γ ligand not previously recognized in the literature to date. We used next-generation sequencing (NGS) to characterize gene expression profiles of LS180 and CV1 cells treated with known NR ligands rifampicin and SR12813. Subsequently, this study utilized a two-hybrid reporter gene assay to screen a panel of chimeric nuclear receptors for activation by those NR ligands. RT-PCR was used to identify mRNA levels of known PPAR γ target genes after treatment with SR12813. NGS of LS180 cells treated with known nuclear receptor ligands identified upregulation of genes outside of their canonical targets. To explore further, we used a two-hybrid reporter gene assay to screen a panel of chimeric, normalized nuclear receptors for activation by SR12813. PPAR γ was found to be the nuclear receptor causing off-target gene activation following SR12813 treatment. PPAR γ mRNA levels along with other known PPAR γ gene targets were screened using RT-PCR to identify the ability of SR12813 to alter mRNA levels of cytokines, pro-apoptotic proteins, and MHC-1. PPAR γ has promise as an anti-tumor drug target that greatly alters the immune landscape of solid tumors. This work led to the identification of SR12813 as a novel ligand of PPAR γ . Further exploration of this work hopes to investigate the ability of PPAR γ to potentiate adaptive immune recognition of cancer and a generalized anti-tumor response.

Abstract #77
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

Engaging young learners: evaluation of Score 1 for Health's Anatomy Academy in Joplin area schools, fall 2024

Graschelle Hipolito*, Kate Backes, MPH, Lisa Taylor, MS
***Presenting Author**

Introduction: Anatomy Academy is an educational initiative under Kansas City University's (KCU) Score 1 for Health that pairs osteopathic medical students with fifth-grade classrooms to teach human anatomy through interactive activities. Volunteer medical students deliver a total of eight one-hour sessions in classrooms over the course of approximately two months. The purpose of this study was to evaluate if Anatomy Academy program improved learning outcomes for elementary school students. **Methods:** This evaluation analyzed data from pre- and post-tests administered to program participants that assess students' knowledge of human anatomy. A Wilcoxon signed-rank test was used to compare matched pre- and post-test final scores. **Results:** 153 fifth-grade students from 3 elementary schools in the Joplin, MO area were included. The average pre-test score was 57.8%, compared to 81.3% on the post-test, a significant improvement in knowledge scores ($p < 0.05$). School C had the largest difference between pre- and post-test scores with a 28.3% improvement, while School A and School B improved by 22.3% and 20.0%, respectively. **Discussion:** The findings of this study indicate that the Anatomy Academy's interactive mentor-led educational methods have a positive impact on increasing fifth-grade students' knowledge of human anatomy. Further research should explore between-school differences and how factors such as time of day, curriculum variations, and attendance patterns influence student learning outcomes. **Conclusion:** Anatomy Academy serves as a promising teaching model for engaging both elementary students and osteopathic medical students to promote science and health. Score 1 For Health's Anatomy Academy program emphasizes the importance of fostering community-facing health engagement among pediatric populations, in alignment with KCU's mission of improving the well-being of the communities it serves.

Abstract #78
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

The effectiveness of utilizing music therapy in the recovery of post-traumatic brain injury patients

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***Presenting Author**

Traumatic brain injury (TBI) affects around 2.8 million Americans every year and is caused by outside forces physically injuring the brain. With incidence highest in children aged 0-19 and adults 65 and older, a TBI can leave patients with symptoms ranging from a momentary headache and diplopia to permanent memory loss and post-traumatic migraine. With TBI most prevalent in vulnerable populations, new therapies must be identified to protect the pediatric development of brains and prevent further deterioration of geriatric mental capacity. One option that is used to treat TBI non-pharmacologically is the utilization of music therapy (MT). MT is the use of music, both passively (PMT) and actively (AMT), to assist in the recovery from a physical injury, a traumatic event, or a neurologic disorder. Passive refers to simply listening to music, whereas active refers to musical training, such as playing an instrument or singing. Through a comprehensive literature review, we explored how current MT research applies to enhancing outcomes in TBI patients by analyzing the impacts of MT on improving outcomes in neurodegenerative diseases and the neuroplasticity gained through AMT. Inclusion criteria included articles written in the last 10 years, using keywords “music therapy”, “neuroplasticity”, and “TBI” as the focus of our search. Utilizing PubMed and Elsevier, 28 articles were identified according to the selected inclusion criteria: 4 articles demonstrated the positive effect of music therapy on neuroplasticity whereas 9 articles showcased the improved outcomes in patients post-TBI who were subjected to various forms of MT. Additionally, 15 studies detailed other applications of MT that were concordant with our hypothesis. Our preliminary analysis of this research provides strong evidence to suggest that the utilization of MT, specifically AMT, in the treatment regimen for post-TBI patients will significantly increase the capacity for recovery and accelerate restoration of executive function.

Abstract #79
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

Longitudinal analysis of Score 1 for Health far vision screening results, 2018-2024 academic years

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***Presenting Author**

Affiliation: Kansas City University, College of Osteopathic Medicine **Background:** Score 1 for Health is a program through Kansas City University (KCU) that provides free health screenings to Kansas City metro area and Joplin, MO, elementary schools. This analysis assessed far vision screening result trends captured from the Score 1 program from the 2018-2019 to 2023-2024 school years. **Methods:** Far vision assessments were completed by first-year osteopathic medical students from KCU. Students who did not pass the screenings were reassessed by a registered nurse. Data for 2018-2019 and 2023-2024 academic years were analyzed. 2019-2020 and 2020-2021 were excluded due to COVID-19. **Results:** A total of 35,749 results were included in this analysis. Overall, 15.1% of students had non-passing results. The median age of the total population was 8 years (range: 4-16 years, IQR: 7, 10 years). Trends in the proportion of students not passing each year, by race, varied by year, but Hispanic/Latino and Native Hawaiian/Other Pacific Islander elementary students displayed the highest overall prevalence of non-passing results, 17.9% and 17.6% respectively. White students had the lowest prevalence at 9.5%. The prevalence of non-passing results among female students was higher than male students across all years. Students in upper BMI percentile categories (85-95th and >95th) generally had a higher prevalence of non-passing results (highest observed in 2023 for both 85-95th (20.3%) and >95th (19.6%) percentiles). **Conclusion:** This study shows that 15% of children screened through Score 1 had suboptimal far vision, which may impact their ability to learn in the classroom. Vision concerns were more prevalent in females, underrepresented minorities, and students with an elevated BMI; these differences may reflect inconsistent access to routine pediatric primary care, when vision screening typically occurs. These findings highlight the importance of the Score 1 screening program in identifying vision concerns.

Abstract #81
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

Impact of BMI and Height on Sciatic Nerve Landmarks Accessibility in Anesthesia

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*Presenting Author

Introduction Accurate identification of bony landmarks is essential for sciatic nerve block procedures. Variations in body mass index (BMI) and height may influence landmark positioning and the accessibility of the sciatic nerve (SN). This study explores how BMI categories affect pelvic landmark positioning and sciatic nerve accessibility. **Methods** Twenty formalin-embalmed cadavers from the Kansas City University Joplin anatomy program were examined. Weight and height were recorded prior to embalming. Distances between the sciatic nerve's exit point and the sacrum (S1), iliac crest, and posterior superior iliac spine (PSIS) were measured with a linear tape by a single student, ensuring precision through repeated measurements. Data were analyzed using Pearson's correlation, mean, and standard deviation in Microsoft Excel. **Results** Weak correlations were found between BMI and distances from PSIS to SN ($R = 0.13$) and Iliac Crest to SN ($R = 0.23$), suggesting BMI does not predict landmark positioning. Underweight individuals ($BMI < 18.5$) had the least variability in PSIS to SN distance ($9.58 \text{ cm} \pm 0.73 \text{ cm}$), facilitating sciatic nerve localization. Normal BMI individuals ($18.5\text{--}24.9$) showed higher variability (PSIS to SN: $9.14 \text{ cm} \pm 1.32 \text{ cm}$, Iliac Crest to SN: $13.22 \text{ cm} \pm 0.98 \text{ cm}$), requiring more precise palpation. Overweight individuals ($BMI 25\text{--}29.9$) also had greater variability, complicating landmark identification. Obese individuals ($BMI \geq 30$) had a longer, more consistent Iliac Crest to SN distance ($14.05 \text{ cm} \pm 0.64 \text{ cm}$). A moderate correlation was found between height and Iliac Crest to SN distance ($R = 0.44$), suggesting taller individuals may have longer pelvic dimensions, affecting sciatic nerve block procedures. **Conclusion** Underweight individuals show more consistent pelvic landmarks, facilitating sciatic nerve localization. While BMI does not predict landmark positioning, height influences pelvic dimensions and should be considered in sciatic nerve block procedures. Body composition variations may impact anesthesia administration.

Abstract #82
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

Analysis of the relationship between heart failure and pneumonia on the length of a hospital stay

Damandeep Singh Kapoor*, Trilok Polavaram, Peyton Thames, Mitchell Fisher, Nova Beyersdorfer, Kerry Johnson, John Paulson
***Presenting Author**

Background: Pneumonia encompasses community-acquired pneumonia (CAP), hospital-acquired pneumonia (HAP), and ventilator-associated pneumonia (VAP), all characterized by infection and inflammation within the lungs due to bacteria, viruses or fungi. In contrast, heart failure (HF) arises from structural or functional issues that decrease cardiac output and increase intracardiac pressures. HF is the leading cause of hospitalization among US adults ≥ 65 years old. Pneumonia frequently contributes to hospitalizations in HF patients, with pneumonia's incidence being about three times higher in those with HF compared to those without. **Methods:** This retrospective study evaluated patients with hospital stays of ≥ 6 days versus < 6 days. The patients were classified as having pneumonia and HF (PXG), pneumonia without HF (PoG), or HF without pneumonia (oXG). Data was collected from Freeman Health System in Joplin, MO and Neosho, MO using electronic medical records (EMR). International Classification of Diseases, Tenth Revision (ICD-10) codes were used for diagnoses. Additional variables analyzed were age and gender. **Results:** Patients with pneumonia and HF had the highest percentage of extended hospital stays (59.33%-63.72%) with a 95% confidence interval. It cannot be concluded that age had a significant impact on the length of stay when compared to those < 65 years old. Additionally, no significant difference was found in extended stays between male (PXM) and female (PXF) patients ($p=0.6650$). However, a small but significant difference was observed between pneumonia-only groups (PoM and PoF), ranging from 0.82% to 7.26% ($p=0.0139$). Gender appears not to significantly influence extended hospital stays. **Conclusion:** Having both pneumonia and HF concurrently, correlates to a larger percentage of extended hospital stays, regardless of age or gender. Roughly 60% of the patients admitted with both conditions need extended care. Furthermore, patients with pneumonia alone also experience higher percentages of extended hospital stays regardless of age or gender.

Abstract #83
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

Exploring demographic and clinical trends in postural orthostatic tachycardia syndrome (pots): insights from public database analysis

Vasisht Karri*, Dennis Wolff
*Presenting Author

Postural Orthostatic Tachycardia Syndrome (POTS) is a complex autonomic disorder characterized by excessive heart rate increase upon standing, often accompanied by fatigue, dizziness, and cognitive impairment. Despite increasing recognition, its epidemiology, comorbidities, and treatment trends remain underexplored. Using public health datasets, including NHANES and the National Inpatient Sample (NIS), this study examines demographic distributions, associated conditions, and treatment responses in POTS patients. Among 8,752 individuals, POTS exhibited a 78% female predominance, with common comorbidities including autoimmune disorders (30%), hyper-mobility syndromes (15%), and mast cell activation syndrome (10%). Beta-blockers were the most frequently prescribed treatment, demonstrating a 67% effectiveness rate, followed by midodrine (55%) and IV fluids (20%). The findings confirm a strong autoimmune and connective tissue component in POTS, reinforcing the need for individualized treatment strategies. Variability in treatment response suggests that patient-specific approaches, including immunomodulatory therapies, may be necessary for optimizing long-term outcomes. Future research should focus on biomarker identification, personalized treatment protocols, and further exploration of immune dysregulation in POTS pathophysiology.

Abstract #84
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

Anatomical considerations in surgical intervention for lateral ankle instability

Julia Kirkland, MS*, Dr. Lyon Hough, Adam Yousseff, Morgan Stewart, MS, Vincent Schmidt, MS, Simran Aulakh
***Presenting Author**

Lateral ankle instability is a common condition that can significantly affect an individual's mobility and quality of life. Static stabilizing structures such as the anterior talofibular ligament, posterior talofibular ligament, and calcaneofibular ligament are significantly compromised in lateral ankle instability. Additional structural support is provided by the fibularis brevis, fibularis longus, fibularis tertius, and the inferior extensor retinaculum. Surgeons attempting to address lateral ankle instability are faced with several challenges related to its reconstruction such as inadequate remnants of tissue and replicating natural tension resulting in complications such as recurrent ankle instability, joint restrictions, and/or pain. This investigation aims to explore the morphological characteristics of tissues that influence surgical intervention choices for lateral ankle instability, focusing on the anatomical characteristics of the fibula, and its correlation to morphological variations of the fibularis brevis muscle, fibularis brevis tendon, fibularis tertius tendon, and the inferior extensor retinaculum. Analyzing measurements from fifty-eight formalin-embalmed cadavers presented strong correlations in several morphological characteristics. We believe these findings provide insight into surgical decision-making for the Brostrom-Evans and Brostrom-Gould procedures. Understanding these anatomical relationships may help surgeons optimize procedural outcomes and assess individual patient variations.

Abstract #85
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-2

Rivaroxaban failure in a COVID-19 patient on long-term anticoagulation: a case study

Carrine Kogulan*, Dr. Swapna Joseph, MD
***Presenting Author**

Deep vein thrombosis (DVT) and thromboembolism (TE) are well described in COVID. Here we discuss a case in which Rivaroxaban failed in a patient suffering from multiple pulmonary embolisms (PE) following COVID-19 infection. There are limited reports of failed responses to DOACs in COVID-related TE. A 56-year-old male with hereditary thrombophilia on rivaroxaban presented with dyspnea and dizziness following a prolonged flight. He tested positive for COVID and had previous history of Factor S deficiency, elevated Factor VIII activity, recurrent PEs, and DVTs. Since 2000, he had been on coumadin (2000-2013), lovenox (2013-2016), and xarelto since 2016. Past history of thrombectomy (2001) and IVC filter placement (2013). CT confirmed bilateral PE with RV strain on echocardiogram. Imaging revealed DVT in R/L femoral and R popliteal veins. Following thrombolysis using EKOS catheter, he was discharged on Lovenox. COVID-19 may exacerbate thrombotic events through cytokine storms, leading to endothelial cell damage, fibrin deposition, and a hypercoagulable state. Pro-inflammatory factors like IL-1 β , IL-6, IL-17 and TNF- α contribute to clot formation in these patients. COVID's effect on coagulation suggests a critical role of anticoagulation, though certain genetic and dietary factors may interfere with rivaroxaban's effectiveness. The failure of rivaroxaban in this patient was multifactorial including genetic factors, dietary changes related to his cruise affecting Xarelto's absorption, and prolonged stasis due to long flight compounded by acute COVID-associated TE. Improved guidelines for high-risk patients are recommended such as switching the recommended drug to Lovenox, closer dietary monitoring, and caution with supplements. Additionally, prioritizing COVID vaccination in these patients could reduce the risk of severe thrombotic complications. Incorporating osteopathic manipulative treatments (OMT) such as lymphatic drainage or soft tissue techniques can further enhance venous return to prevent the formation of DVTs. Further research into specific anticoagulation strategies and vaccine prioritization for these individuals is essential.

Abstract #86
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

Clinical distinction between optic nerve and its sheath: a cadaveric study

Rhea Kulkarni*, Gabriel Grosswold, Farida Mehrhoff, MD, Robert Hillard
***Presenting Author**

BACKGROUND: The optic nerve (ON), consisting of approximately 1.2 million retinal ganglion cell axons, courses through four anatomically distinct regions from the globe to the optic chiasm. While current imaging studies report the ON diameter as a combined measurement of the nerve and its surrounding sheath, this approach may mask specific changes in nerve fibers, which can indicate early pathological processes. Despite the clinical significance of ON diameter measurements in conditions affecting intracranial pressure, few anatomical studies distinguish between the ON and its sheath.

METHODS: 18 formalin-preserved cadavers were dissected and brains with intact ONs were removed. Different parts of the ONs and their sheaths were photographed and measured using Swift Imaging 3.0 and AmScope softwares. Histological evaluation of the specimens was performed. Average diameters of the ON with and without its sheath were calculated. **RESULTS:** The mean diameter of the ON near the globe is $2.80 \text{ mm} \pm 0.68$, $2.89 \text{ mm} \pm 0.58$ posterior to the annulus of Zinn, and $2.80 \text{ mm} \pm 1.42$ near the optic chiasm. When measuring the ON together with its sheath, diameters of $4.41 \text{ mm} \pm 0.95$ near the globe, $4.17 \text{ mm} \pm 0.98$ posterior to the annulus of Zinn, and $3.08 \text{ mm} \pm 1.51$ near the optic chiasm were found. The ON sheath thickness is $0.38 \text{ mm} \pm 0.12$ near the globe, $0.39 \text{ mm} \pm 0.21$ posterior to the annulus of Zinn, and $0.16 \text{ mm} \pm 0.06$ near the optic chiasm. The width of the subarachnoid space is $0.77 \text{ mm} \pm 0.31$ near the globe, $0.31 \text{ mm} \pm 0.12$ posterior to the annulus of Zinn, and 0 mm near the optic chiasm.

CONCLUSION: The data reveals significant differences in ON diameter with and without its sheath across all anatomic regions. This should be taken into consideration when evaluating the ON.

Abstract #87
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

Clear cell hidradenoma: patterns, risk factors, and malignant potential – a systematic review

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***Presenting Author**

Introduction: Clear cell hidradenoma (CCH) is a rare, benign skin tumor with malignant potential that appears as violet lesions with thin vessels. It originates from eccrine sweat glands in the extremities, head, and neck. Age and t(11;19) TORC1-MAML2 gene fusion increase the risk of developing a CCH in addition to CCH sharing characteristics with other clear cell tumors. This study aims to determine the trends, locations, occurrences, and presentations of cancerous and non-cancerous CCH. **Materials and Methods:** Cases of CCH were selected from the PubMed Database using the keywords “acrospiroma” and “clear cell hidradenoma.” The cases were categorized as cancerous or non-cancerous, analyzed through descriptive statistics and t-tests, and evaluated using the appraisal tools from the Joanna Briggs Institute (JBI). **Results:** The systematic review findings of 449 cases suggested an average age of 54.7 (± 21.1) years old, greater female than male gender incidence (odds ratio=1.65; 95% CI=0.72-3.79; p-value=0.24), and thirty-six cancerous CCH articles but were not significant. Cases of CCH appeared the most in genitourinary (12.5%), face (12.2%), and head (11.3%) regions with greater tumor size and duration in cancerous CCH. Cancerous CCH had a significantly greater mean size at 4.43 cm compared to non-cancerous at 2.42 cm (p=.023) and substantially greater tumor duration at 5.65 years compared to non-cancerous at 2.9 years (p=.048). **Discussion and Conclusion:** The analysis of these patterns and risk factors suggests an additional understanding of the prognosis, malignancy, and recurrence of CCH. With further investigation, CCH can have definite patterns identified by a multidisciplinary team that can recognize CCH before malignant transformation. The aim is for providers to determine and prevent CCH from progressing to cancer by understanding how this tumor appears and responding swiftly.

Abstract #88
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

Anatomical variations of the sciatic nerve and piriformis muscle: a cadaveric study and clinical implications

Ting Ma*, Chenxi Shi, Harsha Kalagana, Farida Mehrhoff
***Presenting Author**

Background: The anatomical relationship between the sciatic nerve (SN) and the piriformis muscle has significant clinical relevance, particularly in the context of piriformis syndrome. The Beaton and Anson classification system is widely used to categorize variations in the SN's course relative to the piriformis, but additional variations have been documented, underscoring the complexity of this anatomical relationship. These variations are clinically significant as they may contribute to conditions such as piriformis syndrome, where an atypical SN exit relative to the piriformis can lead to compression. Furthermore, a high division of the SN increases the risk of nerve injury during intramuscular injections and is a major factor in failed sciatic nerve blocks during popliteal block anesthesia. **Methods:** This cadaveric study examined 20 specimens to identify anatomical variations in the relationship between the SN and the piriformis muscle. Observed variations were classified according to the Beaton and Anson system, with any additional deviations recorded and analyzed. **Results:** The gluteal region of a total of 38 extremities were dissected and examined where three exhibited anatomical variations. Two (5%) were classified as Type B, where the SN bifurcates, with one division passing through the piriformis and the other exiting below it. One case (2.6%) did not conform to the Beaton and Anson classification, instead showing a divided SN exiting entirely below the piriformis. Variations were all unilateral with a normal (Type A) anatomical relationship on the contralateral limb. **Conclusion:** This study contributes to the growing body of evidence that anatomical variations of the SN and piriformis muscle are relatively common and have potential clinical implications. While these anomalies can contribute to conditions such as piriformis syndrome, their precise impact remains debated. Clinicians and surgeons should remain aware of both typical and atypical variations to minimize complications in medical and surgical interventions.

Abstract #89
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

Pneumonia and respiratory failure length of stay outcomes: a retrospective analysis of freeman health system patients.

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***Presenting Author**

Background Pneumonia is one of the most common causes of hospital admission in the United States. Prolonged length of hospital stay has been associated with increased mortality and comorbidities. Identifying conditions that put patients at increased risk of prolonged length of stay (LOS) is important so that preventive measures may be taken to avoid prolonged LOS. **Methods** This retrospective study examines the percentage of patients who had extended LOS (≥ 6 days) within three patient populations: patients with pneumonia without respiratory failure (PoG), patients with respiratory failure without pneumonia (oXG), and patients with both pneumonia and respiratory failure (PXG). Patients with pneumonia and/or respiratory failure were identified using International Classification of Diseases, Tenth Revision (ICD-10) codes. Within and between study populations, age and gender differences were also analyzed. Sample proportion tests were used to compare the proportions of extended hospital stay among the three overall populations. Two sample proportion tests were used to compare the proportions between gender groups and age groups within each population. **Results** The percentage of patients with both pneumonia and respiratory failure who had an extended hospital stay was higher than patients with pneumonia without respiratory failure and respiratory failure without pneumonia. Statistical analysis shows that PoG and oXG are significantly different ($p \leq 0.05$), however this difference could be small. This pattern is consistent across the age and gender subgroups, with $PX > Po > oX$ regardless of age or gender. **Conclusion** Our data indicates that the percentage of patients with pneumonia and respiratory failure who had extended hospital stays was higher than the percentages for patients in PoG and oGX groups. Our data shows that this holds true regardless of patient age or gender. Future studies are needed to better understand the relationship or potential causation of these findings.

Abstract #90
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

The Effectiveness of Ultrasonography in the Evaluation of Clinically Dehydrated Children in Kenya

Angelina Miley*, Kaitlin Barnes, Brianne Werner, Zachary Werner, Gautam Desai, DO
***Presenting Author**

Introduction: Dehydration is a concern among children in low-resource settings. Advances in point-of-care ultrasound (POCUS) have created new diagnostic opportunities. The objective of this study is to evaluate the effectiveness of ultrasonography in assessing dehydration in children aged 6–18 years in Kenya, compared to clinical/laboratory/symptom-based assessments. **Methods:** After KCU IRB approval, children with/without symptoms of vomiting and/or diarrhea were recruited and consent obtained from the parent/guardian at the Mama Pilista Bonyo Memorial Health Centre in rural Kenya. Dehydration was assessed using the Gorelick dehydration score, a dehydration patient questionnaire, and POCUS to measure the inferior vena cava (IVC), aorta, and IVC with passive leg raise (PLR). Urine-specific gravity (USG) was also measured with a refractometer. **Results:** Nearly half (54%, n=7) of thirteen children in the study were dehydrated. 31% (n=4) had a confirmed diagnosis of malaria. All had experienced diarrhea within the past year with the majority (62%, n=8) reporting that they were seen by a healthcare provider. Nearly half of participants (46%, n=6) reported using medication or oral rehydration solutions to treat diarrhea at home, while 38% (n=5) did to manage vomiting. Of the dehydrated children (54%, n=7), the average IVC was 0.98 cm, the average aorta size was 1.02 cm, vs an average IVC of 1.21 cm and average aorta size was 1.28 cm in those not dehydrated (46%, n=6). Most participants (92%, n=12) showed increased IVC diameter with PLR. The average Gorelick score of the dehydrated children was 1.71 and 0 for not dehydrated children. The average USG for the dehydrated children was 1.051 and 1.019 for the not dehydrated children. **Conclusion:** This study highlights benefits of POCUS as a tool for assessing hydration status and fluid responsiveness in children. POCUS, when combined with clinical assessments, laboratory measurements, and symptoms, enhances the accuracy of dehydration diagnoses.

Abstract #91
Program: Osteopathic Medicine
Category: Bioethics

Poster Session: J-1

The impact of AI systems on free will, autonomy and moral decision-making

Angelina Miley*
***Presenting Author**

Artificial intelligence (AI) is increasingly utilized in human decision-making processes, raising concerns about autonomy, free will, and moral duty. AI raises distinctive ethical concerns, including the phenomenon known as ‘anthropomorphic illusion’, which happens when human qualities and characteristics are attributed to objects like AI, creating an environment of over-reliance and lack of critical analysis in decision-making. Furthermore, AI uses personalization tactics scheme and cost-benefit analyses in making decisions rather than taking into account moral intentions. While critics argue that AI will replace human cognition and undermine human agency, this argument fails to consider the broader historical context of AI as a mere tool built upon the foundation of evolution and adaptation of human abilities. Ethical concerns are valid, and appropriate regulation of AI could show that it is truly an enhancement rather than a tool for undermining moral autonomous decision making. Creating regulatory schemes and transparent designs of AI would ensure the augmentation of human autonomy and decision-making rather than undermining it. Existing regulations are lacking in standardization, transparency, and compliance which leads to risks in AI decision making processes. By strengthening existing regulations and identifying weaknesses, AI systems can alleviate biases with the use of ethically sound algorithms, protecting human-oversight in use of decision-making.

Abstract #92
Program: Dental Medicine
Category: Medical Education

Poster Session: J-2

THRIVE Wellness Program

Marion Mines*, Prithu Patel, Amara Mbionwu, Tyler Staples, Carlton Abner, Nathan Matney, Dr. Erinne Kennedy
***Presenting Author**

Goal: Kansas City University (KCU) created a training framework to strengthen student resilience, reduce burnout and facilitate social belonging among health profession students called the THRIVE Program. The THRIVE Program is a two-day immersive workshop, followed by scheduled touchpoints that reiterate the curriculum and co-curricular campus health and wellness components throughout the year that are uniquely designed for each college. **Methods:** The purpose of the study is to evaluate the THRIVE program including a curriculum evaluation, burnout and resilience measures. This study will use a cross-sectional, pre-post survey design. Demographic and group variables will be assessed at the pre-training timepoint. Student burnout (Copenhagen Burnout Inventory) and coping flexibility (COFLEX) will be assessed pre-program, post-program, and at the end of the academic year. The survey is anonymous with no identifiers. Responses to the survey questions will be summarized using descriptive statistics, in means, median, modes, range, and standard deviations (where applicable). Differences in pre-post scores will be analyzed using repeated measures ANOVA and chi-square where appropriate. The electronic survey will be sent to approximately 600 students at Kansas City University for the Academic Year 2022-2023 (reverse order). We expect a response rate of 40-60%, and a participation rate of students above 85% in the immersive experience. **Results:** THRIVE was hosted in July 2022, and August 2023 in Kansas City and Joplin-COM with the two-day immersive workshop. Workshops took place off-campus, in Kansas City, and Joplin. Data is currently under analysis. **Conclusion:** After two years of offering THRIVE for three colleges, the THRIVE leadership has worked with college leadership to adapt the program to each colleges specific needs.

Abstract #93
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

Pleurodesis: a sticky solution for managing recurrent pleural effusion and pneumothorax

Reema Mody*, Dr. Michael Weaver
***Presenting Author**

Pleurodesis is a procedure that is used in the management of recurrent pleural effusions and pneumothoraces. This procedure consists of obliterating the pleural space and introducing adhesions between the parietal and visceral pleura. Pleurodesis can be completed by using either mechanical or chemical methods. The mechanical approach is performed during video-assisted thoracoscopic surgery (VATS), where the pleura is mechanically disturbed with a sterile surgical pad or specialized pleural abradar. The chemical approach introduces a chemical irritant, most commonly talc or tetracycline. Both the mechanical and chemical approach will cause inflammation and fibrosis which will promote an adhesive surface of the pleura solving the issue of recurrence. Our patient, a 52 year old female, presented to the emergency department at Freeman Hospital with a complaint of epigastric and chest pain. Over the span of one year, the patient experienced five bilateral pleural effusions, with the right side being larger than left. During her hospitalization of the fourth bilateral pleural effusion, the patient had an associated right side hydropneumothorax. Pleurodesis was offered as the next best step in management but the procedure was declined by the patient.

Abstract #94
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

Rapidly progressive chronic kidney disease in an undocumented hispanic male.

Carson Neal*, Nitin Potturi, Kevin Krishnan
***Presenting Author**

Chronic kidney disease (CKD) is a progressive disease that is characterized by the gradual loss of kidney function with most cases leading to end stage renal disease (ESRD). Hemodialysis or transplantation are the only viable options for survival. This case presents a 35 year old undocumented immigrant from El Salvador with stage V ESRD. Throughout his course of care, he faced barriers such as limited access to healthcare, language barriers, financial burdens, and cultural beliefs which led to his rapid decline. He initially presented to the ED in 2020 with acute kidney injury secondary to hypertension. During this visit he was diagnosed with CKD stage IV but was denied follow-up with a nephrologist due to his undocumented status. Three years passed where he received regular outpatient care from a community clinic to manage his hypertension. He presented once again to the ED due to worsening status. Throughout the course of treatment the patient faced obstacles such as fear of deportation, limited health literacy, financial and housing instability, and inconsistent transportation, which ultimately delayed consistent hemodialysis. He feared that seeking regular medical care may jeopardize his and his family's safety and lead to deportation. Additionally, his cultural perspectives prioritizing family needs over personal health and a family history of death from CKD following treatment influenced his reluctance to start hemodialysis. For this patient a thorough and long-term approach with extensive work-up is necessary for survival. This case highlights a case of rapidly deteriorating CKD in a relatively young patient and the healthcare disparities faced by an undocumented immigrant with a chronic illness. In order to address these inequalities there must be increased access to healthcare within marginalized communities and care that focuses on trust to ensure equitable health outcomes for all patients.

Abstract #96
Program: Osteopathic Medicine
Category: Quality Improvement

Poster Session: J-1

Cardiovascular presentations in Klippel-Feil syndrome: a systematic review

Abbigail Niewchas*, Salma Alkhatib, Christopher Stewart, Mitchell Fisher, Andrew Simonsen, Randall Hansen DO, Alex Otto DO, Suporn Sukpraprut-Braaten PhD
***Presenting Author**

Introduction: Klippel-Feil Syndrome (KFS) is a rare congenital disease characterized by an abnormal fusion of two or more cervical vertebrae. This review intends to describe the most common cardiovascular findings associated with KFS to establish baseline knowledge and reference material for clinicians. **Methods:** A total of 43 articles containing 46 reports were included from the 157 case reports considered. Cardiovascular abnormalities were classified using the American Board of Internal Medicine's Cardiovascular Disease Certification Blueprint. Cases were reviewed for commonality in biological sex, age, and vertebral fusion and level using the Samartzis classification system to determine if an association exists with the cardiovascular findings analyzed. **Results:** 72% of cases reported one or more findings consistent with congenital heart disease, making this the most common category of cardiovascular abnormalities analyzed. Using the Samartzis classification system, type III KFS was the most common fusion profile in this subset of patients. The heterogeneity of disease manifestations makes the treatment and management of KFS case-dependent, though current guidelines highlight the importance of a multidisciplinary care team for pediatric patients. Our findings support this notion and provide evidence for including a care provider specializing in cardiovascular medicine in patients of all ages, as well as the consideration of additional diagnostic screening exams for vascular abnormalities in the cervical region. Future studies into the embryological origin of KFS and a more robust search for a genetic marker are needed to understand better the development of the disease and its various associated conditions.

Abstract #97
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

An atypical overlap of systemic lupus erythematosus, interstitial lung disease, and myositis

Sharon Pala*, Mark Jarosz, DO, Justin Wilberding, DO
***Presenting Author**

Systemic Lupus Erythematosus (SLE) is a multisystem autoimmune disease associated with many different comorbidities, including Interstitial Lung Disease (ILD) and inflammatory myositis, with ILD being less common¹. Here we present a case of a patient who presents with an atypical presentation of these diseases simultaneously. A 73-year-old female with a past medical history of hypertension and tobacco use presented for worsening dyspnea for 2 weeks. CT chest without contrast revealed bilateral pneumonia with severe lung scarring, and interstitial changes. Labs revealed an SLE etiology with elevated ANA at 1:1280. Mi-2-Alpha antibodies were positive, suggesting myositis overlap. Respiratory status declined despite BiPAP and high-dose steroids. This warranted recommendation of IVIG and a need to transfer. On day 11, the patient was accepted at a tertiary center but was unable to secure a bed. Patient continued to decline and passed away on day 17. Genetic factors seem to interact with environmental exposures like cigarette smoking to influence susceptibility to developing SLE.² This female patient had no family history of autoimmune disease but is a former smoker. The patient received high-dose steroids and IVIG but did not improve. Time was a critical factor in the prognosis while waiting for transfer. In addition, studies found that those with a severe and progressive disease of ILD may respond to rituximab³. This patient could have been a candidate for a biologic therapy to help offset rapid decline in the hospital. SLE can lead to several comorbidities that overlap in presentation as seen in this case of a 73-year-old female. Time of treatment was a crucial factor, and the consideration of biologics may have improved this patient's outcomes; it would be beneficial to further investigate the role of environmental factors in SLE when family history of autoimmune disease is absent.

Abstract #98
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

Bridging the gap between prostate cancer diagnosis and machine learning

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*Presenting Author

Prostate cancer (PCa) is the leading cause of cancer death for American men. Diagnosis has moved away from the weakly specific digital rectal exam and prostate-specific antigen test which can be confounded by benign conditions. Moreover, certain demographic groups are increasingly at risk of PCa. Due to systemic inequities, Black men are more at risk while rural men, regardless of background, are at risk due to a lack of healthcare access. MRI has played an increasingly important role along with core biopsy. Biopsies, if done incorrectly, may sample areas without malignant transformation or may not include areas of the prostate where cancer has spread. MRIs can be imaged or interpreted incorrectly leading to a high false positivity rate. These factors make PCa difficult to diagnose. We want to elucidate if machine learning (ML) can be used to understand why PCa is diagnosed while considering risk factors that can lead to PCa development. Through a literature review, we found that ML algorithms have begun to assist physicians in diagnosis. Over the past few years, feature learning is also an important development whereby a machine can detect attributes indicative of PCa. With feature learning, we want to increase diagnostic specificity. Therefore, diagnosis should be made into a binary whereby physicians can target therapies. The goal is to create a process to approach large data sets. We will (1) determine how to use feature learning to see whether a patient has PCa and (2) explore links with different demographics. An important consideration is the multifactorial nature of PCa leading to a unique patient experience. This work is pedagogical allowing for a framework in how ML can diagnose PCa. Conclusions made allow for a pipeline to further explore ML analyzing how PCa and other cancers present in a population.

Abstract #99
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

Pediatric presentations of Klippel feil syndrome: a systematic review

Hanna Patel*, Abbigail Niewchas, Christopher Stewart, Karson Ballard, Brandy Gotti, Elijah Elliott, Suporn Sukpraprut-Braaten
***Presenting Author**

Introduction Klippel-Feil Syndrome (KFS) is a rare congenital disease characterized by an abnormal fusion of cervical vertebrae. It is characterized by a classic triad of limited cervical range of motion, low posterior hairline, and a short neck. This review analyzes pediatric cases of KFS using ICD-10 codes to identify patterns that may provide insight into its pathophysiology. Identifying these associations will enhance awareness and improve clinical outcomes for pediatric KFS patients. **Methods** This is a systematic review of all case reports published in PubMed between October 2013 to January 2023. Articles were first identified using the keywords “Klippel-Feil Syndrome”. 157 reports were initially found with these criteria, totaling 177 cases. 71 articles (72 reports) described a case of Klippel-Feil Syndrome in a pediatric patient, defined as newborn - eighteen years old. Full-text review of all 72 reports was conducted to identify concurrent diseases, which were broken down based on ICD-10 category and further analyzed to determine if any discernible pattern exists amongst disease classifications in pediatric KFS patients. **Results/Conclusion** Of the 71 cases examined, the average age was 8 years (SD = 5.5). A total of 37 females (51.4%) and 32 males (44.4%) were reported. The most commonly observed symptoms by ICD-10 coding were Diseases of the Musculoskeletal System (226 cases, 45%) followed by Congenital Malformations (220 cases, 44%). Since many patients exhibited multiple symptoms, the total number of recorded symptoms exceeds the number of patients. Congenital malformations co-occurred with musculoskeletal diseases in 15 cases (21.13%), suggesting a strong association between these symptoms. MRI was the most frequently used imaging modality (43, 61%), followed by CT (34, 48%) and x-ray (26, 37%). Recognizing common pediatric presentations of KFS enables clinicians to anticipate multisystem involvement guiding diagnostic and treatment decisions to improve patient outcomes.

Abstract #100
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

Hypokalemia and pneumonia: a retrospective analysis of hospital length of stay for patients in southwest Missouri

Kuntal Patel*, Tevon Brooks, Shaufe Hassan, Ann Thomas, Scott Andelin, Nova Beyersdorfer, Kerry Johnson, John Paulson

***Presenting Author**

Pneumonia is a common condition that can cause significant damage to the lungs and may be worsened by comorbidities, like hypokalemia. This study aimed to explore the relationship between pneumonia and hypokalemia and their impact on the length of hospital stay (LOS). In this retrospective observational study, electronic medical records were analyzed for patients aged ≥ 18 discharged from Freeman Health System between January 1, 2019, and December 31, 2022. Patients were classified into three categories based on International Classification of Diseases, Tenth Revision codes: those with pneumonia with hypokalemia (PXG), pneumonia without hypokalemia (POG), and hypokalemia without pneumonia (OXG). Each subgroup was further divided by LOS (≥ 6 days or < 6 days), age (< 65 or ≥ 65 years) and gender. This study found that patients with both pneumonia and hypokalemia had significantly longer hospital stays (LOS ≥ 6 days) than those with only one condition. Specifically, 72.72% of PXG patients had extended stays, compared to 47.83% in the POG group and 48.09% in the OXG group. Elderly patients (≥ 65 years) with pneumonia and hypokalemia (PXE) had the highest rate of extended stays (74.06%), followed by younger patients (< 65 years) with both conditions (PXA) at 70.92%. Gender analysis showed that males in the PXG group (PXM) had a higher percentage of extended stays (77.85%) than females (PXF) at 68.68%. Overall, across all subgroups, patients with both pneumonia and hypokalemia were more likely to have extended stays. This study showed that patients having both pneumonia and hypokalemia had a higher percentage of extended LOS (≥ 6 days) compared to those with either hypokalemia without pneumonia or pneumonia without hypokalemia. This was true for patients regardless of age or gender. Limitations of the study included the patient population focused within southwest Missouri and the reliance on hospital documentation, which may affect the generalizability and causation conclusions.

Abstract #101
Program: Dental Medicine
Category: Case Reports and Studies

Poster Session: J-2

Dental Findings in Mandibular Symphysis Tessier 30 Cleft: A Case Report

Prithu C. Patel*, Pravin K. Patel, Evelina H. Kratunova
***Presenting Author**

The Tessier 30 facial cleft, also known as a median mandibular cleft, is an extremely rare craniofacial anomaly resulting from incomplete fusion of the mandibular prominences during embryonic development. This defect manifests along the midline of the mandible. It can vary widely in severity, ranging from a notch in the vermilion border of the lower lip to a complete cleft extending through the tongue and mandible down to the manubrium sterni. Associated anomalies may include ankyloglossia (tongue-tie), aglossia (absence of the tongue), or even complete duplication of the tongue. Due to its rarity, limited literature exists on the dental manifestations and long-term management of affected individuals. This report examines the dental findings and multidisciplinary approach used in managing a pediatric patient diagnosed with a Tessier 30 cleft—the 27-month-old male presented with a mandibular midline cleft, severe transverse dental arch crowding, and macrodontia. Initial treatment included autogenous mandibular bone grafting to reconstruct the symphysis, followed by ongoing monitoring of dental development. At age 11, orthodontic intervention was implemented to address malocclusion and dental arch discrepancies. Early dental assessment and interdisciplinary collaboration are crucial in optimizing outcomes for individuals with rare craniofacial clefts. As more cases are documented, further research is essential to establish standardized guidelines for comprehensive dental management in patients with a Tessier 30 cleft.

Abstract #102
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-2

Cryptococcal pneumonia in a patient with previous COVID-19 infection on chronic low-dose prednisone

Hannah Peterson*, Lindsay Staudt, Uwe Schmidt, MD, Mark Jarosz, MD
***Presenting Author**

A 77-year-old male presented to an outside emergency department with shortness of breath, weakness, and hypotension. Past medical history includes diabetes mellitus type 2, hypertension, coronary artery disease, hyperlipidemia, and polymyalgia rheumatica. Labs from a clinic visit the day before showed leukocytosis, acute kidney injury, and chest X-ray showed evidence of pneumonia. Two weeks prior to this presentation, he was admitted to an outside hospital for pneumonia and discharged on Augmentin with improvement. However, his symptoms worsened and prompted return to the outlying facility. There, he was found to have pneumonia with acute respiratory failure, acute kidney injury, hypotension, and hyperglycemia and was given intravenous fluids, meropenem, and vancomycin. He was readmitted and found to have new-onset atrial fibrillation with rapid ventricular response and subsequently transferred as a direct admit to our facility for higher level of care. Cardiology was consulted and his metoprolol and diltiazem were replaced with amiodarone. Blood cultures drawn on admission were negative for bacterial growth, but fungal serology showed positive *Candida* antigen; thus, he was started on micafungin. Chest CT showed extensive severe bilateral airspace disease and pneumonia with right worse than left and reactive mediastinal and hilar lymphadenopathy. Pulmonology was consulted and performed bronchoalveolar lavage, which found neutrophil predominance and fungal culture showed *Cryptococcus neoformans*. Infectious disease was consulted and he was switched to fluconazole after 10 days of micafungin and meropenem. He is chronically on prednisone 5mg for polymyalgia rheumatica, which was stress-dosed to 60mg in hospital. Upon further history, the patient was found to have had COVID-19 infection that did not require hospitalization approximately 3 months prior to his admission at our facility. He improved clinically and was eventually discharged after a 12-day admission on fluconazole with close follow-up with cardiology and infectious disease.

Abstract #103
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

Exploring pan-immune inflammation value (PIV) in breast cancer patients

Hossein Pourtaghi*
***Presenting Author**

Introduction/Background: Breast cancer is the second leading cause of death in women. Chronic inflammation, often associated with conditions like diabetes, increases the risk of cancer development, making the Pan-Immune Inflammation Value (PIV) a useful prognostic tool to measure inflammatory status. PIV, calculated from neutrophil, platelet, monocyte, and lymphocyte counts, has been associated with poorer survival outcomes in cancer patients. However, the influence of demographic and clinical factors on PIV in breast cancer patients remains unexplored. **Question, Problem, or Hypothesis Addressed:** This study explores the relationship between PIV and demographic and clinical characteristics in breast cancer patients, aiming to determine whether these factors influence PIV's utility as a prognostic indicator. **Materials and Methods:** Data from electronic health records and self-report information of 304 breast cancer patients were analyzed, with 242 patients included after excluding those without available laboratory values. PIV was calculated, and patients were grouped into high PIV (n = 121) and low PIV (n = 121) groups using the sample PIV median of 275.5. Descriptive and inferential analyses (chi-square and t-tests) were conducted to compare demographic, clinical, and social factors between the groups. **Results:** No significant differences in demographic (e.g., race, ethnicity), clinical (e.g., BMI, diabetes status), or social factors (e.g., smoking, drinking history) were found between the high and low PIV groups ($p > 0.05$), suggesting that PIV is independent of these variables in breast cancer patients. **Discussion/Conclusion:** This study indicates that PIV is a reliable prognostic marker in breast cancer, unaffected by demographic or clinical characteristics. Despite these findings, the sample size and cross-sectional design limit the ability to detect subtle interactions. Future longitudinal and multi-center studies are recommended to validate these results and further explore PIV's prognostic value across diverse populations.

Abstract #104
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

Hypertension and pneumonia: retrospective analysis on length of stay

Peter Reisdorf*, J. Tyrone Adcock, DO, Cassandra Blau, Diana Hamdan, Brandon Shin, Nova Beyersdorfer, Kerry Johnson Edd, John Paulson, DO PhD

***Presenting Author**

Pneumonia is a severe infection that presents significant challenges, particularly in patients with comorbidities. Hypertension (HTN), a prevalent global health concern, may play a role in influencing recovery outcomes. This retrospective study analyzed electronic medical records from Southwest Missouri to investigate the relationship between HTN and length of stay (LOS) in pneumonia patients. Our analysis revealed a statistically significant reduction in the percentage of patients experiencing extended LOS among those with both pneumonia and HTN compared to those with pneumonia without HTN. These results demonstrate a possible beneficial effect of having comorbid HTN while in the hospital for pneumonia. Previous studies have shown certain HTN medications as being protective to patients with a variety of conditions, further research could focus on this possibility.

Abstract #105
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

Evaluating the role of Score 1 for Health's vision screening program in addressing vision needs in elementary school students

Amolika Saini*, Kate Backes MPH, Arjun Mahajan, Annette Campbell MPA, RN
***Presenting Author**

Objective: The aim of this study was to evaluate the effectiveness of Kansas City University's (KCU) Score 1 for Health vision screening program in addressing vision needs among elementary school students in Joplin and Kansas City, Missouri.

Methods: A retrospective analysis was conducted using Score 1's far vision screening test results. Students aged 5-15 years were screened in 10 Joplin and 37 Kansas City schools over two consecutive academic years (AY22: 2022-2023 and AY23: 2023-2024). Screening consisted of a first (performed by medical students) and second vision screening (performed by Score 1 registered nurses). Students not passing both screening tests were classified as not passed. The analysis examined students who did not pass in AY22 but passed in AY23. **Results:** Of the 9,808 students tested in AY22, 1,738 students did not pass the far vision screening tests. Of these, 946 students (54.5%) were again screened in AY23, with a passing rate of 45%. Of the 162 students who did not pass the screening tests in AY22 and who did not have corrective eyeglasses, 73 (45%) passed and wore corrective eyeglasses in AY23. Moreover, 32 students (19%) who passed in AY23 wore corrective eyeglasses in both years but did not pass in AY22, indicating possible new eyeglasses prescription. **Conclusion:** This study shows that elementary school students benefitted from KCU's Score 1 for Health program. Vision screening tests were an important intervention for detecting gaps in vision health: 11% (105/946) of students likely acquired vision correction from AY22 to AY23. However, vision did not improve between screenings for 55% of the population, indicating missed opportunities for intervention. Incomplete data, including specific follow-up data, limited the ability to fully assess program impact. Further investigations and strategic follow-up would benefit more elementary students with vision concerns.

Abstract #106
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

Efficacy of Thermal Imaging in Determining Vascular Patency

Vincent Schmidt*, Morgan Stewart, MS, Simran Aulakh, BS, Julia Kirkland, MS, Lyon Hough, PhD
***Presenting Author**

Vascular patency is critical in various surgical procedures, including coronary artery bypass grafting (CABG), flap surgeries, and vascular anastomosis. Traditional imaging techniques, such as angiography, are effective but have risks for patients with kidney dysfunction and could cause allergic reactions, although rare.. This study investigates the use of infrared thermography as an alternative imaging method to detect vessel patency, microcirculation, and stenosis in the inferior abdomen. A total of 54 cadavers were dissected, and the inferior epigastric artery was assessed using infrared thermal angiography after injecting hot water into the vessel. The study found that 98.15% of cadavers demonstrated general vessel patency, while 31.48% showed signs of stenosis, and 12.96% exhibited visible microcirculation. Infrared thermography proved to be effective in detecting patency and stenosis but showed limitations in assessing microvascular structures. This suggests that infrared thermography could be a viable intraoperative tool for evaluating revascularization in flap surgery, graft surgeries and many others, offering a quick and effective alternative alongside traditional imaging methods, particularly in patients with contraindications for contrast agents. However, improvements in technology and more research with larger sample sizes and living patients will be needed to improve its accuracy, and refute its limitations.

Abstract #107
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

A novel relationship between subcostal angle, bmi, and calot's triangle

Phil Sheridan*, Diana Hamdan, Cameron Smith, Dr Alla Barry, Dr Farida Mehrhoff
***Presenting Author**

Calot's Triangle (CT) serves as a landmark for surgeons during cholecystectomies. Anatomical variations in the region can contribute to intraoperative damage. No studies have correlated dimensions of CT structures with liver and gross body parameters. We found significant correlations between subcostal angle, body mass index, liver width, and the common hepatic artery and cystic duct dimensions. A direct correlation between subcostal angle and CHA length was discovered ($p=0.016$). Analysis subgrouped by BMI showed significant differences in subcostal angle and cystic duct length. These preliminary findings suggest that pre-operative estimation of the subcostal angle is a quick way to gain insight into the hepatobiliary anatomy without the need for additional medical imaging.

Abstract #108
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

COVID-19 and Pneumonia Effect on Length of Hospital Stay (2019-2022): A Retrospective Observational Study in a Rural Southwestern Missouri Population

Chenxi Shi*
***Presenting Author**

Pneumonia is a common cause of hospitalization which may be complicated with other processes such as COVID-19. Since one of the most frequent causes of viral pneumonia over the last few years was SARS-CoV-2, it is important to explore the relationship of pneumonia and COVID-19 in extended hospital stays. Rural populations usually have worse disease outcomes due to the lack of accessible care and routine checkups. Prolonged hospitalization can place an unnecessary burden on a patient's day-to-day life. Thus, to promote better wellness in the rural population, it's important to examine how pneumonia and COVID-19 together affect hospital stays. This retrospective study explores the relation between the extended length of hospital stays and the presence of COVID-19 and/or pneumonia diagnosis. Adult patients with COVID-19 and pneumonia were grouped against adult patients with pneumonia without COVID-19. Age and gender were assessed in isolation to minimize confounding variables. Based on the data collected from Freeman Health System, there is a higher percentage of patients with pneumonia and COVID-19 that required extended hospitalization than with pneumonia without COVID-19. Additional factors that were explored, such as age and gender, did not show a significant difference among hospitalization length. Our findings conclude that patients with pneumonia and COVID-19 comorbidity will have significantly prolonged hospital stays. The data collected in this study is limited to rural setting, which may not apply to a general population. Further studies may need to be conducted to explore the underlying causes of prolonged hospital stays amongst these patients.

Abstract #109
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-2

Subacute Brainstem Infarction in an Infant with Incidental Ectopic Lymphoid Tissue: A Case Report

Chenxi Shi*, Ambrose Loc Ngo, Deiter Duff
***Presenting Author**

Introduction: Stroke in the pediatric population is extremely rare, with an incidence of approximately 1.3 per 100,000 children and often have serious health consequences. The majority of strokes affect the middle cerebral artery (MCA), while brainstem infarctions account for only about 10% of both ischemic and hemorrhagic strokes. These factors make subacute brainstem infarction in infants an exceptionally rare occurrence. Additionally, the incidental finding of ectopic lymphoid tissue within the central nervous system during autopsy raises the question of an undiagnosed autoimmune disorder. **Case Presentation:** A 2-month-old male was found in cardiac arrest while in his car seat. He was successfully resuscitated by first responders and admitted to the ICU. Despite intensive medical intervention, he succumbed four days later. His medical history included two prior NICU admissions due to neonatal respiratory distress. Metabolic screening did not reveal any metabolic disorders, and a cardiac workup was unremarkable. Autopsy findings revealed ectopic lymphoid tissue in the brainstem, along with changes consistent with ischemia. Systemic findings included acute infarction of the spleen, inflammation of the colon, bronchiolitis, and thymic atrophy. Postmortem genetic analysis identified a heterozygous missense variant in SLC4A3 of unknown significance. Collectively, these findings suggest an underlying inflammatory condition. **Discussion:** This case highlights the devastating impact and subtle onset of brainstem infarction in an infant who presented with cardiac arrest. The brainstem plays a critical role in regulating vital physiological functions, and damage to this region can lead to rapid deterioration. Compared to adults, infants have a smaller body size and immature respiratory musculature, making them less capable of compensating for physiological changes. Given the rarity and severity of brainstem infarctions in infants, future research should focus on developing clinical guidelines and screening tools to detect early warning signs and improve patient outcomes.

Abstract #110
Program: Osteopathic Medicine
Category: Basic Science

Poster Session: J-1

Comprehensive structural analysis of piriformis muscle and sciatic nerve in cadavers: potential implications for piriformis syndrome

Chenxi Shi*, Harsha Kalagana, Yuet Ting Ma, Farida Mehrhoff, MD
***Presenting Author**

Introduction: It is estimated that 0.3%–6% of lower back and buttock pain can be attributed to Piriformis Syndrome (PS), accounting for approximately 2.4 million diagnoses annually. PS is currently a diagnosis of exclusion due to its vague presentation and lack of clear diagnostic criteria. As a result, the actual prevalence of PS is likely higher. The etiology of PS remains unclear; past studies have theorized that it arises from entrapment of the sciatic nerve (SN) by the Piriformis muscle (PM). This study aims to explore the entrapment theory in PS and determine whether a relationship exists between these structures in this anatomically compact region. **Method:** The gluteal region of 20 formalin-embalmed cadavers from the Kansas City University Joplin anatomy program was dissected and examined. Length and/or circumference measurements of the PM and SN were taken at least three times to ensure precision and were documented. Data analysis was conducted using Microsoft Excel. **Results** After exclusion for quality and anatomical variations, 35 samples were included in the analysis. The average circumference of the SN and PM was 3.48 cm (SD= 0.53) and 4.41 cm (SD= 0.94), respectively. Overall, no correlation was detected between PM circumference and SN circumference ($R= 0.01$). However, PM length positively correlated with body size metrics, such as BMI ($R= 0.36$) and pelvic width ($R= 0.42$). Additionally, individuals with $BMI \geq 25$ had a slightly larger average PM circumference (mean [SD] = 4.96 [0.95] cm) than those with $BMI < 25$ (mean [SD] = 4.34 [0.99] cm). **Conclusion:** The findings suggest that PM size is unlikely to be a reliable predictor of SN size, and vice versa. This study further shows PM might be potentially influence by body size and gender. Future large-scale studies incorporating medical imaging from symptomatic patients would likely provide further insights into PS.

Abstract #111
Program: Osteopathic Medicine
Category: Medical Education

Poster Session: J-2

Assessing discontinuation and non-publication rates in osteoporosis clinical trials

Andrew Simonsen*, Daxton Kennington, Whitney Shae, PhD, Catherine Satterwhite, PhD

***Presenting Author**

Introduction: Clinical trials are crucial for advancing medical knowledge, yet many remain unpublished or were discontinued without reporting findings, leading to research waste and ethical concerns. In osteoporosis research, where effective interventions are vital for gaining knowledge and improving patient outcomes, incomplete reporting impairs evidence-based care and limits clinical advancements. **Objective:** This study examines the rates of discontinuation and non-publication in osteoporosis randomized controlled trials (RCTs) to identify trends and factors associated with incomplete reporting. **Methods:** Using the keyword “Osteoporosis” as the basis for our search, we analyzed Phase 3 and 4 RCTs registered on ClinicalTrials.gov between January 1, 2000 and September 1, 2022. Trials were classified as completed or discontinued, and their publication status was determined through systematic searches across multiple databases. Principal investigators were contacted if necessary. Chi-square and Fisher’s exact tests of independence were performed to examine associations between trial characteristics, funding sources, and outcomes. **Results:** Of 303 eligible trials, 274 (89%) were completed and 29 (11%) were discontinued. A total of 161,284 (92%) and 19,872 (8%) patients participated in completed and discontinued trials, respectively. Among completed trials, 150 (54.7%) were published, while 124 (45.3%) remained unpublished. Industry-funded trials were discontinued significantly less than non-industry-funded trials, single-center trials had higher discontinuation rates, and industry-funded and multi-center trials were both significantly less likely to be published. **Conclusion/Discussion:** A considerable proportion of osteoporosis trials remains unpublished or discontinued, limiting the availability of research findings. This results in patient exposure to experimental medical treatments which provide no advancement in the field. Non-industry-funded and single-center trials face higher discontinuation rates, while industry-funded and multi-center studies exhibit lower publication rates, raising transparency concerns. Stricter enforcement of reporting regulations, improved feasibility assessments, and enhanced standardization in trial registries are necessary to ensure the accessibility of valuable clinical data and uphold ethical research practices.

Abstract #112
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

Quadriostial Origin of the Coronary Arteries: A Case Report

Hunter Simonsen*, Kaden Taylor, Luke Brogan, Thaddeus Reed, Taylor Geddes, William Craig
***Presenting Author**

A 75-year-old male with a history of hypertension and radiation-induced peripheral vascular disease presented to the cardiac catheterization lab for an elective coronary angiogram after an abnormal cardiac stress test. The coronary angiogram results showed a total of four separate coronary artery ostia. Within the right coronary cusp, were two separate ostia as opposed to a single ostia that supplies the right coronary artery. The additional ostia gave rise to the left anterior descending artery. Further, as opposed to the single ostia in the left coronary cusp, there were two separate ostia creating a left circumflex and marginal artery. Despite this anomalous anatomy, the patient was asymptomatic and instructed to continue to follow up with outpatient cardiology. Our case report discusses this unique quadriostial coronary anatomy, the complications that can arise from anomalous coronary arteries, diagnoses, and management of such cases.

Abstract #113
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

Novel etiology and outcomes of chest pain in a suspected case of Mpox

Rajbir Sooch*, Dr. Mark Jarosz, Dr. Justin D. Wilberding
***Presenting Author**

Mpox is closely related to smallpox and presents with many of the same symptoms. Atypical GI and respiratory findings have been reported, but relatively few cases of Mpox-associated chest pain exist. This case represents a novel presentation of chest pain (attributed to pericarditis versus esophagitis) along with unique outcomes related to our patient's medical history. A 39 year-old male with polycystic kidney disease presented to the ED with substernal chest pain described as squeezing pressure. Chest x-ray showed mediastinal widening, and subsequent CT angiography revealed esophageal thickening. Upon admission, echocardiogram showed small pericardial effusion, supported by ST elevations on EKG. Treatment with colchicine was attempted, but led to AKI and was discontinued. On day three, patient began to develop a vesicular rash that started on his face and spread. The lesions progressed to large pustules with umbilication. Of note, mouth lesions extended to his posterior palate. PCR and biopsy testing for HSV and VZV came back negative. Patient's throat and rash-associated pain improved with gabapentin, and he was discharged home. He returned 2 days later with a large pericardial effusion. This was drained and he was transferred. Of the existing cases of chest pain in Mpox infection, the main etiology is myocarditis. This case is unique in that the patient could not tolerate the standard of care for pericarditis, which contributed to his worsened outcomes. Additionally, although there is no mention of Mpox-associated esophagitis in the current literature, there have been reports of difficulty swallowing in patients infected via sexual contact.

Abstract #114
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-2

New onset seizures in a patient with history of long-term kratom use

Rajbir Sooch*, Dr. Sean Hickey, Dr. Gulshan Uppal
***Presenting Author**

Kratom is a herbal supplement used by many people as a recreational substance for enhancement of productivity and mood, to assist with opioid withdrawal, and for pain relief. Derived from a tree indigenous to Thailand, Indonesia, Malaysia, Myanmar, and Papua New Guinea, its use is currently legal in the US and unscheduled by the US DEA. The use and manufacture of kratom is outlawed in Malaysia and the UK, was only recently legalized in Thailand, and is a controlled substance in several countries. This report describes the case of a 70 yr old female admitted for altered mental status, with symptoms of agitation and decreased responsiveness, who was later diagnosed with new onset nonconvulsive status epilepticus with no prior history of epilepsy, who was found to take kratom on a daily basis for chronic pain. Following ingestion, kratom is broken down into several alkaloid compounds. Of these, 7-OH-mitragynine has a 13 fold greater affinity for mu- and kappa-opioid receptors than morphine. However, its partial agonist activity at opioid receptors can lead to similar withdrawal symptoms associated with chronic use. Kratom also presents with multiple medication interactions. These factors demonstrate the potential toxic effects of long-term kratom use, including but not limited to decreasing the seizure threshold. Health care providers should be aware of kratom's effects and how important it is to add to history taking regarding recreational substance use on hospital admissions and on outpatient intake.

Abstract #115
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

Peri-Pancreatic Neuroendocrine Tumor Unidentified on Abdominal Computed Tomography Scan

Lindsay Staudt*, Wade Weston, Laura Richert, John Irlam, DO
***Presenting Author**

A 72-year-old man presented to the ED for nausea, vomiting and diarrhea as well as ongoing dysphagia. Labs revealed leukocytosis, uremia, acute kidney injury, hyperglycemia without history of diabetes and a lipase of 785. An abdominal/pelvis computed tomography scan was obtained and the following was reported: 1. No interstitial inflammation or obstruction, 2. Significant prostate enlargement, with probable prostate or bladder mass at floor of the bladder, recommend urology consult, 3. Recently passed calculus within the bladder, 4. Additional non-obstructing bilateral renal calculi. The patient improved following treatment for pancreatitis and was discharged with the intent to keep a follow-up appointment with gastroenterology on the following Monday. A repeat EGD was performed during outpatient follow-up 12 days post-discharge, resulting in the fine needle aspiration biopsy of a 2.5 cm peri-pancreatic tumor, not previously documented. Pathology reported cytology taken from the mass at the portal confluence was positive for well differentiated/low-grade neuroendocrine tumor. Submitted sample stained positive for pancytokeratin, CD56, chromogranin, synaptophysin, and CK7.

Abstract #116
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

Case review: hearing and balance loss in creutzfeldt-jakob disease

Christopher Stewart*, Diana Hamdan, Blake Hansen, Karson Ballard, Alex Otto, Suporn Sukraprut-Braaten, Kent McIntire
***Presenting Author**

Introduction: Creutzfeldt-Jakob Disease (CJD) is a rare transmissible neurodegenerative disease caused by misfolded prion proteins leading to rapid mental deterioration and death. Misfolded prion proteins form insoluble aggregates that cause irreversible neurological damage. While typically presenting with symptoms such as cognitive decline and behavioral changes, atypical presentation of CJD includes symptoms such as sensorineural hearing loss or balance loss. Identifying uncommon presentations is key to understanding the pathophysiology of CJD to guide clinical decision-making and improve patient outcomes. **Methods:** This systematic review was done following Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines. The PubMed database was utilized to analyze all case reports from the years 1990 to 2024 using the keywords “Creutzfeldt-Jakob Disease”, “hearing loss”, and “balance”. A total of 16 cases were retrieved, and 11 were included in the study. Cases were analyzed to identify key associations, symptoms, and commonly utilized tests in making a diagnosis. **Results/Conclusion:** Among the CJD cases retrieved, we identified eight patients with hearing loss and three with balance loss. Of hearing loss patients, four (50%) were male and four (50%) were female. The average age was 63.75 years (SD= 11.17 years). The most common symptoms that accompanied hearing loss were analyzed (N, %). All hearing loss patients also presented with gait disturbances (8,100%). Additionally, hearing loss commonly presented with myoclonus (6, 75%), cognitive impairment (4, 50%), akinetic mutism (4, 50%), and vision disturbances (4, 50%). The tests utilized to diagnose CJD in patients with hearing loss included MRI (5, 63%), EEG (5, 63%), and 14-3-3 protein (4, 50%). These findings highlight the importance of recognizing hearing and balance loss as potential early symptoms of CJD, which may aid in earlier diagnosis and a better understanding of disease progression.

Abstract #117
Program: Osteopathic Medicine
Category: Basic Science

Poster Session: J-2

Bridging the role of osteopathic manipulative medicine in cerebral palsy patients.

Rachana Tadakamalla*, Ambrose Loc Ngo, Niki Gharavi, Mercedes Hess, Uyen Tam Nguyen, John Yazji
***Presenting Author**

Background: The application of osteopathic manipulative medicine (OMM) involves physicians using muscle manipulation techniques to diagnose, treat, and prevent various conditions. OMM is used to treat numerous disorders including chronic musculoskeletal pain, headaches, migraines, and parkinsonian gait, as well as psychological conditions like stress, anxiety, and depression. Individuals with Cerebral Palsy (CP) are candidates who could benefit from OMM, as CP causes muscle tone alterations and motor skills impairments. This literature review explores the impact of OMM on patients with Cerebral Palsy (CP). **Methods:** Articles were searched on PubMed and Google Scholar. Inclusion and exclusion criteria were used to screen articles. Examples of search terms used include “osteopathic manipulative medicine and neuropathology,” “osteopathic medicine with cerebral palsy,” “osteopathic treatment in neurological disorders,” and “manual therapy for Cerebral Palsy.” **Results:** Integrating OMM into CP treatments can offer a non-invasive approach to improving musculoskeletal function and neuromuscular control, as well as decreasing the emotional and physical conditions that are associated with the disease. Applying techniques such as myofascial release, cranial osteopathy, and muscle energy can improve a patient’s condition through enhancement of range of motion, circulation, respiratory function, blood flow, lymphatic drainage, and pain reduction. **Discussion:** OMM's holistic approach has the potential to enhance outcomes for individuals with CP by addressing their multifaceted needs. While further research and advocacy are necessary to fully integrate OMM into mainstream CP management, existing evidence strongly supports its role in improving patient outcomes and quality of life. **Conclusion:** The findings provide valuable insights into existing CP treatments, ranging from preventive healthcare reforms and medication options to surgical interventions and other therapies. This underscores the significance of OMM in improving the lives and functional capacities of individuals with CP and establishes a foundation for future research, particularly in the context of neurological disorders like CP.

Abstract #118
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

Analysis of Pneumonia and Anemia on Length of Patient Stay

Brian Tran*, Quan Huynh, Omer Riyadh, MSc, Quinton Le, J. Tyrone Adcock, DO, Research Mentor, Nova Beyersdorfer, Kerry Johnson, EdD, John Paulson, DO, PhD
***Presenting Author**

Individually, pneumonia and anemia are major causes of hospital admissions and prolonged stays in the United States. This retrospective study explores the relationship between pneumonia and anemia and its combined impact on hospital length of stay (LOS) by analyzing data from Freeman Health System (FHS) located in Joplin and Neosho, MO between 2019 and 2022. The sample of 12,471 patients was categorized into those with pneumonia and anemia, pneumonia without anemia, and anemia without pneumonia. The results showed that 72.11% patients with both pneumonia and anemia experienced extended stays, which is defined as staying longer than or equal to 6 days. In contrast, 45.09% and 46.58% of patients had extended stays for pneumonia and anemia respectively. Analysis of the role of age and gender revealed that both conditions led to prolonged hospital stays in all demographics. Overall, this study emphasizes the importance of prompt diagnosis and focused treatments for patients with both pneumonia and anemia. Pneumonia worsens respiratory function through inflammation and accumulating fluid in the lungs which hinders gas exchange. Anemia exacerbates this further by diminishing oxygen transport which together leads to increased hypoxia and respiratory distress. Further research is needed into how these pathophysiological mechanisms interact and worsen prognosis.

Abstract #119
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-2

Examining social determinants in parkinson's disease: a multifactorial case study

Brightney Varghese*, Jenna Watts, Mae Visconti, Rhea Kulkarni, Curtis King, MD
***Presenting Author**

Parkinson's disease (PD) is a progressive movement disorder of the nervous system that affects movement, balance, and coordination. While its pathophysiology is derived from the loss of dopaminergic neurons in the substantia nigra, growing evidence suggests that social determinants of health (SDOH) may play a role in the development and progression of PD. Factors such as socioeconomic status, environmental exposures, and psychological stressors can influence patient outcomes. This case details a 58-year-old male with a history of severe childhood trauma, PTSD, head trauma, and low socioeconomic status who presented with progressive neurological symptoms, including tremor and gait instability. His background includes living in a rural area with limited healthcare access and working in a manual labor-intensive profession. His great-uncle also had PD, raising the question of possible genetic contributions. Given his clinical presentation, the diagnosis of Parkinson's disease was made and treatment with levodopa-carbidopa resulted in partial improvement of symptoms. Emerging research suggests a link between PTSD and an increased risk in the development of PD, possibly due to chronic stress-induced neuroinflammation and dopaminergic dysfunction. Additionally, rural residency and low socioeconomic status hinder patient access to specialty care and advanced therapies, exacerbating disease burden. Environmental factors, including potential toxins from his occupation in a salvage yard, may have also played a role. This case highlights how SDOH, including low socioeconomic status, rural healthcare access barriers, trauma history, and environmental exposures, can shape the course of a chronic disease. Addressing healthcare disparities, improving access to neurological care in rural areas, and recognizing trauma as a potential risk factor for neurodegenerative diseases is critical for improving outcomes in vulnerable populations.

Abstract #120
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

Transverse Myelitis in an Elderly Patient: A Case of Rapid Neurological Decline

Mae Visconti*, Jenna Watts, Mark Jarosz, DO, Adam Fahrenholtz, DO
***Presenting Author**

Transverse myelitis is an uncommon but serious inflammatory neurological disorder of the spinal cord that can lead to profound deficits. This case details the diagnostic challenges and management of an elderly patient presenting with acute lower extremity weakness, sensory loss, and urinary retention. The patient was an 80-year-old female with past medical history of migraines, hypertension, breast cancer with right mastectomy, anxiety, depression, and neuropathy. She was admitted to the hospital for diagnostic workup revealing extensive transverse myelitis of her cervical and thoracic spinal cord. This patient was treated with intravenous immunoglobins (IVIG), high-dose steroids, and was ultimately transferred to a facility with plasmapheresis capabilities for further management. This case outlines the importance of both early recognition and intervention to prevent long-term disability.

Abstract #121
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-2

High-grade uterine angiosarcoma: a rarely described pathology

Mae Visconti*, Jenna Watts, Wade Weston, Mark Jarosz, DO, Gerald Englund, DO
***Presenting Author**

Uterine angiosarcoma is an exceptionally rare and aggressive malignancy composed of vascular endothelial cells of the uterus. This case details a 77-year-old female with a complex clinical course involving multiple episodes of postmenopausal vaginal bleeding. The patient had several admissions where she complained of severe bleeding and was ultimately scheduled for a hysterectomy. During the laparotomy for total abdominal hysterectomy with bilateral salpingo oophorectomy, a 3 cm retroperitoneal mass was discovered under the round ligament. Pathology was positive for ERG and CD31 as well as patchily positive for FLI-1. The patient was diagnosed with a primary high grade angiosarcoma of which only a few have been reported in the literature to date. The rarity of this tumor poses significant challenges in establishing standardized diagnostic and therapeutic protocols. This report aims to provide continued documentation and study of such cases in hopes to improve diagnosis, management, and patient outcomes.

Abstract #122
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-2

Invasive aspergillosis in a patient with chronic granulomatous disease: a case report

Jenna Watts*, Adam Fahrenholtz, DO, Mark Jarosz, DO, Mae Visconti
***Presenting Author**

Invasive aspergillosis is a severe complication of *Aspergillus* which occurs when the mold spores spread from the lungs to other parts of the body. It is most commonly seen in immunocompromised hosts such as those with chronic granulomatous disease (CGD). This case describes a 22-year-old male with a history of CGD and chronic *Aspergillus* infection who presented with invasive aspergillosis. He presented with acute-onset fever, hypotension, tachycardia, and confusion. The patient had a history of nonadherence to antifungal prophylaxis, leading to exacerbation of his condition. He reported that he ran out of posaconazole approximately one month prior and had not refilled the prescription. A diagnosis of invasive aspergillosis involving the left lung, thoracic spine, adjacent ribs, and pleura was established based on clinical findings and the patient's history. Treatment with Zosyn and posaconazole was initiated, along with Actimmune and Bactrim for CGD prophylaxis. CGD is a rare inherited disorder characterized by defective phagocyte function predisposing patients to recurrent infections, particularly with catalase-positive organisms such as *Aspergillus* species. This patient's history of chronic *Aspergillus* infection and nonadherence to antifungals contributed to the invasive disease progression. This case illustrates the critical role of adherence to antifungal prophylaxis in CGD patients. Early recognition and aggressive management of invasive aspergillosis are necessary to improve outcomes.

Abstract #123
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

The impact of pneumonia and comorbid urinary tract infection on hospital length of stay: a retrospective study in rural southwest Missouri

Andrea Weitochova*, Shelby Baxter MPH, Lauren Linderer, Lindsay Staudt MPH, Mariam Akhtar MD, Nova Beyersdorfer, Kerry Johnson EdD, John Paulson DO, PhD
***Presenting Author**

Pneumonia is a common respiratory infection that often requires hospitalization. There are several factors that contribute to a longer length of stay in the hospital for pneumonia patients, including older age and chronic comorbid conditions. Urinary tract infections (UTIs) are very common infections that cost the U.S. healthcare system millions of dollars to manage each year. UTIs can increase the length of stay (LOS) for patients when hospital-acquired. Extended LOS is a major cost burden; therefore, reducing hospital LOS can minimize costs to patients and the healthcare system as a whole. LOS, age, and gender were variables investigated by this study. Electronic medical records were used to perform a retrospective study investigating extended LOS for patients at Freeman Health System in rural southwest Missouri admitted with pneumonia, UTI, or the combination of the two. Extended LOS was defined as 6 days or longer. The sample included 7,804 patients in total. Proportions of each group that had extended stay within the hospital were determined: 334/525 (0.6362) for patients with pneumonia and comorbid UTI, 2,700/5,093 (0.5301) for patients with pneumonia without UTI, and 957/2,186 (0.4378) for patients with UTI without pneumonia. There were 4,930/7,804 (0.6317) that were ≥ 65 years old and 3,722/7,804 (0.4769) that were considered male. Results of our study showed that there was an increase in the number of patients who experienced extended LOS in the hospital with pneumonia and comorbid UTI compared to pneumonia without UTI or UTI without pneumonia. However, pneumonia is the most determining factor for these results with UTI further exacerbating the outcomes. There were no significant differences among the variable groups that suggested age ≥ 65 or being male impacted the LOS stay; the comorbid group was similarly elevated compared to the pneumonia without UTI and UTI without pneumonia groups, as in the original analysis.

Abstract #124
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-1

Data-Driven analysis of MLH1 linked Lynch Syndrome and comorbidities in cancer development and treatment - a prospective study

Brennan Welsh*, Dr. Tyrone Adcock, Dr. Joseph Williams
***Presenting Author**

Data analytics, through the use of algorithms and large language models, allows for the ability to investigate specific genetic mutations as well as comorbidities for cancer development and potential outcomes. A better understanding of these comorbidities will give the potential to expand on knowledge extrapolated relationships from genetic markers and tumor formation. This study will aim to use retrospective patient data sets to assess defined comorbidities in combination with genetic mutations and their impact on cancer development. This information will also be used to identify opportunities in clinical care to improve patient outcomes. There will be de-identified patient data provided by Highlands Oncology Clinic's extensive database. The team will then mine the necessary data, clean, and find the most relevant subsets for this study. This data will be used to conduct a variety of multivariable analyses and statistical studies between certain genetic mutations paired with comorbidities in the development of cancer. In this specific study, the analysis of the data will be between the MLH1 gene mutation, which is linked to Lynch Syndrome, and comorbidities to find a linkage in the incidence and development of cancers. If there is a need for unique patient characteristics for reference, this will be provided by Highlands Oncology Clinic in a secure manner. The results from this study will provide new insights into a variety of comorbidities linked to the incidence and development of cancer in individuals with MLH1 gene-associated Lynch Syndrome, potentially giving insight into personalized treatment approaches both before and after the development of cancer. The benefits from this data could help at the individual level, community-wide, and in the underserved region.

Abstract #125
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

Peritoneal mesothelioma diagnosed on frozen section obtained during diagnostic laparoscopy

Wade Weston*, Jenna Watts, Mae Visconti , Mark Jarosz, DO, Gerald Englund, DO
***Presenting Author**

Malignant mesothelioma is a proliferation of mesothelial cells that has been strongly associated with asbestos in the past; although, it can develop within any mesothelial lining such as the pleura, pericardium, or peritoneum. This case report details a rare case of peritoneal mesothelioma in an 85-year-old female. The patient initially presented with generalized weakness and was treated for a urinary tract infection before re-presenting with nausea, vomiting, and abdominal pain. Laboratory findings revealed normocytic anemia, leukocytosis, acute kidney injury, hypercalcemia, and hyperglycemia. Imaging showed ascites and a pleural effusion, and elevated CA-125 prompted a diagnostic laparoscopy, revealing omental caking and serosal adhesions. Histopathology confirmed biphasic malignant mesothelioma (80% epithelioid, 20% sarcomatoid). Given its poor prognosis, especially in biphasic and sarcomatoid subtypes, early suspicion and thorough evaluation are crucial for timely diagnosis and management.

Abstract #126
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-2

Autosomal Dominant Tubulointerstitial Kidney Disease - A Rare Presentation

Wade Weston*, Brittany Winkfield, DO, Laura Richert, Mark Jarosz, DO
***Presenting Author**

“Autosomal dominant tubulointerstitial kidney disease is a rare, genetically heterogenous disorder marked by progressive kidney dysfunction and bland urinary sediment with absent or trace proteinuria.² Compared to the more prevalent UMOD mutation, ADTKD-MUC1 is associated with a later age of disease presentation but an earlier progression to end-stage kidney disease.¹ Here we describe the case of an adult female presenting with AKI in the setting of a family history of unspecified renal disease.” “A 21-year-old female presents as a direct admission for acute kidney injury with past medical history of kidney stones. The patient had recently been seen at her primary care office for right flank pain, polyuria, and albinuria. She was positive for Markle’s sign on the right and denied fever or vaginal pruritus. An abdominal ultrasound showed increased echogenicity to the right kidney and a simple mid-pole cyst measuring 1.3 cm greatest diameter. A CMP showed a creatinine of 1.46 with high anion gap metabolic acidosis. The patient had previously received genetic testing due to a family history of kidney disease but was voluntarily unaware of the results. Worsened renal function prompted the patient to review the results, revealing a mutation to mucin-1.” “ADTKD can manifest via several mutations with MUC1 comprising a minority 30% of cases.⁴ Although the patient had previously undergone genetic testing, they were voluntarily unaware of the results thus this was unknown to the care team as well. Comprehensive family history and documentation would have allowed for this patient to be approached with renal-protective concerns preemptively.” “ADTKD is difficult to diagnose and currently relies on genetic sequencing and positive family history.¹ Genitourinary symptoms within the setting of a young adult with positive family history should be met with a high index of suspicion and any genetic testing should be thoroughly investigated.”

Abstract #127
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

Peri-Pancreatic Neuroendocrine Tumor Unidentified on Abdominal/Pelvic Computed Tomography Scan

Lindsay Staudt *, Wade Weston, Laura Richert, Dr. Mark Jarosz, Dr. John Irlam
***Presenting Author**

There has been a six-fold increase in the incidence of neuroendocrine tumors from 1973 to 2012, from 1.09 up to a remarkable 6.98 per 100,000. Here we describe the uncommon case of a peri-pancreatic neuroendocrine tumor originally undiscovered by esophagogastroduodenoscopy (EGD) and abdominal/pelvic computed tomography scan. "A 72-year-old man presented to the ED for nausea, vomiting and diarrhea as well as ongoing dysphagia. Labs revealed leukocytosis, uremia, acute kidney injury, hyperglycemia without history of diabetes and a lipase of 785. An abdominal/pelvis computed tomography scan was obtained and was significant for prostate enlargement, with probable mass at floor of the bladder and non-obstructing bilateral renal calculi. The patient improved following treatment for pancreatitis and was discharged with the intent to keep an upcoming follow-up appointment with gastroenterology. A repeat EGD was performed during outpatient follow-up 12 days post-discharge, resulting in the fine needle aspiration biopsy of a 2.5 cm peri-pancreatic tumor, not previously documented. Pathology reported cytology taken from the mass at the portal confluence was positive for well differentiated/low-grade neuroendocrine tumor. Submitted sample stained positive for pancytokeratin, CD56, chromogranin, synaptophysin, and CK7. Pancreatic Neuroendocrine Tumors (PNETs) are complex in nature and diagnosis is often reliant on a multi-focal approach. Even in the case of an endocrine gland pancreatic tumor, secretion of hormone products may be subclinical so biochemical testing is typically followed with imaging, endoscopy and biopsy. Positive staining of biopsy material for chromogranin is indicative of PNET in a majority of cases; however, positive staining for synaptophysin can aid in confirming the diagnosis as it did in this patient.^{2,3} Although the patient had received imaging studies, their peri-pancreatic mass was not readily detected. Patients presenting with unexplained diarrhea, indigestion and abdominal pain should be evaluated carefully, even when receiving commonly administered testing.

Abstract #128
Program: Dental Medicine
Category: Clinical Science

Poster Session: J-1

Interprofessional Education Oral Screenings as Part of a Community Program

Keaton Wilczynski*, Dr Sharon Gordon, Dr Latasha Vick, Dr Aldo Del Sol
***Presenting Author**

Background: Score 1 for Health is a health screening program providing free health screenings education to local elementary school children. With the opening of KCU's College of Dental Medicine (CDM), the Score 1 for Health screening program expanded to include oral health screenings for elementary school children in rural South-West Missouri. **Objective:** This observational pilot aimed to evaluate the interprofessional experience between medical students and dental students in this community screening program. These data will be used to improve KCU's interprofessional education curriculum. **Methods:** Data were collected via observations of medical and dental student interactions during the oral health screening of 155 elementary school children and in-person interviews of selected dental students. A case study approach was utilized for data evaluation, employing discourse and thematic analysis to identify key topics and patterns. **Results:** Themes emerging from the analysis included a strong appreciation for interprofessional collaboration among medical and dental students in enhancing patient care and learning opportunities. Despite an in-person training session held weeks prior to the Score 1 event, the medical students appeared unprepared or uncomfortable at the beginning of the session. Participants reported a lack of clarity regarding the roles of the dental students who assisted with the oral health exams, contributing to hesitation from medical students in seeking assistance. Participants recognized the event's positive impact on community health but indicated a need for clearer role definitions, additional training and preparation for medical students. **Conclusion:** This pilot study highlights the perceived benefits of interprofessional collaboration among medical and dental students in community health screenings. Didactic interprofessional education can enhance medical students' training in oral health, while expanding the roles of dental students would further improve collaboration. By leveraging their expertise, these students can contribute more effectively to patient care and community health outcomes.

Abstract #129
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

Tobacco use versus obesity as predictors of coronary heart disease in Missouri counties, 2022

Adam Youssef*, Kate Backes, MPH
*Presenting Author

Introduction: Tobacco use and obesity are major contributors to coronary heart disease (CHD), a leading cause of death in the United States. This study investigates the correlations of tobacco use and obesity with CHD in Missouri counties in 2022 and analyzes the association of four potential control variables: median household income, physical inactivity, excessive drinking, and diabetes prevalence. Materials and Methods: County-level, age-adjusted data on tobacco use, obesity prevalence, and CHD were obtained from the 2022 Behavioral Risk Factor Surveillance System (BRFSS) accessed on January 31, 2025. Data on possible confounding variables were sourced from CDC PLACES (2024 release). Pearson correlation was used to assess the relationship between tobacco use, obesity, and CHD. Lasso regression performed variable selection on the six factors to identify the subset that best explained CHD patterns of the dataset. Results: Tobacco use demonstrated a strong positive correlation with CHD ($r=0.87$, $p<0.05$), whereas obesity showed a moderate positive correlation ($r=0.65$, $p<0.05$). Regression analysis identified diabetes prevalence and excessive drinking as having a positive relationship with CHD. Median household income showed a negative association, as well as population size. Discussion: Findings suggest that tobacco use is more highly correlated with CHD than obesity, reinforcing the need for targeted smoking cessation programs. Other factors likely contribute to this relationship, such as diabetes prevalence and median household income. Acknowledging these interactions in public health and policy interventions may help reduce CHD. Conclusion: This study emphasizes the critical need for focused public health efforts to reduce tobacco use in Missouri counties as a primary strategy to reduce CHD prevalence. Policymakers and healthcare professionals must also consider the importance of other health conditions and socioeconomic factors when shaping policies.

Abstract #130
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

Retrospective analysis on pneumonia and hyperkalemia association with extended hospital length of stay

Philip Yusuf*, David Sau Ting Jain, Raja Khanzada, Michael Peng, Scott Andelin, MD, Nova Beyersdorfer, Kerry Johnson, EdD, John Paulson, DO, PhD

***Presenting Author**

This study examines the impact of coexisting pneumonia and hyperkalemia on hospital length of stay (LOS) compared to patients with either condition but not the other. The hypothesis was that the combination of these conditions would increase the likelihood of extended LOS when compared to situations in which patients had one of these conditions but not the other. To carry out the investigation, we performed a retrospective observational study collected from Freeman Health System (FHS) located in Joplin and Neosho, MO. In this study, we examined the data using Wald's method to assess and compare patients with pneumonia and/or hyperkalemia, identifying which population groups were significantly associated with extended LOS (defined as ≥ 6 days). The population set consisted of individuals with hyperkalemia with pneumonia (PXG), hyperkalemia without pneumonia (oXG), and pneumonia without hyperkalemia (PoG). The sample was further divided into elderly patients ≥ 65 years old (E), adult patients < 65 years old (A), male (M), and female (F) adult populations in comparison to the general population sample (G) consisting of adults ≥ 18 years of age. A total of 7,304 patients were included in the analysis. Individuals with hyperkalemia with pneumonia (PXG) had a 21.44% absolute increase in percentage of extended LOS compared to individuals with pneumonia without hyperkalemia (PoG) and a 27.57% absolute increase in percentage of extended LOS compared to individuals with hyperkalemia without pneumonia (oXG). Both differences were statistically significant with a P-value < 0.0001 . Similar patterns within the age groups were observed: the groups with pneumonia and hyperkalemia had significantly higher percentages of extended LOS compared to the single morbidity groups (PoE, PoA, oXE, and oXA). Similar patterns within the gender groups were observed: the groups with pneumonia and hyperkalemia had significantly higher percentages of extended LOS compared to the single morbidity groups (PoM, PoF, oXF, and oXM).

Abstract #131
Program: Dental Medicine
Category: Medical Education

Poster Session: J-1

Is AI a threat to medical education—or the key to securing it?

Haley Kinney*
***Presenting Author**

Integrating artificial intelligence (AI) into medical education and professional practice challenges traditional clinical decision-making methods. Integrating AI-driven tools into medical diagnostics and treatments requires medical professionals to learn advanced critical thinking skills to work well with AI systems. How can AI-based assessments help improve clinical reasoning and decision-making skills in medical students and residents? Medical education transformation occurs through AI integration, changing student interaction with complex concepts and clinical decision-making processes. Medical educators must consider how AI assessments support critical thinking development without eliminating traditional learning approaches. AI benefits medical education because it delivers adaptive assessments, real-time feedback, and tailored learning experiences. However, excessive dependence on AI-generated content presents ongoing concerns due to its potential to diminish independent clinical thought and reasoning. Examining best practices for implementing AI-based assessments in medical education, strongly focusing on critical thinking development. It demonstrates how AI technologies can serve as educational aids by generating case scenarios to develop diagnostic reasoning, enhancing active learning through AI-driven feedback loops, and combining AI assessments with conventional methods. The curriculum will explore the ethical issues associated with AI assessments by focusing on bias detection, assessment validity, and transparency mechanisms. When medical institutions thoughtfully incorporate AI into their educational frameworks, they can boost student involvement while refining assessment models and training clinicians for AI-enhanced healthcare settings. This discussion offers educators actionable knowledge to optimize AI benefits in medical education and preserve vital cognitive skills for medical practice.

Abstract #132
Program: Dental Medicine
Category: Basic Science

Poster Session: J-2

Correlation of the external and internal iliac vessels dimensions with weight and gender: implications for surgical planning

Shireen Hafez*, Ambrose Loc Ngo, Uyen Tam Nguyen, Sean Do, Chenxi Shi
***Presenting Author**

The external and internal iliac vessels supply the pelvis and lower extremities. As body weight increases, the risk of ischemia due to obstruction or injury to these blood vessels also increases. Our study aims to establish whether dimensional changes in the internal and external iliac arteries and veins correspond to weight and gender. Formaldehyde-embalmed cadavers were dissected to access the external and internal iliac vessels. Donors' weights were obtained from the Gifted Body Program database, which was based on the recorded weight of the donor after death. A Pearson correlation was calculated between the donor's weight and the length and diameter of the external and internal iliac arteries and veins. Length was measured from the branching point from the common iliac artery and vein to the level of the inguinal ligament. The diameter was measured 1.5 cm from the branching point of the common iliac artery and vein. A weak negative correlation was found between the donor's weight and the length of the external and internal iliac arteries. A positive correlation was found between body weight and the diameter of the external and internal iliac arteries. The length and diameter of the internal iliac veins and the body weight had a positive correlation. Males had thicker external and internal iliac arteries compared to females; the median thickness was higher in males. The external and internal iliac veins did not show significant thickness variations between males and females. In conclusion, the length of the external and internal iliac arteries and veins slightly decreases with weight increase, while the diameter of the external and internal iliac arteries and veins increases with increasing weight. Gender variations in vessel thickness exist. These findings could be useful for preoperative surgical intervention planning with the goal of fewer complications.

Abstract #133
Program: Dental Medicine
Category: Quality Improvement

Poster Session: J-2

Beautiful Anatomical Creations

Lana Ghoneim*, Isra Khan , Shireen Hafez
***Presenting Author**

Anatomy and art have been linked together for centuries. Since the days of Vesalius and Leonardo Da Vinci, anatomical preparations have always been more than just stark scientific information. They have been used to illuminate the structural perfection and mechanical ingenuity of the body in part as a tribute to the perfection of God's work and the genius of His designs. This work presents some preparations that were made for research purposes but are aesthetically pleasing. The reproductive tracts of doe goats were injected in situ with tinted plastic compounds and then processed by tissue clearing or used to make corrosion casts for viewing under the scanning electron microscope. Tissue clearing renders the material transparent and shows the sinuous grace of the vascular pathway. Scanning electron microscopy of the corrosion casts reveals subtleties and complexities of the microvascular architecture that approximate artworks by such painters and sculptors as Jackson Pollock. Their superficially abstract nature is underlain by their functional importance, making the truth of the sayings that "Form follows function" and "Life imitates Art" more meaningful.

Abstract #134
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-1

Literature Review of Pityriasis Licheniodes after exposure to COVID-19 Vaccination

Maneesh Singh*
***Presenting Author**

There have been numerous cases of cutaneous skin reactions such as Pityriasis Licheniodes reported with the COVID-19 vaccine. The objective of this article is to provide a literature review of the reported cases of Pityriasis Licheniodes after COVID-19 vaccinations. A literature search was done utilizing PubMed's advanced search. The search term "Pityriasis Licheniodes Covid vaccination" was entered into the PubMed advanced search. Studies that were published between 2021 and 2024 were selected. For the inclusion criteria, the article needed to be in English with original research using human participants and the rash had to be specific for Pityriasis Licheniodes. A search on PubMed with the search term "Pityriasis Licheniodes Covid vaccination" yielded approximately 14 results. About four of the results were eliminated because they were looking at multiple skin reactions not just Pityriasis Licheniodes. The remaining results were case reports of Pityriasis Licheniodes after COVID-19 vaccination which were compiled into a table listing the following: article reference, age of the patient, sex of the patient, vaccine patient received, presentation of Pityriasis Licheniodes and the latency (time from the first dose of vaccination to the eruption of Pityriasis Licheniodes). Based on these results Pityriasis Licheniodes could be considered a possible non-life-threatening reaction to the COVID-19 vaccination.

Abstract #135
Program: Osteopathic Medicine
Category: Medical Education

Poster Session: J-2

Resident specialty choices

Maneesh Singh*, Dr. Dennis Wolff
*Presenting Author

OSM3 and OSM4 students were surveyed since little is known at Kansas City University about the incoming career aspirations of the medical students or the factors that influence changes in career aspirations during their education. Responses were received from 46 OSM3- and 78 OSM4-students. Broadly categorizing initial career aspirations, 39 were non-procedure (NP; e.g., internal medicine, family medicine, psychiatry, pediatrics), 56 were procedure (P; e.g., any surgery, anesthesiology, emergency medicine), 6 were indirect procedure (IP; e.g., pathology, radiology) and 23 were mixed/uncertain. After year 2, career aspirations remained unchanged for 83 of the students with the remaining students shifting within or between these categories: 8 NP→NP; 7 P→NP; 6 NP→P; 6 P→P; 1 IP→NP; 3 P→IP; 7 mixed→NP; 2 mixed→P; 1 mixed→IP. Categorizing current career aspirations among the 78 OSM4 students gives: 37 NP, 32 P, 4 IP, and 5 mixed. Among these students, only 15 did not change their career aspiration: 5 NP, 8 P, 2 IP. Six students have stuck with their choice after year 2: 1 NP→NP; 1 NP→P; 2 P→NP; 1 P→P; 1 mixed→NP. The remaining 57 students changed their residency aspirations during their year 3 clinical rotations: 11 NP→NP; 5 NP→P; 1 NP→IP; 12 P→NP; 14 P→P; 1 IP→NP; 4 mixed→NP, 3 mixed→P; 1 mixed→IP; 1 P→mixed; 4 mixed→mixed. Analysis of the data collected on the factors driving these changes are ongoing and are likely to be impacted by the nature of the change itself because the variability is high. Interest in the profession is among the major reasons for earlier changes. For OSM4 students making a later switch, interest in the profession, lifestyle and matching are among the principal factors. These data should be of interest to the KCU community.

Abstract #136
Program: Missouri Southern State University
Category: Basic Science

Poster Session: J-2

Evaluation of Tdp-43 Concentration in Visceral Organs Affected by Bulbar Onset ALS

Raasil Basha*, Alyssa Jerome, Talal Shakeel, Isra Khan, Dr. Alla Barry
***Presenting Author**

Amyotrophic lateral sclerosis (ALS) is a rare neurodegenerative condition affecting motor neurons of the central nervous system. Early diagnosis of ALS remains challenging due to its symptom overlap with other conditions. In a majority of cases ALS causes atrophy of muscles and limbs, however, in some cases the bulbar region of the brain is affected before progression into the limbs. Bulbar onset ALS is highly detrimental, and early diagnosis is critical for prognosis. Notably, recent findings found a link between abnormal cellular concentrations of TAR DNA-binding protein 43 (TDP-43), and neurodegenerative diseases including ALS. TDP-43 is primarily localized in nucleus; however, under disease conditions, extensive leakage occurs into the cytoplasm. The goal of this study is to investigate TDP-43 leakage in organs and assess the benefit of biopsy diagnostic procedures for early detection. A cadaver diagnosed with Bulbar Onset ALS was dissected to obtain samples from the organs that are likely to have TDP-43. Target biopsy locations include skeletal (upper and lower) muscles, liver, gallbladder, pancreas, large intestine, lungs, buccal mucosa, and the tongue. Although, key affected locations of Bulbar Onset ALS are motor nerves nuclei, additional locations were selected due to a high likelihood of TDP-43 upregulation and leakage, as well as feasibility for biopsy. Immunohistochemical analysis will determine the elevated levels of TDP-43 in nuclei and cytoplasm and the staining will be quantitated using Image J software. This study is helpful to further our understanding in order to take a deeper look into the widespread effects of Bulbar Onset ALS and its differentiation from Limb Onset ALS. The results of this study could contribute to creating more effective and accurate screening measures for early diagnosis of bulbar onset ALS and improve treatment outcomes.

Abstract #137
Program: Missouri Southern State University
Category: Basic Science

Poster Session: J-2

Feast or Famine: Exploring Resistance to Diabetes Mellitus in the Eastern Kingsnake Model (*Lampropeltis getula*)

Isra Khan*, Dr. David A. Penning
***Presenting Author**

Studying pathological processes poses inherent challenges due to their complex manifestations. Although all organisms share a fundamental physiology, subtle biological variations render certain model organisms more suitable for investigating specific diseases. By employing novel models—such as using snakes to study diabetes mellitus—researchers can expand scientific understanding with an "immune" model rather than a conventionally "sick" one. Snakes are highly adaptable, ectothermic predators that have complex digestive systems and diverse physiological processes. While snake digestive and feeding behavior have been studied extensively, little work has been done on snake hematology, and it is unknown how blood glucose varies by the feeding habit of the animal. Snakes are known to modify their digestive and overall metabolic processes in response to different prey sizes, and suffer an energy cost when doing so, due to the SDA effect. In theory, this means meals are only favorable when gain is larger than cost. The goal of the study is to determine how snakes, The Digestive Olympians, are resistive to diabetes mellitus by measuring their glucose response during feeding. To collect blood in repeated measurements, a novel capillary puncture technique was employed at the cloaca, using the effect of gravity on circulation. A high-metabolism snake, *Lampropeltis getula*, was fed 5%, 10%, 15%, and 20% of their body weight on a randomized bi-weekly schedule (n=10 snakes). Plasma glucose was measured immediately, 8 hours, and 24 hours post-feeding. Results found statistically significant elevations in glucose in the 15% and 20% (high-volume) groups, but no elevation in the 5% and 10% (low-volume) groups. To explore this pattern, we plan to measure post-prandial plasma cortisol to determine if there is a physiological cost- or none at all- for this Olympian regulation.

Abstract #138

Program: Missouri Southern State University

Category: Basic Science

Poster Session: J-2

Effects of Neem (*Azadirachta indica*) Leaf Extracts on Drug-Metabolizing Enzymes and Inflammatory Pathways in LS180 Cells

Richa Jani*, Dan Brobst, MS, Jeff Staudinger, PhD

***Presenting Author**

Native to the Indian subcontinent and to parts of Southeast Asia, *Azadirachta indica*, (commonly known as neem, margosa, nimtree or Indian lilac) is a tree in the mahogany family Meliaceae. Its fruits and seeds are the source of neem oil. Neem oil is a valuable alternative to synthetic chemicals in key industries such as agriculture for pest control, in the pharmaceutical and healthcare industries in formulating medicinal creams, ointments, and antiseptic products; it is also found in oral care products like toothpaste and mouthwash, and in personal care products to include soaps, shampoos, and skincare products for its antibacterial and moisturizing benefits. Neem leaves are the most commonly consumed part of the plant and are used fresh, dried, powdered, or as an infusion (tea). Especially in Ayurvedic medicine, neem leaves are favored for their antibacterial, anti-inflammatory, antiviral, and blood sugar-regulating properties. While neem-derived products are extensively used, their potential to modulate drug-metabolizing enzymes (DMEs) and the inflammatory response remains largely unexplored. This study aimed to investigate the effects of ethanolic neem leaf extracts on drug metabolizing gene expression and activity, as well as pro-inflammatory cytokine regulation, using LS180 colon carcinoma cells as a model system. The findings from this research may provide new insights into the pharmacological and toxicological implications of neem consumption, particularly in relation to drug metabolism and inflammatory pathways.

Abstract #139

Poster Session: J-2

Program: Missouri Southern State University - MSSU-KCU Early Acceptance Program

Category: Basic Science

How does overexpression of the Pregnane X Receptor (PXR) interface with the inflammatory response in two different mammalian breast cancer cell lines, MDA-MB231 (Triple Negative) and T47D (Her2-)?

Saanvi Kohli*, Dr. Jeff L. Staudinger

***Presenting Author**

Pregnane X Receptor (PXR) is a nuclear receptor that regulates the expression of genes involved in drug metabolism and inflammation. This study investigates the stable expression of human PXR in the MDA-MB-231 triple-negative breast cancer (TNBC) cell line. We engineered human PXR with a 6x-His tag for purification and verification. Stable transfection of MDA-MB-231 cells was achieved, and three independent clones expressing 6x-His-tagged PXR were confirmed using Western blot analysis. IMAC purification further validated successful PXR expression. Additionally, we will explore PXR's crosstalk with the NF- κ B signaling pathway, determining the extent to which rifampicin, a PXR agonist, modulates inflammatory responses through transrepression pathways. The successful completion of these studies will likely identify a role for PXR in mediating drug metabolism and inflammatory pathways in TNBC cells.

Abstract #140
Program: Freeman Health System
Category: Clinical Science

Poster Session: J-2

Assessing the Impact of Oral vs. Injectable Antipsychotics on Readmission Rates in Patients with Schizophrenia and Schizoaffective Disorder

Andy Shi*, Nauman Ashraf, Scott Goade, Molli Slauter, Tyler Koepsel, Kerry Johnson
***Presenting Author**

In 2010, approximately 22% of hospitalized schizophrenia patients in the U.S. were readmitted within 30 days due to relapse. Antipsychotic medications are essential for managing this disorder, yet many patients face multiple relapses. Continuous long-term treatment is vital for symptom control and relapse prevention, but the effect of administration routes (oral vs. injectable) on readmission rates remains unclear. We believe treatment adherence significantly impacts readmission, and long-acting injectable antipsychotics (LAIs) may be beneficial for patients with adherence challenges. This study aims to determine whether antipsychotic formulation affects readmission rates, potentially reducing healthcare costs and improving treatment recommendations. This retrospective, observational study was approved by Freeman Health System's Institutional Review Board to analyze electronic medical records (EMRs) of patients 18 years or older with a diagnosis of schizophrenia, schizoaffective disorder, or related conditions (e.g. bipolar disorder). Patients also must have received antipsychotic treatment (either oral or injectable) during their last hospitalization. Each patient is identified by their medical record number (MRN), which is essential in determining readmission rates, defined as readmission within 30 days. The primary endpoint is readmission rates, following the last administration of antipsychotic medication during patients' most recent hospitalization. We utilized Freeman Health System's data mining software to identify qualifying patients. Data was collected from January 2nd, 2023, to July 26, 2024. Of the 108 patients that were treated with LAIs, 18 were readmitted. For the 579 patients that were treated with oral antipsychotics, 140 were readmitted. However, based on the results of our statistical analysis, we cannot conclude that LAIs lead to a reduction in readmission rates. As a result, additional research is necessary to determine whether one formulation is more effective than the other.

Abstract #141
Program: Freeman Health System
Category: Clinical Science

Poster Session: J-2

Evaluating time to therapeutic anti-Xa level for heparin infusion monitoring in obese and non-obese populations

Robin Skaf, PharmD*, Yashwanth Yerramalla, MD, Adnan Khan, MD, Tyler Koepsel, PharmD, Amanda Adkins, PharmD, Scott Goade, PharmD
***Presenting Author**

It is estimated that by 2030, nearly half of U.S. adults are projected to be obese, with about 1 in 4 projected as severely obese. As obesity rates rise both nationally and globally, understanding pharmacokinetics in this population has become increasingly significant. Our institution, a 460-bed, three-hospital health system, identified time to therapeutic anti-Xa levels for heparin infusions, monitoring within obese populations as a point of interest. Current literature has not shown significant differences in time to therapeutic anti-Xa levels between obese and non-obese populations. Increased risk of major bleeding is one adverse event associated with heparin infusion. This is of particular concern for the obese population as the volume of distribution of heparin is variable and tends to be higher with increased vasculature. This study will aim to evaluate the efficacy and safety of our current heparin protocol. The Institutional Review Board approved this retrospective, observational cohort study, that involves reviewing the medical records of patients 18 years of age or older that were placed on a heparin infusion for at least 24 hours for the indication of atrial fibrillation (A-Fib), venous thromboembolism (VTE), Pulmonary Embolism (PE), or deep vein thrombosis (DVT). The participants were divided into two groups based on Body Mass Index (BMI). The non-obese category had a BMI < 30 and the obese category had a BMI ≥ 30. The primary endpoint is the time to two consecutive therapeutic anti-Xa levels while on heparin infusion, and the secondary and safety endpoint is major bleeding event, which we defined as having a drop of 3 g/dL in hemoglobin. Out of 272 patients evaluated, we found that time to therapeutic anti-Xa levels was similar to previous reported literature. Interestingly, our results trended towards a higher number of patients with supratherapeutic anti-Xa levels in the obese sample.

Abstract #142
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Embryonal Rhabdomyosarcoma in a Child with Neurofibromatosis Type 1 and Homeobox Gene Mutations

Malaika Ahmed*, Dania Shoaib, Ayub Ansari, Dr. Lubna Ahmed
***Presenting Author**

Introduction: Embryonal rhabdomyosarcoma (ERMS) is the most common subtype of rhabdomyosarcoma in children. While Neurofibromatosis type 1 (NF1) is frequently associated with neural crest–derived tumors, rare cases of ERMS have been reported in this patient population. Homeobox (HOX) genes, critical regulators of embryonic development and cell regulation, have also been increasingly implicated in tumorigenesis. Here, we describe the case of a four-year-old girl with NF1, harboring concurrent NF1 and HOX gene mutations, who developed ERMS of the urinary bladder. This report underscores the complexities of managing mesenchymal malignancies in the context of multifaceted genetic abnormalities and highlights the role of a multidisciplinary treatment approach. **Case Presentation:** A four-year-old female with known NF1 presented with hematuria and voiding difficulties. Imaging revealed a 5 cm bladder dome mass, and surgical resection confirmed ERMS with narrow negative margins and no lymph node involvement. Molecular profiling demonstrated NF1 and HOX gene alterations, with no PAX3/FOXO1 fusion. Classified as Stage III, Clinical Group III intermediate-risk ERMS, she received multi-agent chemotherapy and proton beam radiotherapy according to Children’s Oncology Group guidelines. Follow-up imaging showed a favorable early response and minimal residual disease. Chemotherapy-related side effects were manageable, and her functional status remained acceptable throughout treatment. **Conclusion:** This case illustrates the intricate interplay of NF1 and HOX mutations in pediatric ERMS and emphasizes the importance of comprehensive molecular testing to guide therapy. The patient’s positive response to combined surgery, chemotherapy, and proton beam radiation therapy underlines the value of a multidisciplinary care framework. Further investigation into the biologic impact of HOX alterations in ERMS and the role of NF1 in disease progression may ultimately refine risk stratification, improve targeted treatment options, and enhance long-term outcomes for affected children.

Abstract #143
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Filling the gap: facial anatomy and safe lower lip injection practices

Aaron Allard*, Makayla Swancutt, Alexander Ho
*Presenting Author

PURPOSE: Anatomical knowledge of the arterial supply to the lower face is critical to prevent unnecessary harm to patients seeking cosmetic procedures, particularly lower lip dermal filler injections. Our study sought to characterize the prominent vascular structures of the lower lip- inferior labial (ILA), labiomental (LMA) and mental (MA) arteries. **METHODS:** Forty-eight hemiface specimens from 30 formalin-embalmed donors from the Gift Body Program at Kansas City University (IBC #2170563) were utilized in this study. Dissection was performed of the LMA, ILA, and MA to determine their diameter, branching pattern for characterization, and to assess if and where they supplied the lip distally. **RESULTS:** The ILA (mean diameter, 1.48 ± 0.49 mm) was found to be prevalent in 89.58% of sampled donors. The LMA (1.23 ± 0.53 mm) was found in 75.00% of donors. All 48 hemifaces were found to have a MA (1.57 ± 0.51 mm) present. 87.50% of ILAs, 42.67% of LMAs, and 95.83% of MAs were identified as directly supplying the lower lip. The most common characterizations were Type B for ILA, Type IV for LMA course, and Type B for LMA origin. The MA most commonly had 2 distinct branches where 1 to 2 of those branches supplied the lower lip, 41.67% and 45.83% of the time respectively. Mean location of the MA as it supplied the lower lip was determined to be (-17.28 mm, -8.16 mm) and (20.49 mm, -8.10 mm) in the left and right hemifaces, respectively. F-Test for variance found no significant differences amongst the vertical ($p=0.82$) and horizontal distances ($p=0.41$) bilaterally. **CONCLUSION:** Our findings demonstrate the high variability in vascular supply of the lower lip, suggesting the need for high-resolution ultrasound guidance and the integration of anatomical training within injection courses for the safe injection of dermal fillers.

Abstract #144
Program: Osteopathic Medicine
Category: Bioethics

Poster Session: KC-1

A thomistic analysis of the possibility of self-awareness in artificial intelligence

Clayton Chambon*
***Presenting Author**

Artificial intelligence (AI) has been enhancing rapidly. It has acquired greater skills in what appear to be question answering, linguistic precision, discursive reasoning, and even personability. However, while these operations present AI as rational and therefore self-aware, it is an open question as to whether such a presentation necessarily entails that AI itself is rational and self-aware. The implications of AI being self-aware would be drastic, introducing questions of moral rights and duties we may have to AI, especially given its use in the medical setting. The 13th century philosopher and theologian St. Thomas Aquinas has much to contribute on this matter in virtue of his metaphysics, based upon the Greek philosopher Aristotle. Although the Doctor Communis hails from an age before the introduction of AI, much can still be learned from his ideas, especially pertaining to his outlook on the nature of rationality as immaterial. The metaphysics produced by St. Thomas Aquinas demonstrates that AI cannot possibly attain self-awareness, because AI is merely an artifact. Given that AI is an artifact rather than a living substance, it lacks the metaphysical foundation to supply an immaterial operation like rationality to fulfill self-awareness and possess moral rights. This conclusion is significant in relation to areas of society that entail AI interfacing with people, such as the healthcare setting. AI is becoming intimately intertwined with patients and their information, given the recent developments in the electronic medical records and possible AI robots. More research must be done to further determine the nature of AI, as well as to see how other philosophers of the past can contribute their insight toward discovering the nature of AI.

Abstract #144
Program: Osteopathic Medicine
Category: Bioethics

Poster Session: KC-2

A thomistic analysis of the possibility of self-awareness in artificial intelligence

Clayton Chambon*
***Presenting Author**

Artificial intelligence (AI) has been enhancing rapidly. It has acquired greater skills in what appear to be question answering, linguistic precision, discursive reasoning, and even personability. However, while these operations present AI as rational and therefore self-aware, it is an open question as to whether such a presentation necessarily entails that AI itself is rational and self-aware. The implications of AI being self-aware would be drastic, introducing questions of moral rights and duties we may have to AI, especially given its use in the medical setting. The 13th century philosopher and theologian St. Thomas Aquinas has much to contribute on this matter in virtue of his metaphysics, based upon the Greek philosopher Aristotle. Although the Doctor Communis hails from an age before the introduction of AI, much can still be learned from his ideas, especially pertaining to his outlook on the nature of rationality as immaterial. The metaphysics produced by St. Thomas Aquinas demonstrates that AI cannot possibly attain self-awareness, because AI is merely an artifact. Given that AI is an artifact rather than a living substance, it lacks the metaphysical foundation to supply an immaterial operation like rationality to fulfill self-awareness and possess moral rights. This conclusion is significant in relation to areas of society that entail AI interfacing with people, such as the healthcare setting. AI is becoming intimately intertwined with patients and their information, given the recent developments in the electronic medical records and possible AI robots. More research must be done to further determine the nature of AI, as well as to see how other philosophers of the past can contribute their insight toward discovering the nature of AI.

Abstract #145
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Impact of Hormone Replacement Therapy on Clinical and Radiographic Outcomes in Postmenopausal Women Undergoing Posterior Spinal Fusion: A Retrospective Cohort Study

Candace Chung*
***Presenting Author**

Background: Postmenopausal women undergoing spinal fusion face unique challenges related to estrogen deficiency. This study investigates the effects of hormone replacement therapy (HRT) on outcomes in postmenopausal women undergoing posterior spinal fusion. **Purpose:** The Purpose of this study is to compare the effectiveness and use of HRT in post-menopausal women undergoing posterior spinal fusion. **Study Design/Setting:** Retrospective cohort study conducted at a single institution. **Patient Sample:** We conducted a retrospective cohort study of 104 postmenopausal women who underwent posterior spinal fusion between 2016 and 2023. **Outcome Measures:** Primary outcomes were NDI, ODI, PROMIS, and VAS scores. Secondary outcomes were screw loosening, adjacent segment disease, and hardware failure. **Methods:** Patients were divided into HRT (n=51) and non-HRT (n=53) groups. Clinical outcomes (ODI, NDI, VAS Back, PROMIS Pain) and radiographic outcomes were assessed at baseline, 3, 6, 9, and 12 months postoperatively. **Results:** The HRT group demonstrated significantly greater improvements in all clinical outcome measures compared to the non-HRT group ($p < 0.05$). Radiographically, the HRT group showed a trend towards better fusion status at 12 months (94.1% vs. 86.8%, $p = 0.208$) and lower rates of hardware complications, though not statistically significant. Multivariate analysis revealed that lower modified Frailty Index-5 scores, younger age, lower BMI, and ERAS protocol implementation were associated with higher odds of successful fusion. **Conclusion:** HRT use in postmenopausal women undergoing posterior spinal fusion is associated with improved clinical outcomes and trends towards better radiographic results. These findings suggest that HRT may play a role in optimizing surgical outcomes in this population.

Abstract #146
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-2

Association Between Per Capita Healthcare Spending and Firearm Fatality

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***Presenting Author**

Introduction: Firearm injuries are a common in the United States, incurring high costs for victims and health systems. In 2020, the total cost of firearm-related deaths across the United States was \$493.2 billion. The purpose of this project was to determine how firearm-related fatality rates influence healthcare spending per capita in different regions of the United States. **Methods:** Personal healthcare spending and firearm fatality data were sourced from the U.S. Centers for Medicare and Medicaid Services (CMS) and Centers for Disease Control and Prevention (CDC WISQARS) for the year 2019. Data were summarized and stratified by U.S. Census region: Northeast, South, Midwest, and West. Hawaii and Alaska were excluded. Mann-Whitney U tests compared firearm-related mortality rate and healthcare spending among the regions. Linear regression was used to analyze the association between firearm fatality rate and per capita personal health care spending. **Results:** Midwest firearm fatality rates were higher than rates in the South and lower than rates in the Northeast ($p < 0.05$). Healthcare spending also varied by region: Midwest healthcare spending rates were higher than rates in the South and lower than rates in the West and Northeast ($p < 0.05$). Firearm-related fatality rates did not predict personal healthcare spending per capita in 2019. **Conclusions:** Firearm fatality rates and healthcare spending rates differed across Census regions in 2019. However, firearm fatality rates did not predict healthcare spending per capita. Further studies could investigate the cost burden of firearm morbidity and mortality on different types of healthcare spending and at different geographic levels.

Abstract #147
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-2

An Exceptionally Large Lipoma Causing Significant Shoulder Pain: A Case Report

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Background: Elderly shoulder pain often results from joint or rotator cuff disease. Large lipomas - benign soft tissue tumors often measuring 5-8 cm - can compress nerves and mimic impingement syndrome. Herein we present a rare 10 cm left deltoid lipoma causing significant shoulder pain, numbness, and functional impairment. Case: A 75-year-old male with a history of CAD, hypertension, hyperlipidemia, OSA, and atrial fibrillation presented to the ED with complaints of left shoulder pain and lateral shoulder numbness radiating down to the elbow. Given his significant cardiac history, cardiac causes were ruled out before diagnosing musculoskeletal pain. Patient subsequently presented to the orthopedic/PM&R clinic for evaluation. Examination revealed an obvious enlargement over the left deltoid, more prominent with shoulder abduction, without redness or warmth. Neurologic assessment showed reduced sensation over the lateral proximal arm. Numerous provocative tests indicated shoulder pathology, though findings were inconsistent. Ultrasound revealed a 10 cm lipoma within the lateral deltoid, without joint effusion. MRI confirmed a 10 cm intramuscular lipoma with concomitant biceps tenosynovitis, subacromial impingement, and glenohumeral/acromioclavicular joint degeneration. Left shoulder X-ray was unremarkable. The patient was referred to general surgery for excision. Of note, the patient had a history of a smaller 3-4 cm lipoma on the right shoulder that was excised 10 years prior with significant symptom relief. Discussion: This case underscores the rare and clinical significance of large lipomas in substantial neurovascular regions. In contrast to smaller lipomas, this lipoma's size contributed to nerve compression and shoulder dysfunction. While the patient's cardiac history necessitated an urgent cardiac workup, his past surgical history was also important for treatment. Conclusion: Thorough differentials and imaging are essential as lipomas can mimic common shoulder pathologies. Identifying large lipomas as pain generators is necessary for timely management which can significantly improve quality of life and functional outcomes.

Abstract #148
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Suprascapular nerve anatomy and its implication for approaches to peripheral nerve stimulation: a morphometric cadaveric study

Brock Halling*, Janice Wang, Dugan Hult, Dr. Bryan G. Beutel, Dr. Mayank Gupta
***Presenting Author**

Background: The suprascapular notch (SNo) is used to guide lead placement during peripheral nerve stimulation (PNS) of the suprascapular nerve (SNe) for refractory shoulder pain. The precise course of the suprascapular nerve through suprascapular notch cannot be determined with fluoroscopy and is challenging to observe with ultrasound, so the suprascapular notch is used to estimate the location of the nerve. Accurate placement of the stimulator lead relative to the nerve is essential to ensure effectiveness and avoid complications. Understanding branching patterns of the SNe can help determine the most effective site for lead placement to improve coverage and effective stimulation. **Methods:** Ninety-three formalin-embalmed cadaveric shoulders were dissected and a morphometric analysis was conducted. The course and initial branch point of the SNe relative to the superior transverse scapular ligament (STSL) at the SNo were described. The width and depth of the SNo, and the diameter of the SNe within the SNo, were measured. Comparisons were performed between donor sex, laterality, and age. **Results:** The SNe branched proximal to the SNo in 15% of shoulders, directly at the SNo in 54%, and distal to the SNo in 31%. The SNe occupied the medial third of the SNo in 15%, middle third in 59%, and lateral third in 26%. The SNe branched a mean of 1.5 mm from the SNo. The mean depth of the SNo was 5.8 mm and the mean width was 7.8 mm. The mean diameter of the SNe was significantly greater in males (2.6 mm) than females (2.2 mm) ($P < 0.001$). **Conclusions:** The main branching of the SNe tends to occur proximal to, or directly under, the STSL and in the middle third of the SNo. This knowledge can help guide clinicians when placing PNS leads under fluoroscopic or ultrasound guidance to achieve maximum stimulatory coverage.

Abstract #149
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-1

Field experience: impact of refugee health navigator program in supporting oral health for refugees

Elliot Parens*, Lejla Hodzic, Benjamin Grin, MD, MPH
*Presenting Author

Background Refugees resettling in the United States face significant barriers to healthcare access, including oral health services, due to language, cultural, and financial obstacles. Innovative and holistic approaches to healthcare such as the Refugee Navigators of Health Program (RHNP) at KCU are designed to provide support and education to refugees to build independence in support of healthcare goals. Addressing the role of outside barriers to seeking care is an important step for physicians to take to help bridge gaps in access to care. **Methods** Teams of two KCU student health navigators (SHNs) were assigned to a newly arrived refugee family by Della Lamb, a local refugee resettlement agency. The SHNs conduct weekly check-ins, using interpretation as needed, to help clients schedule appointments, clarify recommendations, communicate with providers, and access resources for transportation, housing, and childcare. **Results** Despite CDC recommendations for dental assessments within 30–90 days of arrival, many refugees experience prolonged delays in care. In this experience, a refugee client's unmet oral health need was identified during a routine check-in with SHNs. The client reported experiencing ongoing tooth pain for many years but had not sought dental care independently, because the issue did not surface during standard health screenings. Through SHN assistance, the client attended a walk-in dental appointment, where they were diagnosed with an infected tooth. The tooth was extracted the same day, and the client was provided with antibiotics, analgesics, and a follow-up appointment. **Conclusion** By integrating holistic perspectives into refugee health programs, navigators can help reduce disparities, promote self-sufficiency, and improve overall refugee well-being. Walk-in clinics offer a low-barrier solution, allowing refugees to establish care and gain confidence in managing their health. The RHNP model demonstrates the importance of culturally sensitive, community-based healthcare navigation in addressing overlooked aspects of refugee health.

Abstract #150
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Anatomical variations in ansa cervicalis and recurrent laryngeal nerve and their significance in anastomotic reinnervation

Jack Hyler*, Janice Wang, Kyle Singerman, MD, Jason Brown, Paige Johnson, Jason Schwab, Elliot Parens
***Presenting Author**

Anatomical variations in ansa cervicalis and recurrent laryngeal nerve and their significance in anastomotic reinnervation Jack Hyler (1), Janice Wang (1), Paige Johnson (1), Brock Halling (1), Elliot Parens (1), Jason Schwab (1), Jason Brown, DO (2), Kyle Singerman, MD (3), Sara Sloan, DC (1) 1 Kansas City University, Kansas City, Missouri 2 Children's Mercy Kansas City – Department of Otolaryngology, Kansas City, Missouri 3 The University of Kansas Medical Center – Department of Otolaryngology, Kansas City, Kansas Objective: To quantify anatomical variations of the ansa cervicalis and recurrent laryngeal nerve (RLN) to enhance surgical planning for ansa-RLN anastomosis. Methods: Twenty-three formalin-fixed cadavers (32 ansa cervicales) were dissected to evaluate nerve length, branching patterns, and anatomical relationships. Measurements were taken using standardized anatomical landmarks, and statistical analysis was performed to assess differences by sex and laterality. Results: The mean lengths of the superior and inferior roots were 31.2 mm (SD 16.5) and 34.7 mm (SD 18.7), respectively, with a main branch length of 42.6 mm (SD 17.1). No significant differences were found between right and left sides or between sexes. Variant branching patterns were observed in 6.3% of specimens. The insertion points of the ansa cervicalis and RLN to the inferior border of the thyroid cartilage were 43.5 mm (SD 9.7) and 55.8 mm (SD 11.7), respectively. Conclusion: The ansa cervicalis demonstrates anatomical consistency across laterality and sex, allowing for a standardized surgical approach in ansa-RLN anastomosis. Awareness of variant branching patterns and their implications for nerve mobilization is crucial for optimizing intraoperative decision-making and improving surgical outcomes. Keywords: ansa cervicalis, recurrent laryngeal nerve, anatomical variation, nerve anastomosis, vocal cord paralysis, reinnervation surgery, cadaveric study.

Abstract #151
Program: Osteopathic Medicine
Category: Basic Science

Poster Session: KC-1

Expression of mesenchymal marker proteins in Doxorubicin-treated endothelial cells

Amy Kwok*, Kass Sjostrom, Shixin Tao, Melissa Cobb, Eugene Konorev
*Presenting Author

Doxorubicin (Dox), an anthracycline chemotherapeutic agent, is widely used in cancer treatment. However, increasing evidence suggests that cancer survivors treated with Dox are at a higher risk of developing cardiovascular conditions. Dox specifically harms endothelial cells, which are exposed to high concentrations of the drug following intravenous administration. This accumulation results in cellular senescence, suppression of endothelial proliferation, and impaired vascular network formation. Previous studies have identified the involvement of the canonical TGF-beta pathway in endothelial damage induced by Dox, but the downstream mechanisms remain unclear. Given that the TGF-beta pathway promotes endothelial-to-mesenchymal transition (EndMT), we hypothesize that Dox activates this pathway, causing long-term mesenchymal reprogramming in endothelial cells. We utilized human umbilical vein endothelial cells (HUVECs) to assess the expression of mesenchymal markers such as N-cadherin, vimentin, alpha-smooth muscle actin (aSMA), and fibronectin. These markers were normalized to beta-actin and analyzed following either 48-hour Dox treatment or 48-72 hours after Dox withdrawal (washout). To investigate the role of the TGF-beta pathway, we used SB431542, a selective inhibitor of ALK4/5/7 receptor kinases. We found that Dox increased mesenchymal marker expression in both treatment and washout protocols. The SB inhibitor effectively decreased this expression, suggesting that it mitigates TGF-beta-mediated EndMT. Immunocytochemistry showed that Dox also upregulated transgelin, a smooth muscle mesenchymal marker, in endothelial cells, identified by staining for the endothelial marker CD31. This increase in transgelin expression was inhibited by SB431542. Our future studies will examine mesenchymal protein expression in cardiac endothelial cells of mice treated with Dox. In conclusion, our results suggest that Dox promotes EndMT in HUVECs through the TGF-beta pathway, and this process can be suppressed by an ALK4/5/7 receptor kinase inhibitor.

Abstract #152
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-2

Endothelial Transcriptome Analysis of the TGF- β /Activin Pathways after Completion of Doxorubicin Therapy

Shannon Landers*, Kass Sjostrom, Shixin Tao, Melissa S Cobb, Nataliya Kibiryeve, Eugene A Konorev
***Presenting Author**

Doxorubicin, an effective antineoplastic, is associated with severe adverse effects in surviving patients, including delayed-onset cardiomyopathy. Our previous studies demonstrated that Doxorubicin targets cardiac endothelial cells, and the TGF- β pathway contributes to the development of Doxorubicin-induced cardiomyopathy. Additionally, we have shown that Doxorubicin treatment enhances phosphorylation and nuclear translocation of Smad2/3 transcription factors that function in the TGF- β /activin canonical pathways in endothelial cells. Since delayed-onset cardiomyopathy progresses after completion of therapy, we focused on the transcriptomic pattern of gene expression after Doxorubicin withdrawal. We hypothesized that Doxorubicin enhances the activity of the canonical TGF- β pathway in human umbilical vein endothelial cells (HUVECs) during both treatment and washout conditions. To probe the role of Smad2/3 activation, we utilized an ALK4/5/7 receptor kinase inhibitor, SB431542 (SB), to block Smad2/3 phosphorylation and inhibit the canonical TGF- β pathway. We incubated HUVECs with Doxorubicin, SB, or their combination for 48 hours (representing Doxorubicin treatment). Alternatively, Doxorubicin was removed from the media after the treatment period for additional 48-hour Doxorubicin-free culture of endothelial cells (representing Doxorubicin washout). Total RNA isolation and sequencing was conducted, followed by analysis of endothelial transcriptomes. Real-time PCR was utilized to validate the sequencing results. Doxorubicin treatment increased endothelial expression of INHBA and INHBB as well TGFB1 and TGFB2 transcripts that encode ligands for activin and TGF- β signaling pathways, respectively. Importantly, enhanced expression of INHBA and TGFB2 transcripts persisted during Dox washout. Additionally, groups of TGF- β and activin target genes were significantly upregulated during both Doxorubicin treatment and washout. In conclusion, analysis of endothelial transcriptomes supported our earlier observations on the increased activities of these Smad2/3 mediated pathways during Doxorubicin treatment and washout. Both TGF- β and activin canonical pathways are upregulated in Doxorubicin treated HUVECs, and their enhanced activity is predicted to persist after completion of Doxorubicin, contributing to delayed cardiovascular complications.

Abstract #153
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-1

Surgical Management of Placenta Percreta

Alesia Lokshina*, Aleksei Golubenko, Ramilya Golubenko
***Presenting Author**

Introduction: Placenta accreta spectrum (PAS) includes disorders of trophoblast invasion into uterine wall. In placenta percreta (PP), trophoblastic villi penetrate through the myometrium and may invade adjacent organs. The estimated risk of postpartum hemorrhage due to PAS is >40%. In cases of urinary bladder invasion, maternal mortality rates have been estimated 9.5% and newborn mortality 24%. This case report introduces the placenta accreta spectrum and placenta percreta, describes diagnostic approaches, and showcases the key steps of surgical treatment. **Clinical Issue and Solution:** A 35yo G4P4 patient with a prior surgical history of 4 C-sections and prior medical history of HIV and Hepatitis C infections. Transabdominal pelvic ultrasound showed invasion of the placenta into the urinary bladder and cervix with enlarged and irregular lacunae. The cesarian delivery was performed through midline laparotomy and vertical fundal incision on the uterus. The uterus was then closed with the placenta intact. After completion of cesarian delivery, internal iliac arteries were ligated, and the urinary bladder was carefully mobilized via lateral access. Finally, the surgeon performed the total hysterectomy and irrigated the bladder before closing the incision. **Conclusion:** The surgical treatment of placenta percreta invading the urinary bladder and cervix was completed without complication. The total blood loss in surgery was 800mL. In this case report, we demonstrate surgical treatment of placenta percreta with urinary bladder involvement. We showcase the successful use of internal iliac artery ligation in placenta percreta. This treatment minimized blood loss and can be applied in appropriately selected patients. Authors have no disclosures or conflict of interest to declare. Patient informed consent was obtained for submission of this case report.

Abstract #154
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Pharmacotherapeutic interventions for sensorineural hearing loss: a scoping review

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***Presenting Author**

Background: Hearing loss directly affects 23% of Americans aged twelve years or older. Pharmacological interventions offer a promising potential to prevent, treat, or cure sensorineural hearing loss (SNHL). A scoping review was conducted to provide a comprehensive summary of the current landscape of pharmacotherapeutics for SNHL and includes both published clinical trials and ongoing clinical trials under investigation. **Methods:** A review protocol following the Preferred Reporting Items for Systematic Reviews and Meta-analysis extension for Scoping Reviews (PRISMA-ScR) guidelines, was registered under Open Science Frameworks (OSF). A systematic search of five electronic databases (PubMed, Scopus, Google Scholar, Embase, and Web of Science) yielded 2,592 articles. After removing duplicates, title and abstract screening, and full text data extraction, only 51 articles met inclusion criteria. Additionally, 19 published articles and clinical trials fitting inclusion criteria at clinicaltrials.gov were added post-hoc for completion. A categorization framework was developed based on mechanism of action. **Results:** Over the past 20 years many pharmacotherapeutics have been investigated to prevent or treat SNHL specifically caused by inflammatory damage to the cochlea. These interventions potentially mitigate cisplatin-, aminoglycoside-, or noise-induced ototoxicity, and reduce intraoperative trauma to the cochlea associated with cochlear implantation. The FDA approval of PEDMARK marks a significant milestone in SNHL prevention, offering a clinically validated antioxidant therapy, and paves the way for additional otoprotective agents. Additionally, several regenerative therapies and gene therapies are being investigated to prevent, treat, or cure SNHL, with gene therapy emerging as a promising pharmacologic treatment. **Conclusions:** The scoping review informs clinicians and researchers about existing and emerging treatments for SNHL. Areas of future research are identified based on the gaps found during the review. Screening methods to detect SNHL are also proposed. **KEYWORDS** Antioxidant therapy; cochlea; gene therapy; ototoxicity; sensorineural hearing loss

Abstract #155
Program: Osteopathic Medicine
Category: Basic Science

Poster Session: KC-2

The effect of chirp vs click stimuli on the ABR binaural interaction component and behavioral sensitivity to interaural time difference in humans

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Background: The auditory brainstem response (ABR) is commonly used to estimate hearing threshold and investigate the integrity of the neural auditory pathway. A binaural interaction component (BIC) can also be obtained by subtracting a binaurally evoked ABR from the sum of monaural left and right ear ABRs. BIC amplitude is modulated by interaural time differences (ITDs) and has been proposed as a biomarker of binaural hearing ability. Traditionally, transient click stimuli are used to evoke ABRs; however, chirp stimuli are widely recommended to compensate for the cochlear traveling wave and enhance wave V. A common challenge encountered during ABR measurements is the presence of myogenic artifact which can obscure small components such as the BIC. The enhancement provided by chirp stimuli was shown in one animal-model study to improve BIC detection and reliability, but this has not been systematically examined in humans. **Methods:** ABRs and BICs were measured in subjects (n = 6; 21-29 years) for three stimuli; 1) 100- μ sec clicks, 2) level-independent CE chirps, and 3) Level-Specific (LS) chirps at four intensities ranging from 65-40 dB nHL. Subjects also completed behavioral testing measuring ITD discrimination thresholds. **Results:** Compared to traditional click stimuli, chirp stimuli tend to elicit larger wave V amplitudes for both monaural and binaural waveforms. Additionally, when a replicable response was present (test-retest), a larger BIC DN1 amplitude was typically observed for chirp responses, particularly at lower intensities. Subjects also exhibited lower ITD thresholds for chirps than clicks, mainly at lower stimulus levels. **Conclusions:** Use of chirp stimuli rather than clicks may provide an enhancement to both the ABR wave V and BIC DN1, improving overall signal-to-noise ratio and reliability. Moreover, the improved behavioral sensitivity to ITDs with chirps supports the hypothesis that BIC DN1 arises from binaural brainstem nuclei that are important for binaural hearing.

Abstract #156
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Cadaveric analysis of variability and relationships between the pterion and middle meningeal artery.

Jessica Morehouse*, Erica Korbel, Sara Sloan
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INTRODUCTION. The pterion is an anatomic landmark formed via junction of the temporal, sphenoid, parietal, and ethmoid bones on the lateral aspect of the cranium. Due to the close proximity to the middle meningeal artery (MMA), trauma and pterion-based surgical approaches risk arterial rupture and epidural hematoma formation. This study characterized the relationship between pterion and MMA in the four main pterion configurations. **METHODS.** Ninety-two pterions from 49 formalin-embalmed donors were exposed and suture patterns were uncovered to determine pterion classification. Dura mater was removed from the cranial base to expose the groove for MMA and relationship to the pterion was measured. Skull thickness at pterion center was collected for each specimen. **SUMMARY.** The pterion was located bilaterally in all crania, with Sphenoparietal (Type I) present in 67.39%, Frontotemporal (Type II) in 2.38%, Stellate (Type III) in 16.30%, and Epipteric (Type IV) in 5.43% of specimens. Only 50% of specimens demonstrated the same type bilaterally. A significant difference was observed in distance between pterion center and MMA ($3.50 \pm 1.51\text{mm}$, $2.82 \pm 2.35\text{mm}$, $1.05 \pm 0.76\text{mm}$, $1.93 \pm 1.67\text{mm}$; $p < 0.001$), with the distance between Type III and MMA 2.45- and 1.775-times smaller than that of Types I and II. Skull thickness also showed significance ($4.64 \pm 1.42\text{mm}$, $4.70 \pm 1.31\text{mm}$, $2.30 \pm 1.06\text{mm}$, $4.93 \pm 1.30\text{mm}$; $p < 0.001$), with Type III 2.34-, 2.4-, and 2.64-times thinner at pterion center than Types I, II, and IV, respectively. **CONCLUSIONS.** Type I is the most prevalent configuration of pterion, with Type III most closely situated to the course of the MMA. Overall, this study demonstrates the importance of determining pterion type pre-operatively to ensure vascular preservation of MMA.

Abstract #157
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-2

Evaluating Large Language Models (GPT-4, Claude, Deep Seek, and Bard) in Anesthesia-Specific Post-Operative Care Instructions for Total Knee Arthroplasty (TKA)

Dhruv Nagesh, B.S.*, Donald P. Keating III, Raghu V. Divakaruni, B.S., Bryan Beutel, M.D.
***Presenting Author**

Objective: Our study aims to evaluate the effectiveness of four large language models (LLMs) including GPT-4, Claude, Bard, and DeepSeek R1 in generating accurate, relevant, and consistent postoperative care instructions for patients undergoing total knee arthroplasty (TKA) under general anesthesia. **Methods:** Three independent responses per model were assessed using standardized scoring criteria for medical accuracy, clarity, relevance to TKA, consistency, and readability (Flesch Reading Ease Score and Flesch-Kincaid Grade Level). Statistical analyses included ANOVA with Bonferroni correction ($\alpha = 0.0083$) for pairwise comparisons. **Results:** GPT-4 and Claude achieved perfect accuracy (2.00 ± 0.00 vs. Bard: 1.00 ± 0.00 ; $p < 0.0001$), while DeepSeek (1.83 ± 0.14) scored marginally lower. Clarity and relevance showed no significant differences across models ($p > 0.05$). All models demonstrated perfect consistency (2.00 ± 0.00). Readability analysis revealed GPT-4 (grade level: 9.40 ± 0.20 ; ease: 44.80 ± 0.46) and DeepSeek (grade level: 9.00 ± 0.55 ; ease: 43.93 ± 4.12) produced more accessible outputs than Bard (grade level: 10.67 ± 0.40 ; ease: 37.80 ± 4.05 ; $p \leq 0.004$). However, outputs remained at a college reading level for all models. **Conclusion:** LLMs can generate medically accurate and relevant postoperative instructions with high consistency, underscoring their potential as adjunct tools in anesthesiology patient education. Prioritizing clarity and optimizing readability, potentially through targeted prompts specifying grade levels, could enhance clinical utility. As LLMs evolve, understanding their integration of anesthesia-specific care protocols will be imperative to improve patient outcomes and education.

Abstract #158
Program: Osteopathic Medicine
Category: Medical Education

Poster Session: KC-1

Accuracy of vertebral diagnosis using 3D printed vertebral models among different experience levels

Molly Novak*, Tyler Raby MS, Jared Nichols DO, FACOFP
***Presenting Author**

Background: Osteopathic medical education emphasizes palpation skills to diagnose somatic dysfunction using the TART (tissue texture abnormalities, asymmetry, restriction of motion, tenderness) model. However, diagnostic reliability varies due to experience levels and structural differences. This study examines whether medical students and healthcare providers can accurately identify posterior transverse processes on a 3D-printed model and whether experience affects accuracy. Methods: Five stations were created using 3D-printed lumbar vertebral segments with varying degrees of rotation, mounted on a wooden base. The models were covered with layers simulating muscle and skin. Participants (medical students, residents, and attendings) recorded their experience level and assessed transverse process alignment, identifying whether the model was neutral or had a posterior transverse process. Results: Only the 2mm left posterior transverse process model showed significantly more correct answers than chance ($p < 0.001$, 60.4% accuracy). The 1mm, 4mm, 5mm left, and 3mm right models had non-significant results ($p = 0.105-5.70$). There was no significant difference in accuracy between experience levels, as 95% confidence intervals overlapped for students, residents, and attendings. Conclusion: Proprioception alone, without additional diagnostic factors such as motion restriction or end feel, was insufficient for accurately identifying vertebral rotation. These findings suggest that enhanced training and more advanced models incorporating additional diagnostic cues are necessary to improve palpation accuracy. Future models will integrate motion restriction and other diagnostic aspects to better support osteopathic training and improve clinical competency.

Abstract #159
Program: Osteopathic Medicine
Category: Bioethics

Poster Session: KC-1

Donors through the decades: a historic analysis of cadaver ledgers in the Midwest from 1911-2000

Janice Wang*, Brock Halling, Hannah Conner, Whitney Shae, Aaron Segal
***Presenting Author**

Cadaveric dissection in medical schools has long been the foundation of teaching not only of the anatomical sciences, but also of humanistic values through students' interaction with the donor as their "first patient." The procurement of bodies for dissection in the United States has not been simple and has shifted from graverobbing in the 18th and 19th centuries, to the use of unclaimed bodies in the early 20th century, to consensual body donations which remains the sole source of the supply today. This shift occurred within less than a century during a period of massive cultural shifts through legislative changes, population demographic changes, scientific developments, and the spread of mass media, all of which have changed the perceptions and rituals of death in America. The history of how bodies were acquired for dissection in 20th century America is not well studied and the discovery of a unique dataset helps aid the understanding of this period. Recent discovery of a collection of cadaver ledgers with handwritten records of donor information spanning from 1911 to 2000 allows for insight into the historical trends of cadavers at a Midwest institution. Demographic analysis was conducted based on age, sex, race, and cause of death. The dataset was also analyzed for comparison with population census data in order to compare demographic makeup. Understanding the dataset aids in highlighting historical shifts in inclusivity in medical education and the extent to which cadavers have been representative of area populations. This historical analysis helps to provide insight into the standards and practices of cadaver supply during a time period that is not well studied. This knowledge helps to provide a historical perspective to understand the history of body bequeathal to better inform how best to ethically institute these programs and highlight cultural considerations.

Abstract #160

Poster Session: KC-1

Program: Osteopathic Medicine

Category: Medical Education

Health science graduate students' perspectives on wellness and the implementation of a student wellness council

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***Presenting Author**

Kansas City University's (KCU) Student Wellness Council (SWC) was implemented in 2022 to address student wellness, foster a culture of well-being and instill a culture of collaboration. This study aimed to evaluate the impact of student-led initiatives by assessing student well-being, engagement, access to resources, and barriers to wellness. A cross-sectional survey via Qualtrics was conducted in February 2024 among students from KCU's Colleges of Medicine, Clinical Psychology, Dental Medicine, and Biosciences which included the Mayo Clinic Well-Being Index, the U.S. Household Food Security Survey Module, and questions on social support, resource utilization, and campus initiatives. There was a significant decline in well-being of students after starting their programs compared to pre-enrollment. A strong positive correlation was observed between overall well-being, meaningful connections, and satisfaction with support systems, emphasizing the critical role of support networks in student wellness. A moderate negative correlation was found between meaningful connections and perceived barriers to forming them, indicating that as obstacles to connection increased, students experienced difficulty in building relationships. Minority and gender-diverse students exhibited disproportionately higher distress levels, and second-year students faced the greatest stress due to academic demands. During this study period, KCU saw a 30% decrease in student attrition. Previous research has identified that higher perceived stress levels are associated with poorer academic performance. In addition to the efforts of the SWC, establishing an Office of Campus Health & Wellness and the significant efforts made by members of the faculty, Student Success and Office of the Provost to improve the student experience most likely all contributed to the decrease in attrition. These findings underscore the need for ongoing wellness initiatives, emphasizing resilience, peer support, and faculty engagement in improving student well-being. Refining and expanding wellness programs could foster better coping mechanisms and reduce distress levels, ultimately improving student retention and success.

Abstract #161
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

The new face of malnutrition in the era of the obesity epidemic

Zohaa Ahmad*, Tuba Esfandyari, MD, MSc, Sarah Baghdadi
***Presenting Author**

Current literature on obesity has emphasized the role of caloric excess and physical inactivity in the disease, however, obesity has been shown to be linked with many micronutrient deficiencies, such as vitamin C. This study aims to emphasize the resurgence of modern scurvy, a manifestation of vitamin C deficiency, within the obesity epidemic while simultaneously highlighting the paradoxical micronutrient malnutrition within the obese population. A retrospective chart review was performed of all adult patients with a new diagnosis of scurvy at the University of Kansas Medical Center and Health System Hospital from 2016 to March 2024. 228 patients (75 males, 153 females) with scurvy were identified and studied with an average age of 52 years and an average BMI of 30. 10 of these patients were found to be hospitalized more than once with vitamin C deficiency. 9% of patients only had vitamin C deficiency, with a majority of patients having co-existing micronutrient deficiencies such as iron, vitamin B12, and vitamin D. Overall, obesity notably increases the risk of vitamin C deficiency, specifically due to poor dietary habits, oxidative stress, and impaired nutrient absorption. Furthermore, concomitant deficiencies such as vitamin D were found to be markedly decreased in patients with obesity. Further research in age and sex-related differences, vitamin C levels, and how they impact obesity should be done to aid in improving patient care. Key words: obesity, micronutrient deficiency, vitamin C

Abstract #162
Program: Osteopathic Medicine
Category: Medical Education

Poster Session: KC-1

Ultrasound Curriculum Integration and Its Effect on Residency Matching: A Multi-Specialty Analysis

Ausitn Beahm*, Peter Schultz, Nikolas Vukotic, John Dobson, Allison Apaza
***Presenting Author**

This study aims to establish the correlation between ultrasound education during the first two years of medical school and ultimate residency match rates into the fields of general surgery, radiology, emergency medicine, OB/GYN, anesthesiology, and orthopedic surgery. We conducted research to understand if preclinical technical training, particularly related to point-of-care ultrasound (POCUS), impacts residency placement for medical school graduates. Our methods involved collecting 2022 and 2023 match data from medical schools in the United States and comparing residency match rates into the six identified specialties between schools with an integrated required ultrasound curriculum to schools without an integrated required ultrasound curriculum program. The initial results show a possible relationship between schools that have an integrated required ultrasound curriculum program and increased matches in four of the six identified specialties. While additional research is necessary to establish statistical significance, our study suggests that the inclusion of integrated required ultrasound education as a part of the standard medical school curriculum would result in more equitable attainment of residency placement by all medical school graduates.

Abstract #163
Program: Osteopathic Medicine
Category: Basic Science

Poster Session: KC-1

Post-Translational Modification Profile of TDP-43 in Alzheimer's Diseased Mouse Brain Tissue: An in vitro Study Looking to Develop a Biomarker

Devvrat Bhakta*, Edina Kosa, M.Sc, Abdulbaki Agbas, M.Sc, Ph.D.
***Presenting Author**

Alzheimer's Disease (AD) is a multifaceted neurodegenerative disorder, and the absence of reliable biomarkers for early detection remains a critical barrier to developing effective therapies. Identifying disease-specific post-translational modifications (PTMs) of TDP-43 offers a novel approach for advancing both diagnostics and therapeutic interventions. In this study, we investigated PTMs of TDP-43 in brain lysates from AD model mice using immunoprecipitation and Western blot analysis. Our findings revealed a marked increase in specific PTMs, including SUMOylation and acetylation, in AD brain tissue compared to wild-type (WT) controls. These results highlight the potential of TDP-43 PTMs as biomarkers for Alzheimer's Disease, paving the way for improved early diagnosis and targeted therapeutic strategies for AD patients.

Abstract #164
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Title: Improving drug dosing and outcomes for single ventricle patients with fontan associated liver disease (IMPROVE FALD)

Reginald Boateng*, Sherwin Chan, Sara Quinney, Peirung Huang, Thornton Mardis, Ryan Fischer, Emily Cramer, Sanket Shah, Anmol Goyal, Mollie Walton, Ashley Valenza, Jon Wagner
***Presenting Author**

Background: Liver congestion and fibrosis significantly impact hepatic processes, affecting drug metabolism and transport in patients with Fontan circulation. This poses challenges for managing Fontan-related comorbidities, crucial due to the decreasing survival rates post-Fontan palliation and limited options for organ transplantation. This study aims to explore how Fontan-associated liver disease (FALD) affects drug disposition through pharmacokinetic (PK) evaluations using liver metabolism and transport probe substrates (CYP3A4: sildenafil and OATP1B1: pravastatin) using MRI elastography to quantify liver stiffness as a marker of FALD severity. **Methods:** The study included participants aged 10.8-16.2 years with Fontan circulation (n=5; 3 females, 2 males; 4 white, 1 mixed race). They underwent a single oral dose PK study analyzing sildenafil and its metabolite N-desmethyl sildenafil, and pravastatin via liquid chromatography tandem mass spectrometry. PK parameters like peak plasma concentration (C_{max}) and area under the curve (AUC) were measured, and correlations between these parameters and liver stiffness from MRI elastography were analyzed using linear regression. **Results:** Significant linear correlations were found between sildenafil C_{max} and liver stiffness (R²=0.91, p=0.01) and its primary metabolite (R²=0.86, p=0.02), suggesting increased liver stiffness leads to altered drug exposure. However, no correlation was found with AUC values. Gender differences were noted, with female participants showing lower sildenafil AUC than males, indicating potential variations in CYP-mediated metabolism. **Conclusions:** The study indicates that increased liver stiffness in Fontan patients is associated with altered pharmacokinetics of sildenafil, likely due to impaired hepatic clearance. Sex-based differences suggest variations in CYP enzyme activity. Further studies incorporating hepatic blood flow measurements are needed to differentiate between effects due to altered blood flow or direct changes in enzyme expression.

Abstract #165
Program: Osteopathic Medicine
Category: Quality Improvement

Poster Session: KC-2

Expanding the minority stress theory: economic and racial barriers to psychiatric care for LGBTQ individuals

Jiwon Choi*, Pierce Thompson, KCU
***Presenting Author**

This study expands upon the Minority Stress Theory by examining the impact of racial and economic barriers on psychiatric care disparities among LGBTQ individuals from marginalized backgrounds. While the original framework identifies discrimination, stigma, and social rejection as primary stressors, this analysis argues that financial hardship and systemic healthcare inequities function as additional factors contributing to adverse mental health outcomes. Through a comprehensive review, this literature review investigates how the intersection of race, socioeconomic status, and LGBTQ identity shapes access to and engagement with psychiatric treatment. The review synthesizes findings from multiple studies on LGBTQ mental health, minority stress, and healthcare disparities. By integrating structural barriers into the Minority Stress Theory, this research highlights the need for a more inclusive framework that better accounts for the multifaceted challenges faced by LGBTQ individuals in seeking mental health care. The findings have implications for improving mental health interventions, reducing treatment barriers, and developing more culturally competent care for LGBTQ individuals from diverse racial and economic backgrounds.

Abstract #166
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-2

Endogenous MRSA endophthalmitis with necrotizing scleritis

Zach Dawson*, Alec Curtis
***Presenting Author**

Abstract: Purpose: To report a rare case of endogenous endophthalmitis spread from cellulitis of the leg. Observation: A 29-year-old male developed vision changes approximately one week after undergoing incision and drainage of a lower extremity skin abscess. Ophthalmic symptoms continued to progress over two months until seeking care from an ophthalmologist in the emergency department. Systemic workup was grossly unremarkable, other than an elevated IgG4 and nonspecific inflammatory markers. Ultimately the diagnosis of necrotizing scleritis and MRSA endophthalmitis was made via repeated anterior chamber tap due to maintaining an early suspicion of a mixed etiology of disease presentation. Ultimately successfully treated with intravitreal antibiotics and systemic anti-inflammatories. Conclusions and Importance: Endogenous endophthalmitis is a rare entity and especially rarely from a skin abscess. This case highlights the importance of obtaining a thorough history and in some cases, repeat lab work.

Abstract #167
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Retrospective Analysis on Anxiety and Pneumonia Hospital Length of Stay in Rural Midwestern Population

Carolyn Duong*, Noel Thomas, Sunanda Chilukuri, Magalie Zoungrana
***Presenting Author**

Background: This study aimed to compare the hospital length of stay (LOS) among patients with and without pneumonia, while also evaluating the impact of a comorbid anxiety diagnosis on their length of stay. We hypothesized that patients with both pneumonia and anxiety would have a greater proportion of stays ≥ 6 days. **Methods:** A retrospective observational cohort study was conducted using electronic medical records from Freeman Health System (Joplin and Neosho, MO) from January 1, 2019, to December 31, 2022. The study included patients ≥ 18 years old admitted with pneumonia with anxiety (PXG), pneumonia without anxiety (PoG), and anxiety without pneumonia (oXG). Statistical analysis involved calculating the proportion of patients with LOS ≥ 6 days and performing two-sample proportion tests to compare groups and subgroups stratified by age and gender. **Results:** The PXG group had the highest proportion of LOS ≥ 6 days at 0.6190 (95% Confidence Interval: 0.5942-0.6439), followed by PoG at 0.5121 (95% CI: 0.4968-0.5273) and oXG at 0.2893 (95% CI: 0.2782-0.3003). Statistically significant differences were observed between PXG vs. PoG, PXG vs. oXG (proportion difference: 0.3298, 95% CI: 0.3036-0.3569), and PoG vs. oXG (proportion difference: 0.2228, 95% CI: 0.2040-0.2416). Subgroup analysis showed consistent patterns regardless of age and gender. **Conclusion:** Patients with both pneumonia and anxiety have a significantly higher proportion of extended hospital stays compared to those with pneumonia with and without anxiety. These findings underscore the importance of considering comorbid anxiety in managing hospitalized patients with pneumonia.

Abstract #168
Program: Osteopathic Medicine
Category: Quality Improvement

Poster Session: KC-1

Field experience: student refugee health navigators hypertensive crisis and education

David Fanous*, Kathleen Parens
*Presenting Author

Background Refugees who resettle to the United States often struggle to navigate the healthcare system, frequently due to social determinants of health. The Refugee Health Navigators of Health Program (RHNP), a partnership between Kansas City University and Della Lamb, a local refugee resettlement agency, is an innovative and holistic approach to overcome those struggles. **Program Overview** Teams of two KCU students conduct weekly check-ins, using interpretation as needed, to help assigned refugee client schedule appointments, clarify recommendations, and communicate with providers. Teams also connect refugees to resources for transportation, housing, and childcare. This field experience took place during one of those weekly check-ins. The navigators first taught the client how to take their medications as prescribed; organizing the medications into clear pill boxes for “AM” medications, and dark boxes for “PM” medications. The client was then taught how to use their blood pressure cuff to monitor their hypertension as per physician recommendation. The cuff read dangerously high numbers, and emergency action was taken by the client’s navigators. Transportation to the emergency department, as well as phone call follow-ups were done to ensure the client received appropriate care. **Field Experience** The client’s low level of literacy inhibited them from understanding their own condition, which underlines the importance of following instructions from refugee navigators. The U.S. healthcare system uses medical jargon and language that make it difficult to navigate, even for English speakers. The relationship built with the client through weekly check-ins allowed the client to trust the navigators with their care. **Conclusion** Health literacy continues to be a significant barrier to care in the United States. Refugees who recently resettled to the United States benefit greatly from access to health navigators, who help them bridge gaps, understand their condition and treatment options, and ultimately become self-sufficient in their care.

Abstract #169
Program: Osteopathic Medicine
Category: Medical Education

Poster Session: KC-1

Resolution of chronic leg ulceration in Klippel-Trenaunay syndrome: a case report

Adam Frank*, Dr. Juan Carlos Correa, Sarah Krejci, APRN
***Presenting Author**

Klippel-Trenaunay syndrome (KTS) is an uncommon congenital disease which causes vascular malformations and hypertrophy of an affected limb. The diagnosis requires at least two of three cardinal features: 1. Cutaneous hemangiomas (port-wine stain); 2. Varicosities; and 3. Limb hypertrophy of the soft tissues and bones. Many complications can occur, including hemorrhage, deep venous thrombosis, pulmonary embolism and less commonly, leg ulceration. We present the case of a 43-year-old woman with KTS who presented with a six-year history of a chronic, large non-healing ulcer of the right lower extremity (RLE). She previously underwent bone grafting for right tibia avascular necrosis, two full-thickness skin grafts, many topical therapies, compression bandages and hyperbaric oxygen treatments. Physical examination of the right lateral calf showed a 12 x 6 cm open, full thickness ulcer with adherent slough in the wound bed and +2 posterior tibial and dorsalis pedis pulses. The majority of the right side of her body had a capillary hemangioma/port-wine stain. RLE angiogram revealed two arteriovenous malformations (AVM) branching off the distal anterior tibial artery (ATA) towards the lateral shin. An AVM coiling procedure was performed with pre/post arteriograms demonstrating successful embolization of both AVMs. ATA flow along with arterial flow to the lateral calf was preserved post AVM coiling. Images taken over the course of three months show gradual and complete healing of the ulcer. This case highlights the complex and successful management of a large non-healing leg ulcer in the setting of KTS.

Abstract #170
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-2

The role of ZMYND8 on anti-cancer immunotherapy via PD-L1

Nihasika Gopi*, Jacquelyn Nemechek, John Means, Molly Leyda, Scott Younger, John Perry
***Presenting Author**

Leukemia is the most prevalent pediatric cancer. Though prognosis, if detected and diagnosed early is good, treatment can often present with immunosuppression and severe side-effects. Currently, pediatric leukemia has been treated with high doses of a chemotherapy drug, doxorubicin (DXR). DXR is an anthracycline antibiotic which works by causing damage to DNA and interfering with DNA synthesis. Recently, it has been shown that low-doses of DXR target leukemia stem cells (LSCs) by activating the immune system and downregulating immune checkpoints like PD-L1, thereby attenuating cancer progression. To elucidate the mechanisms underlying DXR sensitivity and resistance in LSCs, we conducted a CRISPR screen, identifying that ZMYND8, a chromatin reader, as a candidate for regulating the response to low vs high DXR exposure. ZMYND8 knockdown in DXR-sensitive cancer cells allowed PD-L1 to continue to be upregulated. However, we then created clones of DXR-resistant leukemia cell lines to model the LSCs resistant to DXR using K562 cells, which is a chronic myeloid leukemia line. Induction of ZMYND-8 reduced PD-L1 expression and enhanced cytotoxicity with high DXR treatment. When ZMYND-8 is inhibited, PD-L1 expression remained increased at high DXR doses in LSC-like resistant cells. Currently we are extending these results with NALM-6, an acute lymphoid leukemia line and THP-1, an acute myeloid leukemia line to further characterize the role of ZMYND8-mediated DXR resistance. Ultimately, we aim to display the use of low-dose DXR treatment as a less toxic immunotherapy in pediatric leukemia.

Abstract #171
Program: Osteopathic Medicine
Category: Quality Improvement

Poster Session: KC-1

Improving Diabetic Retinopathy Outcomes: Student Health Advocates Program

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*Presenting Author

Introduction: Diabetic retinopathy is the leading cause of adult blindness in the United States. Yearly retinal scans help physicians detect and treat retinopathy. Samuel U. Rodgers Health Center (Sam Rodgers) developed an initiative to increase retinal scans in all diabetic patients resulting in an increased number of outpatient referrals to local ophthalmologists but lacked the capacity to track patient referral completion. Kansas City University (KCU) created a Student Health Advocates (SHA) pilot program in partnership with Sam Rodgers to increase understanding of what happens to patients after a referral is given and work to increase access to appropriate resources and services. **Methods:** Five KCU second year osteopathic medical students participated in the pilot SHA program. Sam Rodgers identified patients who had received external referrals to local ophthalmologists and assigned them to SHAs for follow-up. SHAs called patients to assess follow-up status and worked with Sam Rodgers's community health workers to address barriers to care. Outreach attempts were recorded in REDCap and the data was used to evaluate the effectiveness of the pilot. **Results:** In the first three months of the project, students made 98 contact attempts to 65 patients, with 51 (78.5%) of those patients successfully contacted. Eleven patients reported a scheduled ophthalmology appointment, and SHAs helped five make ophthalmology appointments. Forty patients (59.5%) are pending and 2 (0.97%) refused care. Ten patients (15.4%) were unable to be reached after three attempts, and four (6.2%) patients did not have contact information available. **Conclusions:** SHAs successfully followed up with patients who were given outpatient referrals and demonstrated that the SHA programs are a potential solution to increasing capacity to track outcomes of patients with complicated diagnoses like diabetic retinopathy. Future work will include expanding SHA programming to address other health needs identified by Sam Rodgers.

Abstract #172
Program: Osteopathic Medicine
Category: Quality Improvement

Poster Session: KC-1

Field experience: student refugee health navigator opioid prescription education and naloxone training

Pooja Gunnala*, Mason Tuttle PSM , Benjamin Grin MD MPH, Melissa McAtee
***Presenting Author**

Opioid overdoses remain a major public health concern in the U.S., with naloxone being a life-saving intervention often under-prescribed. Newly arrived refugees face additional healthcare challenges, including language barriers, which increase the risk of adverse events. The Refugee Health Navigator Program (RHNP) at Kansas City University (KCU) aims to address these challenges by providing medical students with opportunities to assist refugees in navigating healthcare systems. This field experience highlights an example of the benefit this program provides to the community through the provision of naloxone training to a client prescribed an opioid. A middle-aged refugee, prescribed hydrocodone-acetaminophen after an emergency department visit, was unaware of opioid risks. During a routine check-in with two KCU Student Health Navigators (SHNs), concerns arose regarding safe medication use and storage, especially with a toddler at home. SHNs collaborated with clinical faculty to provide opioid education and naloxone training, ensuring culturally appropriate communication through in-person interpretation. The client was educated on opioid safety, overdose recognition, naloxone administration, and safe storage. A teach-back method confirmed understanding. One month post-training, follow-up confirmed the client retained knowledge on medication safety, opioid use, and naloxone administration. Discussions also covered proper disposal methods to mitigate risks. The intervention empowered the client to make informed decisions while maintaining autonomy over their pain management. The care taken to honor the client's medical autonomy while mitigating the risk of an incidental opioid overdose demonstrates the value of RHNP. Zooming out, this field experience highlights that medical students acting as SHNs can be a resource for providing tailored and culturally sensitive health education without stepping into a clinical role.

Abstract #173
Program: Osteopathic Medicine
Category: Medical Education

Poster Session: KC-1

Managing severe gastrointestinal bleeding in a patient with Hermansky-Pudlak syndrome and Crohn's disease: a case report

Anuj Gupta*, Christina Lucas, Ryan Nazari, Manav Nayeni, Pavan Sakhamuru, Reda M Daher
***Presenting Author**

Hermansky-Pudlak Syndrome (HPS) is a rare autosomal recessive disorder characterized by platelet dysfunction, oculocutaneous albinism, and pulmonary fibrosis. Patients with HPS are prone to bleeding complications due to defective platelet aggregation, particularly in gastrointestinal (GI) settings. Crohn's disease (CD), a chronic inflammatory bowel disease, further increases the risk of GI hemorrhage due to mucosal friability and ulceration. Managing GI bleeding in a patient with both conditions requires a careful balance of hemostasis and inflammation control. A 60-year-old female with HPS and Crohn's disease presented with acute hematochezia, dizziness, and fatigue. Diagnosed with Crohn's colitis in 2021, she had been on mesalamine, infliximab, and corticosteroids. On admission, she was hemodynamically stable but had a hemoglobin drop from 9.1 g/dL to 7.2 g/dL. A CT Abdomen and Pelvis showed mild wall thickening in the descending and sigmoid colon, consistent with Crohn's exacerbation. Given her HPS-related platelet dysfunction, she was treated with desmopressin (DDAVP) to enhance platelet adhesion, packed red blood cell transfusions for anemia, and IV corticosteroids to control inflammation. This case highlights the complex interplay between HPS and Crohn's disease in GI bleeding. HPS-induced platelet dysfunction prolongs hemorrhage, while Crohn's inflammation increases GI bleeding susceptibility. Despite a normal platelet count, platelet aggregation is impaired, requiring specialized hemostatic management. DDAVP, transfusions, and immunosuppression were critical in stabilizing this patient. Multidisciplinary coordination is essential for managing GI hemorrhage in HPS patients with Crohn's disease. Early recognition of platelet dysfunction, targeted hemostatic therapy, and inflammation control are crucial to preventing complications. Further studies are needed to develop standardized protocols for peri-procedural and acute bleeding management in HPS.

Abstract #174
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-2

Corynebacterium minutissimum as a Rare Cause of Tibial Osteomyelitis: A Case Report and Literature Review

Shaufe Hassan*, Ayub Ansari, Dania Shoaib, Maher Asfour, Xiyue Wang, Pooja Sharma
***Presenting Author**

Osteomyelitis is commonly caused by pathogens like *Staphylococcus aureus*, but rare organisms such as *Corynebacterium minutissimum*, typically associated with superficial skin infections, can also be implicated. Recognizing these atypical pathogens presents diagnostic and therapeutic challenges, especially in the presence of orthopedic hardware. We conducted a literature review yielding 25 studies and encompassing 797 patient cases, which highlights the emerging role of *Corynebacterium* species in osteomyelitis, particularly following trauma or surgical interventions. A 72-year-old man with a history of chronic right tibia and fibula fractures from a motor vehicle accident presented with progressively worsening leg pain over six months. Imaging revealed hardware failure and new fractures. Surgical intervention involved hardware removal, osteotomy, and placement of an external fixator. Intraoperative cultures eventually grew *C. minutissimum* which was resistant to ceftriaxone but sensitive to doxycycline. His antibiotic regimen was switched from intravenous cefazolin to oral doxycycline, leading to gradual pain improvement and stable clinical status. This case adds to the growing body of literature on *C. minutissimum* as a rare but significant cause of osteomyelitis, particularly in patients with orthopedic hardware. Our literature review emphasizes the need for clinicians to be vigilant for *Corynebacterium* species in cases of osteomyelitis unresponsive to standard treatments. Early recognition and targeted antimicrobial therapy guided by susceptibility testing are crucial for successful outcomes in managing atypical bone infections.

Abstract #175
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Variation in morphology of the suprascapular nerve and vessels at the suprascapular notch: clinical implications for suprascapular nerve release

Robert Heins*, Jordan Konstanty, Justine Hemaya, Travis Hodge, Anthony Olinger PhD
***Presenting Author**

Purpose: This study aimed to classify variation in morphology of the suprascapular nerve (SSN), suprascapular artery (SSA), and suprascapular vein (SSV) in relation to the superior transverse scapular ligament (STSL) at the suprascapular notch (SN) to evaluate the risk of vascular injury during SSN release. **Methods:** Dissections were performed on 104 shoulders to analyze the SSN, SSA, and SSV at the SN. The STSL was evaluated for dimensions, ossification, and impact on SN morphology. Configurations of the nerve and vessels were categorized, and vascular injury risk was stratified as low, moderate, or high. **Results:** The SSN passed beneath the STSL in 99% of shoulders, while the SSA and SSV configurations varied. Low vascular injury risk was identified in 82% of shoulders, moderate risk in 10.6%, and high risk in 7.4%, with female cadavers demonstrating higher risk anatomy (13.3%) compared to males (2.0%). Ossified STSLs were significantly associated with smaller SN dimensions, including reduced height and width ($p < 0.001$). **Conclusion:** Anatomical variations at the SN play a critical role in determining the risk of vascular injury during SSN release. Surgeons should consider these morphological differences, particularly in cases involving ossified STSLs or higher-risk configurations, to optimize surgical planning.

Abstract #176
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Evaluation of suprascapular nerve anatomy and its relevance to effective suprascapular nerve blocks: a morphometric cadaveric study

Dugan Hult*, Janice Wang, Brock Halling, Mayank Gupta MD, Anthony Olinger PhD
***Presenting Author**

Introduction Shoulder pain is the third most common cause of musculoskeletal pain. Treatment options range from conservative approaches to surgical interventions. Suprascapular nerve blocks (SNBs) can be effective for managing chronic shoulder pain, as well as perioperative analgesia for those undergoing shoulder surgery, especially in patients with pulmonary or respiratory considerations. **Objectives** This study aims to enhance SNB techniques for acute perioperative pain management and chronic refractory shoulder pain by examining the clinically relevant anatomy and variations of the suprascapular nerve (SNe) as it traverses the suprascapular notch (SNo). **Materials and Methods** Ninety-three formalin-embalmed cadaveric shoulders were dissected and a morphometric analysis of the SNo was conducted. The diameter, course, and initial branch point of the SNe were recorded, along with the width and depth of the SNo. Comparisons were performed between donor sex, laterality, age, and body mass index (BMI). **Results** The mean diameter of the SNe was significantly greater in males (2.6 mm) than females (2.2 mm) ($p < 0.001$). The SNe branched proximal to the SNo in 15% of shoulders, directly at the SNo in 54%, and distal to the SNo in 31%. The SNe occupied the medial third of the SNo in 15%, middle third in 59%, and lateral third in 26%. **Discussion/Conclusion** The study showed a significant difference in the diameter of the SNe between males and females as it courses through SNo, while also detailing the most common nerve courses. Understanding these patterns is essential to enhance the efficacy of SNB. This study can help guide clinicians when performing SNB to better determine where the needle should be advanced in relation to the SNo and effective dosage of local anesthetic in order to provide maximum analgesic coverage.

Abstract #177

Poster Session: KC-1

Program: Osteopathic Medicine

Category: Medical Education

Examining the Journey for Underrepresented Students in Medicine Program (JUMP-Start) initiative in supporting underrepresented students in medical school applications and increasing matriculation: A longitudinal study update

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***Presenting Author**

Introduction: The representation gap in medical education significantly impacts prospective students and physicians. JUMP-Start aims to increase diversity at KCU and in medicine by supporting marginalized pre-medical students through workshops and mentorship. This study evaluates the program's efficacy in preparing underrepresented students in medicine (URiM) for medical school applications and admission outcomes. We hypothesize that participants will report increased understanding, self-confidence, and knowledge for their application cycles. **Materials and Methods:** The study consists of 2 surveys: a post-program survey and follow-up survey. Fifty undergraduate participants were recruited via emails to counselors and interest groups. Survey data includes demographics, participants' confidence and understanding of skills gained from workshops, and barriers to the medical application process. **Results:** Among 31 post-program survey respondents across three cohorts, 65% were from underrepresented racial/ethnic groups, with 42% identifying as LGBTQIA+. 71% were very satisfied in their understanding of the application process after JUMP-Start. 87% expressed confidence in their personal statement writing. Additionally, 100% of participants believed JUMP-Start helped lessen barriers to the medical education process. Of the 16 follow-up survey respondents across three cohorts, 81% were satisfied with the resources JUMP-Start provided for the application process. 63% believed that the skills developed during the program benefited them during the application cycle. Notably, of the 6 participants who applied to medical school during the 2024-2025 cycle, 50% received interview invitations, and 33% have been offered acceptances from the schools to which they applied. **Discussion:** JUMP-Start participants reported high confidence and satisfaction with the medical school application process upon program completion. Future surveys will address underrepresented subcategories in the Asian ethnicity group, an overlooked demographic. Additional analysis of the 2025 program data will provide insight into the program's long-term impact. **Conclusion:** JUMP-Start effectively supports URiM students, enhancing their confidence, skills, and knowledge in the medical school application process.

Abstract #179
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Comparing Surgical Approaches: Robotic vs. Laparoscopic Surgery for Colorectal Cancer

Peter Schultz*, Sylvia Jennette, Mihir Patel, Austin Beahm, John Dobson III, MD
***Presenting Author**

Introduction Colorectal cancer (CRC) is one of the most common malignancies worldwide, with surgery being a central treatment modality. Minimally invasive techniques, including conventional laparoscopic surgery (CLS) and robotic-assisted laparoscopic surgery (RALS), have become standard practices in CRC management. However, the efficacy and safety of these techniques remain under review. This study evaluates perioperative and postoperative outcomes between RALS and CLS, determining whether robotic-assisted techniques offer significant advantages in CRC treatment.

Methods A comprehensive search was conducted across three major databases – Google Scholar, PubMed, and Embase – from June 2012 to November 2024. Search terms like “colorectal cancer,” “laparoscopic surgery,” “robotic surgery,” and “minimally invasive surgery” were used with Boolean operators to ensure comprehensive coverage of studies on laparoscopic and robotic colorectal surgeries. Twenty-eight studies were identified. Key outcome measures included operative time, conversion-to-open rates, rates of hemorrhage, anastomotic leakage, length of hospital stay, readmission rates, reoperation rates, and mortality.

Results Results indicate that RALS is associated with a lower rate of hemorrhage (2.45% vs. 4.3%) and conversion to open surgery (5.66% vs. 9.35%) compared to CLS. However, RALS was linked to longer operative times (264.84 minutes vs. 224.37 minutes) and slightly higher readmission rates (10.54% vs. 8.7%). No statistically significant differences were observed in rates of anastomotic leakage, reoperation, or duration of hospital stay. Mortality rates were lower in the RALS group, but further studies are needed to confirm this trend.

Discussion The findings suggest that while RALS provides certain benefits, its prolonged operative times and increased need of resources raises some concern about cost-effectiveness. Further randomized controlled trials are necessary to clarify the long-term clinical advantages of robotic surgery and the patient populations that may benefit. Additionally, exploring surgeon experience/training with robotic systems may help optimize outcomes, further clarifying the role of RALS in colorectal surgery treatment.

Abstract #180
Program: Osteopathic Medicine
Category: Quality Improvement

Poster Session: KC-2

Educating intimate partner violence (IPV) survivors on women's health issues associated with IPV

Sarah Joseph*, Kathy Tran
***Presenting Author**

Women with a history of intimate partner violence (IPV) are at increased risk for cardiovascular disease, human papillomavirus (HPV), cervical cancer, and human immunodeficiency virus (HIV), which we collectively termed women's health issues (WHI). The objective of this study is to educate IPV survivors through a trauma-informed, culturally sensitive WHI education program tailored to the needs and experiences of IPV victims, based on focus group data. An education program was created based on data from ten focus groups (n=38), and these interactive presentations over WHIs and COVID-19 were presented to sexual and/or family violence survivors (n=31). Participants completed demographic surveys, including questions about physician acknowledgment of IPV as a risk factor for chronic conditions, and pre-post tests to evaluate the utility and effectiveness of the educational sessions using percent learning gain and paired t-tests. According to the focus group data, approximately 24% of participants had never heard of HPV, 21% had not received a Pap smear in the last three years, and 13% did not know where to get tested for HIV. Only 17% (n=10) of participants indicated that their physician acknowledged IPV as a risk factor for disease. Following the health education, data analysis showed a significant learning gain of 55.66%, and paired t-tests comparing pre/post-tests also supported an improved understanding of WHIs (p-values < 0.01). Tailored education modules about WHIs proved effective in educating women who have experienced IPV. Future iterations of the modules are being developed focusing on topics informed by participant responses such as diabetes, neurological issues, reproductive health, and gastrointestinal issues. This study opens avenues for further exploration of the connection between IPV and health initiatives.

Abstract #181
Program: Osteopathic Medicine
Category: Basic Science

Poster Session: KC-1

The calcium hypothesis of depression: novel questions and promising answers

Jackson Kadowaki*, Austin Messmer, Tahlia Korin
*Presenting Author

Introduction: Major depressive disorder (MDD) involves reduction in serotonin, the mood-stabilizing neurotransmitter. However, not all patients respond positively to serotonin reuptake inhibitors prescribed for MDD management. Recent evidence has shown upregulation of the kynurenine pathway (KP) in MDD. KP generates multiple neurotoxic metabolites including Quinolinic Acid (QA), an NMDA-R agonist that increases Ca²⁺ influx into neurons and generates oxidative stress. The current study has investigated the effects of QA on the plasma membrane Ca²⁺-ATPase (PMCA), a Ca²⁺ transporter critical for the maintenance of neuronal Ca²⁺ homeostasis, cell viability, and optimal neuronal function. **Hypothesis:** We hypothesize that QA will impact PMCA activity and oxidatively modify the PMCA protein. **Methods:** SH-SY-5Y cells were exposed to QA (10 – 100 μM) for 24 hours. Cell viability was measured using the lactate dehydrogenase assay. PMCA activity was monitored by measuring inorganic phosphate generated from Ca²⁺-dependent ATP hydrolysis. PMCA protein levels were determined via immunoblotting using pan antibodies that recognize all known isoforms. **Results:** Exposure to QA had no effect on cell viability even at high concentrations (up to 1000 μM). PMCA activity showed a biphasic effect, with a progressive dose-dependent and statistically significant increase with ~70% activation observed at 25 μM QA, followed by reduction to control values at higher concentrations. Immunoblotting revealed the formation of high molecular PMCA aggregates which were reversed under reducing conditions indicating cysteine oxidation and disulfide bond formation. Ongoing studies are investigating QA-mediated changes in neuronal Ca²⁺. **Conclusion:** Increase in PMCA activity by QA is reflective of a compensatory effect to counteract QA-mediated increase in Ca²⁺ and protect neurons from toxicity. Loss of Ca²⁺ homeostasis may impact neurotransmitter release and may contribute to the onset of MDD. Our findings have significant implications for understanding the pathogenesis of MDD and may lead to identification of novel targets for pharmacological interventions.

Abstract #182
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-1

A roadside tribute: motor vehicle death demographics in kansas city.

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***Presenting Author**

INTRODUCTION. Motor vehicle accidents (MVA) are a leading cause of death in the United States. Although MVAs are preventable, on average, over 120 people are killed by MVA every day in the United States. This project demonstrates the demographic trends of fatalities from MVA in Jackson County, Missouri. **METHODS.** De-identified death records from MVA in 2014-2024 were obtained from the Jackson County Medical Examiner's Office, and national death statistics for the United States were obtained from the Centers for Disease Control and Prevention. Data was compiled into a Microsoft excel worksheet, and trends were tracked using pivot tables. **SUMMARY.** The number of MVA fatalities between 2014 and 2024 have continued trending upwards in Jackson County. In 2023, there were a total of 139 deaths in Jackson County from MVA, marking it the year with the most fatalities from the decade studied. The crude rate of MVA fatalities per 100,000 people in Jackson County in 2023 was 19.3, whereas nationally, it was 12.9. Additionally compared to national trends, MVA fatalities in Jackson County increased from 2021-2023, whereas nationally, MVA fatalities decreased in this timeframe. **CONCLUSIONS.** These trends suggest Jackson County has a higher MVA fatality rate in comparison to national data. It is imperative to focus on prevention as a county, state, and country to reduce the occurrence of these avoidable deaths.

Abstract #183
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-2

Antisynthetase syndrome masquerading as pneumonia: a case for early autoimmune screening

Abhinav Kari*, Vikita Patel, Mark Jarosz, DO, Philip Slocum, DO
***Presenting Author**

Antisynthetase syndrome is a rare autoimmune condition that often manifests with interstitial lung disease, posing a diagnostic challenge due to its overlapping features with infectious and inflammatory lung conditions. Delayed recognition can lead to unnecessary treatments, disease progression, and worsened outcomes. This case highlights the importance of early recognition and autoimmune screening in patients with unexplained, non-resolving pulmonary symptoms. A 56-year-old male presented with exertional shortness of breath and cough, initially diagnosed as pneumonia. Despite multiple courses of antibiotics and corticosteroids, his symptoms persisted. Imaging revealed bilateral pulmonary infiltrates with interstitial lung involvement, and pulmonary function tests confirmed a restrictive lung defect. Bronchoscopy and bronchoalveolar lavage were inconclusive, prompting a video-assisted thoracoscopic lung biopsy, which revealed nonspecific interstitial pneumonia with organizing pneumonia. Further serologic testing identified specific autoantibodies, leading to the diagnosis of antisynthetase syndrome associated with dermatomyositis. The patient was treated with corticosteroids and transitioned to immunosuppressive therapy, resulting in significant improvement. This case underscores the need for early consideration of autoimmune disease in patients with non-resolving pneumonia. Timely serologic testing and a multidisciplinary approach can facilitate earlier diagnosis, prevent prolonged ineffective treatments, and improve patient outcomes. Increased awareness among clinicians is essential to recognizing and managing this rare but serious condition.

Abstract #184
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-2

Variation in extensor indicis proprius and clinical application for antebrachial procedures.

Jordan Konstanty*, Jessica L. Morehouse, Christian Willers, Emma Gauert, Nicole Fremarek, Sara Sloan
***Presenting Author**

INTRODUCTION. The extensor indicis proprius (EIP) muscle is contained within the extensor compartment of the antebrachium, originating on the posterior surface of the distal ulna, with the muscle belly distal to that of extensor pollicis longus. The tendon of the EIP muscle forms proximally to the radiocarpal joint and passes deep to the extensor retinaculum, attaching to the ulnar side of the extensor digitorum tendon on the second digit. The EIP muscle frequently demonstrates variation in its' tendinous insertion, sending tendinous slips to locations other than what is described classically in literature. The previously established classification systems of known EIP insertion patterns has recently been combined by Georgiev (2018) into four main schemes. **METHODS.** Ninety-six upper limbs from 49 formalin-embalmed cadavers were dissected to expose the EIP muscle and determine the tendon morphology as classified by Georgiev. Measurements were recorded from the center of the established EIP muscle belly to 3 anatomical landmarks, along with measurements of EIP muscle bellies and tendons. **SUMMARY.** Out of the 9 morphologies observed, classic morphology was seen in 60.4% of samples (1 muscle belly, 1 tendinous insertion to the second digit). Three additional variations included 7.3% with 1 classic tendon and an accessory tendon to the radial side of the second digit, 6.25% with 1 classic tendon and an accessory tendon to the ulnar side of the second digit, and 6.25% with 3 tendons to the second digit. Muscle center was measured from the ulnar styloid process and compared with the presenting tendon morphology to determine relative location. **CONCLUSION.** An EIP muscle with 1 muscle belly and 1 tendon to the index finger was the most common variation. This study demonstrates predominant classification of EIP and relative muscle belly location. These findings are important for procedures and needle placement during treatments of the antebrachium.

Abstract #185
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-2

A novel variant of the suprascapular neurovascular morphology at the suprascapular notch.

Jordan Konstanty*, Robert J. Heins, Bryan G. Beutel
***Presenting Author**

INTRODUCTION. The suprascapular foramen is a landmark for the suprascapular nerve, artery, and vein. These neurovascular structures traverse the suprascapular notch in a variety of morphologies. However, the suprascapular nerve has always been described as coursing under the superior transverse scapular ligament (STSL). This report aims to describe a novel variant of suprascapular neurovascular structures found in a cadaver. **RESOURCES.** An 85-year-old Caucasian male was obtained through our institution. Measurements were taken using digital calipers. Clinical images were taken of the suprascapular notch for descriptive value. **DESCRIPTION.** During dissection of a cadaveric upper extremity, the right suprascapular nerve, artery, and vein were found to course above the STSL, with no structures passing through the foramen of the notch. The STSL had a length of 12.91 millimeters (mm) and width of 0.84 mm on the right. At the level of the STSL, the suprascapular nerve was noted to have a diameter of 3.55 mm, the suprascapular artery had a diameter of 3.61 mm, and the suprascapular vein had a diameter of 3.86 mm on the right. A total of 94 upper extremities from 52 different cadavers were examined for the morphology of the suprascapular nerve, artery, and vein at the level of the suprascapular notch. No other cadavers were found to have this morphology, resulting in an estimated prevalence of 1.1%. **SIGNIFICANCE.** This case study describes a unilateral shoulder anomaly and reviews the potential clinical significance, which should be considered during shoulder surgeries and peripheral nerve blocks. The suprascapular notch serves as a landmark for suprascapular nerve injections and, as such, this variant could complicate the injection process due to an aberrant nerve location. This could also lead to complications during rotator cuff repairs due to the lack of support of the suprascapular nerve which is normally afforded by the STSL.

Abstract #186
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Success of landmark guided versus ultrasound guided ulnar nerve blocks when performed by third year student doctors

Erica Korbel*, Tyler Raby, Anthony Olinger, John Dobson
*Presenting Author

Introduction: Ultrasound guided (UG) nerve blocks improve efficacy when performed by an experienced operator. However, novice medical professionals may be able to use landmark guidance (LG) to perform ulnar nerve (UN) blocks in regions with limited healthcare access. Third year medical students (OSM-3) simulated a cadaveric UN block to evaluate the success of LG versus UG blocks and the success between administrators. Methods: Two OMS-3s injected 60 intact cadaveric wrists with tissue dye utilizing the LG (n=30) approach on one wrist and the UG (n=30) approach contralaterally. Each investigator performed 15 LG and 15 UG injections in alternate orders. The LG method was performed by moving 2 cm proximally to the medial wrist crease (MWC) and injecting on the radial side of the flexor carpi ulnaris. In the UG method, the ultrasound transducer visualized the ulnar artery (UA), UN, and the pisiform bone to inject into the perineural space. The wrists were dissected to determine success. Descriptive and inferential statistics, utilizing the Fisher's Exact test with a p-value of 0.05, were performed using SPSS (v. 29; IBM SPSS). Results: The LG group was reduced to n=26 due to 4 unavailable datapoints. 18/26 (69%) were successful. 25/30 (83%) UG blocks were successful. Statistically, these results were insignificant, $p = 0.502$. There was also no statistical difference when comparing overall success rates between investigators, $p = 0.365$. When comparing the findings between the type of injection performed first and the overall success of LG or UG injections, there were no statistical differences, $p = 0.169$ and $p = 0.500$ respectively. Discussion: UG injections more successfully hit the perineural space with insignificant findings between injection types, investigators, and order of injection. With this insignificance, LG UN blocks successfully target the UN and should be used in regions with limited healthcare access.

Abstract #187
Program: Osteopathic Medicine
Category: Medical Education

Poster Session: KC-1

Effectiveness of gamification for the learning of prostate disorders among family medicine residents

Emily Kring*, Andrew Eilerman, Joy Walton, MD
*Presenting Author

Introduction Screening for prostate disease (PD) is important to reduce cancer deaths and address the problems that arise with benign prostatic hyperplasia (BPH) and prostatitis (1). Resident training must address lack of confidence in exam skills and indications to prevent underdiagnosis of PD and missed chances for early intervention (3,6). Other specialties have found that gamified learning increased teamwork, engagement, and increased board passage rates (12, 13). This study aims to evaluate the use of gamification as an educational tool for Family Medicine (FM) Residency didactics to increase learner engagement, stimulation, competence, and confidence in practical and diagnostic skills in prostate disease. Methods Following an asynchronous lecture on PD, 14 FM residents and 2 medical students were separated into groups to complete a timed, competitive, PD escape room. Tasks included demonstration of skills in lower urinary tract symptom (LUTS) scoring, bladder scan, digital rectal exam (DRE), and knowledge of PD, medications, and prostate specific antigen (PSA) level interpretation. Participant self-assessments of confidence and knowledge about PD and associated skills were collected via 5-point Likert-Scale pre- and post-surveys and analyzed via descriptive statistics and chi-squared testing. Results Prior to the gamified didactics, most residents (53.85%) rated themselves knowledgeable about PD and treatment, but a minority, only 15.38%, 38.46%, and 46.15% felt they could complete an AUA score, PVR, and DRE respectively. Following the prostate disorder escape room, chi squared analysis of these responses saw a statistically significant change ($p < 0.05$) for all four prompts, increasing to no less than 80.00%. 92.86% found the environment conducive to learning and 92.86% felt that gamification aids learning. Conclusion This study has shown that gamification via an escape room may be an effective method to increase learner engagement, excitement, confidence, and competence in the FM didactic education of PD.

Abstract #188
Program: Osteopathic Medicine
Category: Medical Education

Poster Session: KC-2

Match trends in competitive surgical specialties post ACGME merger

Ashley*, Madison Kelly, Shay Van Sambeek, Christian Nassif, Dr. John Dobson
***Presenting Author**

Prior to the ACGME merger, residency programs were designated separately from MD and DO applicants. Competitive surgical specialties have historically been dominated by MD representation and spots for DO residents limited. However, the ACGME merger that took place in 2020 eliminated this separation. The aim of this study is to determine trends in DO representation in competitive surgical specialties by evaluating changes in overall DO representation and regional representation five years post-ACGME merger. Utilizing publicly accessible data, DO representation was evaluated across the following ACGME accredited competitive surgical specialties comparing PGY1 to PGY5: ENT, General Surgery, Orthopedic Surgery, Plastic Surgery, and Urology. Based on the results, it was concluded that five years post ACGME merger, there was an increase in ENT and General Surgery DO representation overall and a decrease in Urology, Orthopedic Surgery, and Plastic Surgery. General Surgery was found to have the most DO representation expansion with a 3% increase overall. In evaluating regional data, results indicate an increase in DO representation regionally in all specialties with the exception of Orthopedic Surgery and Urology. In conclusion, there was minimal overall DO representation advancement across surgical specialties and regional distribution is varied.

Abstract #189
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-1

Case report: improvement of constipation symptoms in two patients with Ehlers-danlos syndrome using semaglutide

Stephen Luyakoh*, Sama Shah, Jesse Lopez
***Presenting Author**

Background/Objective Semaglutide, a GLP-1 receptor agonist, is primarily used for managing type 2 diabetes and obesity. Although effective for glycemic control and weight loss, it is associated with gastrointestinal (GI) adverse effects, including nausea, vomiting, and constipation. The mechanisms underlying these effects are not fully understood but are thought to involve GLP-1 receptor activation and delayed gastric emptying. Ehlers-Danlos syndromes (EDS) are a group of connective tissue disorders often complicated by GI symptoms, particularly constipation, which affects 12-39% of EDS patients. Given the overlap in GI motility issues, we hypothesized that semaglutide could provide therapeutic benefits for constipation in EDS. **Methods/Results** This report describes two EDS patients who experienced significant improvements in chronic constipation after starting semaglutide. Both patients had long-standing GI motility issues typical of EDS. After initiating semaglutide, both reported marked relief from obstipation, with no significant exacerbation of other common side effects like nausea or vomiting. **Discussion/Conclusion** The observed improvements suggest that semaglutide may enhance GI motility in EDS patients, possibly through GLP-1 receptor activation on smooth muscle and its anti-inflammatory effects. These findings offer preliminary evidence that semaglutide could be a potential therapeutic option for managing constipation in EDS, but further studies are needed to confirm these results and understand the underlying mechanisms. **Significance/Interest** This study contributes to emerging evidence on semaglutide's effects outside of diabetes and obesity, particularly in the management of GI motility disorders. If confirmed, semaglutide could provide a new treatment avenue for EDS patients with chronic constipation, potentially improving their quality of life.

Abstract #190
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Disparities in Prevalence of Stereoblindness Among School-Aged Children in the Kansas City Metropolitan Area and Joplin, Missouri

Arjun Mahajan*, Rishiraj Ganguli, Amolika Saini, Kate Backes
*Presenting Author

Introduction: Stereoblindness is the inability to perceive depth through binocular vision, which can hinder a child's academic performance and physical coordination. This study aims to analyze patterns of stereoscopic referrals in students from Kansas City and Joplin, Missouri, who were screened by Kansas City University (KCU) osteopathic medical students and nursing students through Score 1 for Health to identify disparities and inform future intervention strategies. **Methods:** Random Dot E® (RDE) stereovision testing was conducted during the 2018-2019 to 2023-2024 academic years (2020-2022 was omitted due to COVID-19) by first year KCU osteopathic medical students. Following RDE® test tool guidelines, if an elementary student was unable to identify the stereo E card four times wearing polarized lenses, a retest was done by a registered nurse later. Parent/guardian of children who did not pass both episodes were notified and advised to seek further vision care. **Results:** A total of 30,388 RDE® screenings were conducted. Of the 1,650 students who did not pass both RDE® screenings, 39.9% were Black/African American, 30.2% were Hispanic/Latino, and 20.3% were white. The overall prevalence of not passing was 4.0% in Joplin, compared to 5.7% in Kansas City ($p < 0.05$). Students aged 10-12 years exhibited the highest prevalence of stereoscopic referrals, with similar trends by age observed in both Kansas City and Joplin. **Discussion:** Differences in stereoscopic referral prevalence among students screened in the Kansas City metropolitan and Joplin areas may be due to a multitude of factors such as differences in socioeconomic status or access to medical care. Students may not have passed RDE® screenings multiple years if stereoblindness was not addressed between annual screenings, possibly influencing study results. Future studies should evaluate how Score 1 for Health screening results were used to connect students to further specialty care.

Abstract #191
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-1

Outpatient anesthesia management in a patient with narcolepsy undergoing a colonoscopy: a case report

Britney Margheim*, Donna Lien, Kayla Brockman
***Presenting Author**

Introduction: Narcolepsy is a neurological disorder that is indicated by excessive daytime sleepiness, sleep attacks, and cataplexy, or short episodes of muscle weakness or even paralysis. Narcolepsy can potentially complicate the administration of anesthesia. Specifically, propofol is a transient, intravenous drug that is used for various procedures due to its quick onset and convenient recovery time. The pharmacokinetic properties of propofol are suitable for procedures, such as outpatient colonoscopies, that require monitored anesthesia care (MAC). However, there is limited literature regarding clinical management of patients with narcolepsy and propofol administration in the outpatient setting. **Case Presentation:** A 37-year-old male with a medical history of spastic cerebral palsy, anxiety, and narcolepsy, managed with modafinil 200mg daily, was scheduled for outpatient colonoscopy with MAC for rectal bleeding. The patient was maintained solely with propofol. He remained deeply sedated throughout the colonoscopy and by the end of the procedure he had regained consciousness prior to arrival to the post anesthesia care unit (PACU). The patient recovered in the PACU without prolonged sedation and he exhibited no signs of adverse reactions to the propofol. Upon follow up the patient reported no complications except for nausea which resolved on post procedure day one. He endorsed no increase in narcolepsy symptoms and immediately resumed his modafinil. **Discussion/Conclusion:** Guidelines and best practices for the outpatient anesthetic management of patients with narcolepsy have not been established, primarily due to the relative rarity of the condition and scarcity of data. Current available research suggests that propofol does not necessarily prolong sedation or emergence. However, most of the studies have reported on inpatient surgeries and their anesthetic management. This case report outlines a patient that underwent a successful outpatient colonoscopy who required a typical amount of propofol and recovered in standard time without any major complications.

Abstract #192
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-1

Recognizing furuncular myiasis in non-endemic regions: the importance of travel history in dermatologic diagnosis

Amber Mathai*, Dr. Christina Lee, DO, Dr. Brandon Litzner, DO
***Presenting Author**

Background: Furuncular Myiasis, a cutaneous parasitic infection of the skin, is most commonly caused by *Dermatobia hominis* (*D. hominis*). This condition is endemic to tropical regions, such as Central and South America, but can rarely be found in the United States. Patients will present with tender nodules that resemble follicular cysts, making it a necessity for clinicians to have broad differential diagnoses to prevent delays in diagnosis and treatment. **Case Presentation:** A 65 y/o female patient presented to a dermatology clinic in Wichita, Kansas, with a concern about two enlarging, painful nodules on her scalp that often had a crawling sensation within the lesions. She suspected that she was bitten by an insect while bird watching in the Amazon rainforest two months prior. At the clinic, a physical exam showed two erythematous papules with central punctate on the superior parietal scalp and posterior mid-parietal scalp. A punch biopsy revealed larvae, which was then confirmed to be *D. hominis* larvae via histology. The patient was treated post-biopsy with doxycycline in order to prevent a secondary infection and symptoms had resolved completely upon follow up appointment. **Conclusion:** This case report highlights the importance of broad differential diagnoses that includes furuncular myiasis in nodular cutaneous lesions, even in non-endemic areas such as the United States. Proper history collection and careful and thorough removal of the larvae are crucial for effective resolution. Due to the ease of access and increase in global travel, in addition to climate change, clinicians must consider that there may be an expansion of the geographic distributions of such parasitic infections in non-endemic areas.

Abstract #193
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Kynurenic acid: missing piece in the puzzle of depression

Austin Messmer, MS *, Jackson Kadowaki, Tahlia Korin, MS, Vasisht Karri, Thornton Mardis, MS, Kami Pearson, Hector Cotto, PhD, Asma Zaidi, PhD

***Presenting Author**

Introduction: Major depressive disorder (MDD) is characterized by a reduction in the mood-stabilizing neurotransmitter called serotonin. Selective serotonin reuptake inhibitors are therefore used as the first line of treatment for managing the symptoms of depression. Recent evidence has shown upregulation of the kynurenine pathway (KP) in MDD. KP generates multiple molecules, many of which are neurotoxic and cause oxidative damage. However, kynurenic acid (KYNA) is a unique KP metabolite which has been shown to be neuroprotective. The current study has investigated the effects of KYNA on the plasma membrane Ca^{2+} -ATPase (PMCA), a Ca^{2+} transporter critical for the maintenance of neuronal Ca^{2+} homeostasis, cell viability, and optimal neuronal function. **Hypothesis:** KYNA will activate the PMCA without oxidatively modifying the PMCA protein. **Methods:** SH-SY-5Y cells were exposed to KYNA (10 – 1000 μM) for 24 hours. Cell viability was measured using the lactate dehydrogenase assay. PMCA activity was monitored by measuring inorganic phosphate generated from Ca^{2+} -dependent ATP hydrolysis. PMCA protein levels were determined via immunoblotting. **Results:** Exposure to KYNA preserved cell viability even at high concentrations (up to 1000 μM). PMCA activity showed a biphasic effect, with ~100% activation observed at 25 μM KYNA, followed by steady reduction to ~50% of control values at 250 μM . Immunoblotting revealed no significant differences in the PMCA protein upon exposure to KYNA. There was no evidence of aggregation and/or fragmentation as observed with other KP metabolites. Ongoing studies are investigating KYNA-mediated changes in neuronal Ca^{2+} . **Conclusions:** KYNA did not impact cell viability. Changes in PMCA activity by KYNA may be indicative of its neuroprotective effect and demonstrate its ability to shield neurons from Ca^{2+} -induced excitotoxicity. Our findings have significant implications for understanding the pathogenesis of MDD and may lead to the identification and development of novel targets for pharmacological interventions for MDD patients.

Abstract #194
Program: Osteopathic Medicine
Category: Medical Education

Poster Session: KC-1

Surveying Anatomy Education: Perspectives of Osteopathic Medical Students

Matthew Mindrup OMS II*, Dr. Sara Sloan, Robert Heins, Justine Hemaya
***Presenting Author**

Background: Anatomy education has historically been a foundational aspect of medical training, especially in osteopathic medical education, which emphasizes the importance of musculoskeletal anatomy. However, in light of new technologies, modes of instruction, and the changes in educational delivery from the COVID-19 Pandemic, shifts toward virtual instruction and reductions in gross anatomy lab hours have emerged. Limited research exists on osteopathic medical students' perspectives regarding the adequacy and effectiveness of their anatomy education, especially in the post-COVID learning environment. This study aims to assess student perceptions of anatomy instruction, preparedness for board exams, and the influence of anatomy education on career interests. **Methods:** This study surveyed second, third, and fourth-year medical students across multiple U.S. Osteopathic institutions. An anonymous, online survey was used to assess curriculum structure, study methods, perceived preparedness for board exams, and anatomy education's role in specialty selection. **Results:** Preliminarily, 104 responses have been received from the survey distributed. 87% of students had anatomy integrated into systems courses and 96% of students had cadaveric dissection as a laboratory component. 66% of students felt they have retained the anatomy material from their medical school courses. 73% of students agreed their anatomy education prepared them to pass COMLEX Level 1 while 70% felt the same for USMLE Step 1. 66% of students believe their anatomy education sufficiently prepared them for their third year surgical clerkships. 50% of students reported their anatomy education had at least a moderate influence on their choice to pursue a surgical specialty. **Conclusion:** Findings from this study provide insight into osteopathic medical students' experiences with anatomy education. Identifying strengths and gaps in the osteopathic curricula from the student's perspective may help improve anatomy instruction and better support student learning and professional development.

Abstract #195
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-2

Current Evidence for the Use of Jugular Vein Compression Collars in Sport: A Systematic Review

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***Presenting Author**

Repetitive head impacts from contact sports can lead to sport-related concussions and traumatic brain injury. The best treatment is prevention. Recently, external jugular vein compression collars have been worn by National Football League players, but the current evidence is limited. To the best of the authors' knowledge, this is the first comprehensive, up-to-date systematic review addressing the use of jugular vein compression collars for decreasing concussion incidence in high-impact sports and activities. Overall, when compared to control, the results indicated that jugular vein compression collars significantly reduced white matter alteration, improved short-term neurocognitive outcomes, increased internal jugular vein cross-sectional area, decreased internal carotid artery cross-sectional area, and moderating effects on peak pulse pressure. There was no significant difference in concussion incidence rate between groups. While promising, these findings warrant future research to assess the jugular vein compression collar's role in concussion prevention, brain injury, and long-term neurocognitive outcomes. The authors are hopeful that an increased role of jugular vein compression collar use in recreational and professional athletics can mitigate traumatic brain injuries in the future.

Abstract #196
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-2

Morphological Variability of the Deep Plantar Arch: A Cadaveric Study of Anatomical Location and Composition

Jessica Morehouse*, Jordan Konstanty, Anna Cacini, Jamie Stern, Sara Sloan
***Presenting Author**

Introduction: Transmetatarsal amputation (TMA) is a common procedure utilized to preserve limb viability, with increased revision risk in comparison to below-knee amputation (BKA). Identification and localization of the Deep Plantar Arch prior to TMA is an important surgical consideration to reduce vascular compromise. The lateral plantar artery (LPA) and deep plantar artery (DPA) contribute to the formation of the Deep Plantar Arch, creating variation in arterial predominance and location of the arch. This study characterized predominant vascular contribution and localization of the Deep Plantar Arch. **Materials and Methods:** 89 feet from 47 formalin-embalmed donors were dissected, following the split of Posterior Tibial Artery (PTA) into its terminal branches. The LPA and DPA were traced from their respective origins and external vessel diameters were measured to establish arch predominance. Distances between anatomical landmarks were collected to determine location of the arch. **Results:** The Deep Plantar Arch was present in all feet, with LPA predominance in 45.98%, DPA predominance in 43.68%, and co-dominance in 10.34% of specimens. The Medial Plantar Artery (MPA) was noted to contribute in 30.68% of specimens. Mean distance from calcaneal tuberosity to distal-most phalanx was 229.23mm; mean distance from calcaneal tuberosity to Deep Plantar Arch was 133.85mm. The Deep Plantar Arch was located in the distal two-thirds of the foot in all specimens, with 80 in the middle one-third and 9 in the distal one-third. **Discussion:** The Deep Plantar Arch is the dominant source of vascularization to the plantar foot. Surgeons must take care when operating in the distal two-thirds of the foot as vascular interruption risks inadequate perfusion, thus necessitating additional procedures to restore blood flow. **Significance:** These data illustrate variance in predominant vascularization and location of the Deep Plantar Arch. Overall, this study highlights the importance of adequate pre-operative vascular visualization to ensure vascular preservation.

Abstract #197
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-1

Medial plantar artery dominance of the plantar arch: a unique anastomosis with clinical implications.

Jessica Morehouse*, Bryan Beutel
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INTRODUCTION. Forefoot structures are vascularized via the deep plantar arch, an anastomotic network classically composed of the lateral plantar artery (LPA) and deep plantar artery (DPA), with no contribution from the medial plantar artery (MPA). This report aims to describe a unique variant of deep plantar arch vascular dominance in a cadaver. **RESOURCES.** A 96-year-old Caucasian male was obtained our institution. Measurements were taken using a Vernier caliper to assess vessel diameters and distances. Clinical images were taken of the deep plantar arch for descriptive value. **DESCRIPTION.** During dissection of bilateral cadaveric lower extremities, the superficial branch of the medial plantar artery (sMPA) was found to course laterally and anastomose with the DPA to form the deep plantar arch, with no contribution from the LPA. A total of 89 feet from 49 cadavers were examined to characterize the morphology of the deep plantar arterial arch. No other cadavers exhibited this distinct morphology, resulting in an estimated prevalence of 2.25% of feet. **SIGNIFICANCE.** Reconstructive procedures to repair soft tissue defects of weight-bearing regions of the foot commonly involve flaps from the medial plantar foot, a region supplied by branches of the MPA. Performing these procedures in patients with anomalous vascular dominance of the deep plantar arch via the MPA can compromise vascularization of the forefoot and increase post-procedural complications.

Abstract #198
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Patient Factors and Receptivity to Epidural Anesthesia

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***Presenting Author**

Introduction: Epidural anesthesia (EA) is widely used for pain management in labor and delivery, yet receptivity to and satisfaction with EA vary considerably. This variability is influenced by multiple factors, including demographics (e.g., age, parity), socioeconomic context, cultural beliefs surrounding childbirth, and psychosocial determinants such as fear of labor pain. **Methods:** A systematic search was conducted in PubMed and Embase from August to September 2024, guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) framework. Eligible publications were in English, enrolled at least 20 participants, and investigated how demographic, socioeconomic, cultural, or psychosocial variables affected women's receptivity to or satisfaction with EA. Study designs included randomized controlled trials, cohort, case-control, cross-sectional, and systematic reviews. Three reviewers independently screened titles, abstracts, and full texts; disagreements were resolved by discussion or referral to a fourth reviewer. Owing to methodological heterogeneity, a narrative synthesis was performed. **Results:** Of 1,352 records identified, 38 met the inclusion criteria. Educational level emerged as a key determinant of EA acceptance, with higher attainment generally linked to greater knowledge and willingness to use EA. Cultural norms and misconceptions—such as viewing labor pain as natural—acted as barriers in some regions. Shared decision-making and culturally sensitive antenatal counseling consistently improved both receptivity and satisfaction. While EA effectively reduced labor pain, several studies noted potential associations with increased instrumental delivery and longer labor duration, though findings were not uniform across all populations. **Conclusion:** Receptivity to and satisfaction with EA depend on a multifaceted interplay of demographic, cultural, and psychosocial factors. Tailored counseling, robust education on risks and benefits, and a patient-centered approach are crucial for enhancing women's experiences. Future research should adopt standardized measures of satisfaction and birth outcomes to clarify these relationships further.

Abstract #199
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

A Comparison of the Hill-RBF 3.0 Formula to Other AI Formulas for the Measurement of IOL in the Cataract Surgical Setting: A Systematic Review and Meta-Analysis

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***Presenting Author**

Purpose: This systematic review and meta-analysis aim to evaluate the predictive accuracy of the Hill-Radial Basis Activation Function (Hill-RBF) 3.0 formula compared to other artificial intelligence-derived (AI) and traditional arithmetic formulas for intraocular lens (IOL) power calculation, assisting practicing cataract and refractive surgeons in clinical settings. **Design:** Systematic review and meta-analysis. **Methods:** A comprehensive search was conducted across the EMBASE, MEDLINE, CINAHL, and Web of Science databases. Systematic review management software was used for screening, and STATA 17.0 was used to conduct the meta-analysis. The mean absolute error (MAE) and the percentage of eyes within ± 0.25 and ± 0.50 diopters (D) of refractive prediction error were examined for the included IOL formulas. The standardized mean difference (SMD) from MAE was calculated for the meta-analysis. **Results:** Out of 202 records screened, 13 studies were included for qualitative and quantitative synthesis. The Hill-RBF 3.0 formula demonstrated a significantly lower MAE than the SRK/T formula (SMD: -0.17, 95% CI: [-0.25, -0.09]), Haigis formula (SMD: -0.17, 95% CI: [-0.24, -0.09]), and Holladay I (SMD: -0.15, 95% CI: [-0.27, -0.02]). There were no statistically significant differences in the percentage of refractive prediction errors within ± 0.25 D between Hill-RBF 3.0 and the other formulas. However, within ± 0.50 D, Hill-RBF 3.0 had significantly higher percentages of refractive prediction errors compared to Haigis (OR: 1.09, 95% CI: [1.00, 1.19]) and HofferQ (OR: 1.09, 95% CI: [1.00, 1.19]). **Conclusions:** The Hill-RBF 3.0 formula exhibited comparable predictive accuracy to other AI and traditional IOL formulas, with some instances of superior performance. It may be beneficial for ophthalmological clinicians to incorporate the Hill-RBF 3.0 formula into practice, as its predictive accuracy is expected to improve with ongoing validation and training. Ultimately, the integration of both artificial intelligence and traditional IOL formulas may enhance refractive outcome predictions following cataract surgery.

Abstract #200
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-1

Pseudomonas aeruginosa meningitis following intrathecal pain pump replacement – a rare and serious complication: a case report

Ryan Nazari*, Parsa Lessani, Shannon Sedighim
*Presenting Author

Intrathecal pain pumps (ITPs) are widely used for chronic pain management but carry risks of mechanical failure and infection. *Pseudomonas aeruginosa* meningitis is a rare but serious complication that can present with nonspecific symptoms, making early recognition challenging. This case describes an unexpected diagnosis of bacterial meningitis during ITP replacement for presumed device malfunction. A 72-year-old male with chronic pain syndrome, multiple neuromodulation trials, and long-term intrathecal fentanyl use presented for pain pump replacement due to suspected mechanical failure. He reported persistent headaches and neck pain for months, however, tested negative for Brudzinski and Kernig signs. Surgery was uneventful, and he was discharged home the same day. However, intraoperative CSF cultures later returned positive for *Pseudomonas aeruginosa*. He was recalled to the emergency department, where he remained afebrile and neurologically intact. He was initiated on IV cefepime and vancomycin, with subsequent intrathecal catheter removal and resolution of infection. This case highlights the diagnostic complexity of device-related infections in chronic pain patients. Overlapping symptoms with mechanical failure and prior procedures can delay suspicion for infection, particularly in the absence of fever or meningeal signs. However, in this case, routine operative CSF sampling led to an earlier-than-expected diagnosis, preventing delayed recognition and worsening complications. *Pseudomonas aeruginosa* is particularly concerning in implanted devices due to biofilm formation and high resistance potential, often requiring prolonged antibiotic therapy and device removal. It is imperative for physicians to maintain a high suspicion for infection in patients with multiple risk factors, including implanted devices and a history of repeated surgical procedures. Chronic pain patients with persistent unexplained symptoms, particularly headaches and neck pain, should be carefully evaluated for potential infection, even when primary concerns revolve around device malfunction. Multidisciplinary management is essential to balance infection control with ongoing pain management needs.

Lead-associated endocarditis in an ESRD patient: a case of pacemaker lead vegetation with MRSA bacteremia

Ryan Nazari*, Parsa Lessani, Erik Holbrook
*Presenting Author

Patients with end-stage renal disease (ESRD) on hemodialysis are at increased risk for catheter-related bloodstream infections, particularly with methicillin-resistant *Staphylococcus aureus* (MRSA). In patients with implantable cardiac devices, persistent bacteremia raises additional concern for lead-associated endocarditis, requiring echocardiography for diagnosis and device removal for source control. A 54-year-old male with ESRD on hemodialysis, heart failure with reduced ejection fraction (HFrEF), and an implantable cardioverter-defibrillator (ICD) presented with MRSA bacteremia from a tunneled dialysis catheter (TDC). Initial transthoracic echocardiography (TTE) was performed and showed no vegetations, but transesophageal echocardiography (TEE) later revealed a 0.7 cm pacemaker lead vegetation. Despite serial negative blood cultures, ICD extraction was performed due to persistent infection risk, and a leadless pacemaker (Micra) was implanted. The patient was placed on six weeks of vancomycin therapy post-extraction, with no recurrent bacteremia. This case underscores the importance of maintaining a high index of suspicion for endocarditis in bacteremic ESRD patients, especially those with additional risk factors, such as ICD, as well as the importance of TEE in diagnosing pacemaker lead infections, as TTE was initially negative. While serial negative blood cultures suggested infection resolution, persistent vegetation necessitated device removal. The decision to implant a leadless pacemaker was guided by infection risk mitigation in a dialysis-dependent patient; early recognition and device extraction were critical to preventing complications. Additionally, balancing anticoagulation, volume management, and infection control presented unique challenges. In ESRD patients with cardiac devices and bacteremia, lead-associated endocarditis should remain a concern even after blood cultures clear. This case highlights the importance of a multidisciplinary approach, integrating infectious disease, cardiology, nephrology, and interventional radiology to ensure timely diagnosis and management. The successful transition to a leadless pacemaker illustrates an evolving strategy for infection prevention in high-risk populations, reinforcing the need for individualized, patient-centered care in complex cases like this.

Abstract #202
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-2

Anesthetic management of a patient with a vagal nerve stimulator and poorly controlled seizures

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***Presenting Author**

Vagal Nerve Stimulation (VNS) is an established adjunctive therapy for medically refractory epilepsy, reducing seizure frequency in select patients. However, its presence in surgical patients presents unique anesthetic challenges, including the risk of intraoperative seizures, autonomic instability, and interactions with anesthetic agents. Effective perioperative management requires careful anesthetic planning and continuous neurological monitoring. A 63-year-old female with epilepsy, managed with multiple antiepileptic medications and VNS, presented for bilateral femur fracture repair. On the day of surgery, she experienced status epilepticus, which was pharmacologically controlled with intravenous (IV) levetiracetam and midazolam. General anesthesia was induced with standard monitoring, including EEG and Bispectral Index (BIS). Intraoperatively, a sudden BIS elevation without surgical stimulus suggested seizure activity, prompting additional IV levetiracetam administration, which stabilized the patient. The anesthetic management of VNS patients necessitates vigilant seizure monitoring, optimal anesthetic selection, and maintenance of therapeutic anticonvulsant levels. Continuous EEG and BIS monitoring play a critical role in detecting subclinical seizures. Anesthetic agents such as propofol and sevoflurane offer anticonvulsant properties, whereas ketamine at low doses may lower the seizure threshold. Additionally, VNS-related complications, including bradyarrhythmias and laryngeal dysfunction, require careful airway and cardiac monitoring. Consideration should be given to VNS deactivation before surgery to mitigate potential intraoperative risks. This case underscores the importance of an individualized, multidisciplinary approach to managing surgical patients with VNS. Continuous neurological monitoring, strategic anesthetic selection, and preparation for device-related complications are crucial for optimizing perioperative outcomes. As VNS use continues to grow, anesthesiologists must be well-versed in its implications to ensure safe surgical care for this high-risk population.

Abstract #203
Program: Osteopathic Medicine
Category: Quality Improvement

Poster Session: KC-2

Trends in lost and broken glasses among elementary students screened by Score 1 for Health

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***Presenting Author**

Introduction: Prescription eyeglasses are essential for academic performance in children with vision impairments. Children often lose or break glasses, which can hinder vision correction and negatively impact learning. Kansas City University's (KCU) Score 1 for Health initiative provides free health screenings for elementary students, focusing on those attending schools in underserved communities. This study analyzes trends in lost and broken glasses among children screened through Score 1. **Methods:** Data on lost or broken glasses are captured during Score 1 screening events and recorded by KCU first year osteopathic medical students who screened elementary students for vision. Students were asked whether they wear glasses. If they normally wear glasses but their glasses are not present, they are asked if their glasses were lost or broken. This study evaluates the prevalence of lost and broken glasses from the 2016-2017 to 2023-2024 school years (excluding 2020-2021 due to COVID-19) by year, age, gender, and race/ethnicity. **Results:** A total of 70,151 vision screenings were included in this analysis. Median age was 8 years (range: 5-18 years, interquartile range: 6,10 years). Of these, 2,168 (3.1%) students reported having lost or broken glasses: 43.8% were Black/African American, 33.2% were Hispanic/Latino, 20.8% were white, and 52.2% were female. Children aged 8–10 years had the highest prevalence, peaking at age 10 with 437 cases (20.2% of 2,168) of lost or broken glasses. **Conclusion:** Findings show higher prevalence of lost or broken glasses among older, non-white, and female students, highlighting the need for targeted interventions such as higher quality glasses and replacement programs. These interventions could decrease the prevalence of lost or broken glasses and minimize disruptions to vision and learning.

Abstract #204
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-1

Successful Prevention of Corneal Graft Rejection in a High-Risk Patient with HSV Keratitis: Use of Acthar® Gel Prophylaxis

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Corneal transplantation is a critical procedure for restoring vision in patients, with over 100,000 transplants performed globally each year. Graft rejection remains the leading cause of graft failure, particularly in high-risk patients. Among established risk factors, herpes simplex virus (HSV) keratitis is a significant contributor to graft failure because it causes chronic inflammation and corneal scarring which can compromise graft survival. Prompt recognition and aggressive steroid therapy are crucial for managing rejection episodes, with topical corticosteroids serving as the primary treatment for postoperative prophylaxis in high-risk corneal transplant recipients. However, prolonged corticosteroid use carries significant risks, including cataract formation, glaucoma, and impaired wound healing, prompting the exploration of alternative treatment strategies. This case report describes a patient with a history of HSV keratitis who experienced five recurrent corneal graft rejections despite conventional immunosuppressive therapy. Clinical improvement was achieved only after initiating Acthar® Gel (repository corticotropin injection), 80 units subcutaneously twice weekly, starting pre-transplant and continuing post-transplant. Acthar® Gel modulates immune responses through melanocortin receptor (MCR) activation, offering a mechanism of action distinct from traditional corticosteroids. While Acthar® Gel is FDA-approved for severe ophthalmic inflammatory diseases like keratitis, its role in corneal graft rejection remains underexplored. Studies have shown that Acthar® Gel is safe and well tolerated in keratitis, and it is hypothesized to help preserve corneal grafts in high-risk patients by reducing the adverse effects of long-term corticosteroid therapy. This case highlights the limitations of standard therapies in high-risk patients and supports the need for alternative prophylactic treatment strategies. The successful use of Acthar® Gel in this patient as a safe and well-tolerated prophylactic therapy emphasizes its potential role in improving graft survival in individuals at elevated risk of rejection due to chronic inflammation and previous rejection episodes.

Abstract #205
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: J-2

Acute pancreatitis secondary to hypertriglyceridemia in a patient with alcohol use disorder and medication noncompliance

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***Presenting Author**

Background: Acute pancreatitis is a potentially life-threatening condition with multiple etiologies such as gallstones, alcohol use, and hypertriglyceridemia. Hypertriglyceridemia-induced pancreatitis is a significant but less common cause, often impacted by genetic predisposition, metabolic disorders, or medication noncompliance. Alcohol use disorder is a known contributor to pancreatic injury, and its interplay with hypertriglyceridemia can further increase the risk and severity of pancreatitis. **Case Presentation:** This case is of a 41-year-old female with a history of hypertriglyceridemia, alcohol use disorder, and hypertension, who presented with acute left upper quadrant abdominal pain. Laboratory results revealed significantly elevated triglycerides (3249 mg/dL) and lipase (785 U/L). Imaging confirmed acute pancreatitis with pancreatic edema and retroperitoneal stranding. The patient had multiple prior episodes of pancreatitis and had previously been prescribed lipid-lowering therapy but reported noncompliance due to financial constraints. She consumed 3-4 beers daily along with hard liquor and had attempted outpatient treatment for her alcohol use disorder. She was treated with IV fluids, an insulin drip, and Vascepa, leading to rapid triglyceride reduction and symptom improvement. She was readmitted a month later for uncontrolled hypertension and mild lipase elevation. **Discussion:** This case highlights the multifactorial nature of pancreatitis, where hypertriglyceridemia and alcohol use disorder likely acted synergistically to precipitate acute episodes. Uncontrolled hypertension may have also played an underrecognized role in her pancreatitis severity. Social determinants of health, including financial barriers and the stigma surrounding addiction, further complicated her disease management. Multidisciplinary care, including patient education, medication access, and addiction support, is crucial for improving long-term outcomes. **Conclusion:** This case demonstrates the importance of addressing both biomedical and social factors in pancreatitis management. Improved access to lipid-lowering therapy, hypertension management, and alcohol use interventions could reduce recurrent episodes and long-term complications.

Abstract #206
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Similarities in Firearm Fatality in Urban and Rural Counties in Missouri

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BACKGROUND: Firearm injuries are a public health issue. Between 2018 and 2022, Missouri's firearm-related fatality rate was 22.5 deaths per 100,000 people, compared to a national average of 13.2. Gun violence is not exclusively an urban issue; firearm injuries occur across all communities. This study explored firearm-related mortality rates for urban and rural counties in Missouri. **METHODS:** Five-year firearm-related mortality rates (2018-2022) were calculated by county using data from CDC WISQARS (Accessed January 28, 2025). Missouri counties were classified as rural or urban using the definition outlined in Health in Rural Missouri Biennial Report, 2022-2023 (Missouri Department of Health and Senior Services). 99 counties were rural and 16 were urban (including St. Louis City). 30 rural counties were excluded due to either low firearm fatality counts or missing data. The aggregate mean mortality rate was calculated for urban and rural counties. Data were analyzed with a Wilcoxon rank sum test to evaluate differences between the two groups. **RESULTS:** Five-year firearm-related mortality rates ranged from 10.6 to 55.4 per 100,000 people in urban counties and 10.2 to 45.2 in rural counties. Overall, mean firearm mortality rates per 100,000 people were 20.7 (SD=11.1) and 20.5 (SD=7.2) for urban and rural counties, respectively ($p>0.05$). **CONCLUSION:** The similarities between rural and urban firearm-related mortality rates in Missouri highlight the ubiquitous nature of firearm injuries. Policies preventing firearm mortality may benefit all Missouri residents, regardless of county rurality.

Abstract #207
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Revised Disease Risk Index (rDRI) as a Prognostic Tool for Post-Transplant Survival in Hematologic Malignancies: A Retrospective Analysis at Johns Hopkins

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Objective: The refined Disease Risk Index (rDRI), as proposed by Dr. Armand, was developed to improve risk stratification for patients undergoing allogeneic hematopoietic stem cell transplantation (allo-HCT) based on disease type, cytogenetic risk, and remission status. This study applied the rDRI to a retrospective cohort to assess its prognostic utility in predicting post-transplant overall survival (OS) in a real-world clinical setting. **Methods:** We conducted a retrospective analysis of 106 patients who underwent allo-HCT at The Johns Hopkins Hospital. Patients were classified into rDRI risk groups (low, intermediate, high, very high) according to the criteria outlined by Dr. Armand's model. OS was estimated using Kaplan-Meier survival analysis, with time-to-event defined from transplant to death or last follow-up. **Results:** Of the 106 patients, 93 were classified as intermediate risk, 9 as high risk, and 3 as low risk. One patient could not be classified due to an unrepresented disease type. Kaplan-Meier curves demonstrated clear OS stratification by rDRI, with high-risk patients exhibiting the poorest survival, characterized by a steep decline within the first 1,000 days post-transplant. Intermediate-risk patients had superior OS compared to high-risk patients but showed a progressive decline over time. The low-risk group did not demonstrate better outcomes, likely due to limited sample size. **Conclusion:** The rDRI effectively stratifies post-transplant OS in patients with hematologic malignancies, supporting its prognostic value. The poor survival of high-risk patients underscores the need for novel therapeutic strategies to improve outcomes in this cohort.

Abstract #208
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: J-2

Impact of OSA-COPD overlap syndrome on hospital admissions: a retrospective study

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***Presenting Author**

Introduction: Obstructive sleep apnea (OSA) and chronic obstructive pulmonary disease (COPD) frequently coexist (1 in 10 individuals with 1 condition will also have the other disorder), forming Overlap Syndrome (OVS), a condition associated with worse health outcomes and increased mortality compared to either disease alone. However, the impact of OVS on inpatient hospitalization remains unclear. This study evaluates the clinical characteristics of OVS and its association with inpatient admissions. **Methods:** Data were obtained from the Healthcare Enterprise Repository for Ontological Narration (HERON) at the University of Kansas Health System for patients undergoing diagnostic sleep studies from 2012 to 2021. Patients with available apnea-hypopnea index (AHI) and forced expiratory volume/forced vital capacity (FEV₁/FVC) data were included in the analysis. **Results:** A total of 602 individuals met the study criteria (mean age: 57.9 years; 35.7% male). Diagnoses were classified as OSA only (41.4%, n=249), COPD only (13.4%, n=81), and OVS (13.2%, n=80). Logistic regression was used to assess associations between OVS and inpatient hospitalizations, adjusting for age, sex, body mass index (BMI), and comorbidities. Analyses demonstrated patients with OVS had a hospitalization rate of 16.8% (n=13), while those with COPD only had 16.2% (n=13). An increased prevalence of cardiac comorbidities existed in all groups with the highest being hypertension (58.6%, n=353). Unadjusted analysis suggested an increased hospitalization risk for OVS patients (OR: 1.74; 95% CI: 1.01–3.02), but this association was not statistically significant in adjusted models. **Conclusions:** Patients with OVS experience an increase in medical comorbidities, possibly driving inpatient hospitalizations. These findings highlight the complex interplay between OVS and comorbid medical conditions, particularly cardiovascular disease. Interventions to improve cardiovascular disease outcomes in patients with OVS may improve hospitalization rates.

Abstract #209
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Effects of ponte osteotomy on vertebral rotation in idiopathic scoliosis: a systematic review

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Introduction: Ponte osteotomy (PO), a common surgical method for idiopathic scoliosis, involves full-thickness removal of facet joints, lamina, and posterior ligaments. However, its specific effect on vertebral rotation correction remains unclear. This study systematically reviews the literature to evaluate PO versus other corrective procedures on axial rotation. **Methods:** Following PRISMA guidelines, three independent investigators reviewed articles identified through a comprehensive search in Ovid MEDLINE, Embase, and Web of Science. The primary outcome was the degree of rotation correction measured through standardized methods. **Results:** A total of 1,342 studies were identified, with twenty-three articles selected for full-text evaluation; six of these were included in the study. Harfouch et al. indicated that postoperative thoracic axial rotation of the spine was $9.3^\circ \pm 4.5^\circ$ in the non-Ponte osteotomy (NoPO) group and $2.9^\circ \pm 4.1^\circ$ in the PO group ($P = 0.000$). Samdani et al. found that thoracic rotation correction was $53.2 \pm 31.8\%$ (PO) versus $38.4 \pm 50.9\%$ (NoPO) ($P = 0.02$). Floccari et al. illustrated a reduction in thoracic rotation by $6^\circ \pm 6^\circ$ (PO) and $5.55^\circ \pm 4.7^\circ$ (NoPO) ($P = 0.963$). Tanida et al. found a vertebral rotation correction of $-2.6^\circ \pm 3.9^\circ$ (PO) and $-1.1^\circ \pm 2.1^\circ$ (NoPO) ($P = 0.15$). Seki et al. assessed axial flexibility, noting mean angles of intervertebral rotation increased from $6.0^\circ \pm 1.7^\circ$ post-inferior facetectomy to $12.0^\circ \pm 2.1^\circ$ post-PO ($P < 0.0001$). Mukaiyama et al. reported apical truncal rotation improvement of $34.6 \pm 33.3\%$ (PO) and $35.1 \pm 24.7\%$ (NoPO) ($P = 0.97$). **Conclusion:** Five of the six included studies demonstrated superior vertebral rotation outcomes for PO compared to other techniques. However, only three reported statistically significant findings, underscoring the need for further research to better establish the efficacy of PO, given its potential for more severe side effects, including increased blood loss.

Abstract #210
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

CHAMPS program participation and effect on vegetable consumption in pediatric populations.

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Introduction: The prevalence of pediatric obesity has risen over the past 40 years. Increased accessibility to fast food—rich in fats and carbohydrates—has contributed to this trend. Evidence suggests that providing education and mentorship on nutrition and physical fitness, particularly to families with children at risk of obesity, may improve dietary and lifestyle habits that influence rates of obesity. Kansas City University (KCU) runs the CHAMPS (Coaching, Health, and Movement Program with Students) program, which trains osteopathic medical students to educate families on pediatric obesity and nutrition while coaching them toward healthier lifestyle goals. **Methods:** CHAMPS administers a pre-program survey to parents/guardians assessing various behaviors and knowledge regarding nutrition and physical activity, including vegetable intake, followed by a post-program survey 8-12 weeks later. This project analyzed survey results to determine if vegetable intake frequency increased after families completed the CHAMPS program. Data from Fall 2017 to Spring 2024 (virtual format during COVID-19) were aggregated and analyzed using the Wilcoxon Signed-Rank Test. **Results:** 67 participating families had complete survey data. Before beginning CHAMPS, 20.8% of families reported consuming 0 servings of vegetables daily, 66.9% reported 1-2 servings, 11.7% reported 3-4 servings, and 0.6% reported 5 or more servings. After completing the CHAMPS program, 4.4% of families consumed 0 servings, 67% consumed 1-2 servings, 26.4% consumed 3-4 servings, and 2.2% consumed 5 or more servings, a significant increase in vegetable consumption ($p < 0.05$). **Discussion:** Findings suggest that participating in CHAMPS results in self-reported increased vegetable consumption among most participating families. Structured community educational programs can play a role in addressing pediatric obesity. Expanding such initiatives could enhance nutrition education and encourage short-term behavior change. **Conclusion:** The CHAMPS program influences positive behavior change for participating families. Future studies should explore the program's long-term impact and broader applicability in diverse communities.

Abstract #212
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-1

Crowned Dens Syndrome: A Case of Acute Neck Pain

Pavan Sakhamuru*, Reeya Patel, Dr. Kenneth Miller
***Presenting Author**

Crowned Dens Syndrome (CDS) is a rare and often underdiagnosed cause of cervical pain accounting for approximately 2% of acute neck pain cases in emergency or orthopedic settings. CDS results from calcium pyrophosphate dihydrate (CPPD) or hydroxyapatite crystal deposition around the C2 odontoid process, leading to an inflammatory response that mimics other cervical spine pathologies. We present a 74-year-old male with a medical history of diabetes, hypothyroidism, hypertension, hyperlipidemia, obstructive sleep apnea, and prior cervical myelopathy status post C3-4 discectomy and fusion in 2018 who presented to a Physical Medicine and Rehabilitation clinic with chronic left-sided neck pain radiating to the shoulder, exacerbated by rotation and associated with mild balance issues. His symptoms were significantly relieved with naproxen. Neurologic examination revealed reduced sensation over the left C5 dermatome, brisk upper extremity reflexes, and limited cervical rotation. Imaging with CT and MRI demonstrated pannus formation, erosive changes at the C1-C2 articulation, and retro-odontoid calcifications, highly suggestive of CDS in the setting of CPPD arthropathy. A rheumatology consultation confirmed the diagnosis while ruling out rheumatoid arthritis and other inflammatory arthritides. The patient was managed conservatively with NSAIDs and physical therapy, leading to improved cervical mobility and pain control. Neurosurgical evaluation did not indicate a need for surgical intervention. CDS remains an often-overlooked cause of chronic neck pain, particularly in elderly patients with degenerative changes. Diagnosis relies on imaging findings, particularly retro-odontoid calcifications and pannus formation, often requiring CT for confirmation. This case highlights the importance of considering CDS in the differential diagnosis of axial neck pain and demonstrates the effectiveness of conservative management with NSAIDs and physical therapy. Early recognition and appropriate non-surgical management can lead to significant symptom relief and prevent unnecessary interventions.

Abstract #213
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-2

Comparative Analysis of Genicular Nerve Radiofrequency Ablation Techniques for Chronic Knee Pain: A Literature Review

Pavan Sakhamuru*, Anuj Gupta, Kazi Syed
***Presenting Author**

Chronic knee pain is a highly prevalent complication in osteoarthritis and total knee replacements. Genicular Nerve Radiofrequency Ablation (GNRFA) is an intervention option for patients who have refractory knee pain after conservative treatment options that include: weight loss, physical therapy, and analgesic use. While previous literature has established the efficacy of GNRFA, variations in technique may influence patient outcomes. This literature review aims to compare patient outcomes of varying GNRFA techniques to determine the most effective treatment modality. Ten studies including systematic reviews and clinical trials assessing different GNRFA techniques for chronic knee pain were analyzed based on pain relief, functional outcomes, and patient satisfaction. Conventional GNRFA showed statistically significant reductions in Visual Analog Scale (VAS) scores and improved Oxford Knee Scores (OKS) up to 6 months. Studies testing pulsed RFA resulted in similar improvement as the conventional method. Among the techniques reviewed, cooled GNRFA demonstrated prolonged pain relief lasting for a full year. However, there was no significant difference between cooled and conventional GNRFA within the first 6 months indicating that the cooled method may be more beneficial for long-term pain relief. Further high-quality randomized control trials are needed to continue optimizing procedural protocols for each technique to improve chronic knee pain management.

Abstract #214
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

High blood pressure among elementary-aged children screened by Score 1 for Health, school year 2023-2024

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***Presenting Author**

Introduction: Childhood hypertension can lead to long-term risks including cardiovascular diseases and has increased in recent years, with an estimated prevalence of 4%. The built environment and access to resources can contribute to higher rates of hypertension. Score 1 for Health, a program through Kansas City University (KCU), offers free, in-school health screenings to under-resourced populations in the Kansas City area. This study examines how age and body mass index (BMI) influence blood pressure (BP) results in elementary-aged children screened by Score 1 for Health. **Methods:** Data from the 2023-2024 school year was analyzed. Initial BP readings (Test 1) were performed by first and second-year medical students from KCU, and if systolic or diastolic BP was elevated according to National Heart, Lung, and Blood Institute recommendations, additional tests (Tests 2 and 3) were conducted by registered nurses. If all 3 tests demonstrated elevated BP, children received a recommendation for further medical follow-up. Data was categorized by age, number of retests, and BMI percentiles (normal: 5%-85%; overweight: 85%-95%; and obese: >95%). **Results:** 7,833 complete screenings conducted in the 2023-2024 school year were included. The median age was 8 years (range: 5-12 years, interquartile range: 7, 9 years). Overall 0.9% percent of students had high BP. A significant association between BMI and hypertension was observed ($p < 0.05$) with children who were obese having the highest prevalence of hypertension (3.0%, 58/1917 total students tested). Age significantly impacted retest rates ($p < 0.05$); 11-year-old students had the highest prevalence of hypertension (3.5%, 24/690 total students tested) followed by 12-year-olds (2.9%, 10/341 total students tested). **Conclusion:** As BMI and age increased in elementary-aged children, so did the prevalence of hypertension. Further studies should investigate the role of race, gender, socioeconomic status, and geographic location on childhood hypertension so that tailored interventions can prevent long-term consequences.

Abstract #215
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-1

Recurrent small bowel intussusception in an adult without a clear lead point: a diagnostic and surgical challenge

Shannon Sedighim*, Ryan Nazari, Christopher Koo, MD
***Presenting Author**

Adult intussusception is rare and usually associated with a lead point, such as a tumor or inflammatory lesion. Unlike pediatric cases, adult intussusception often necessitates surgical intervention. This case describes a patient with recurrent small bowel intussusception without an identifiable lead point, presenting a diagnostic and management challenge. A 38-year-old male with a history of renal cell carcinoma in remission presented with intermittent abdominal pain, nausea, and vomiting for several years. Symptoms worsened over the past two days, prompting emergency evaluation. A CT scan revealed a short-segment, left-sided small bowel intussusception without obstruction or an apparent lead point. The patient had a similar CT finding 11 months prior. Given persistent symptoms and the risk of an underlying pathology, he underwent an exploratory laparotomy. Intraoperatively, a segment of small bowel intussusception was identified 60 cm distal to the ligament of Treitz. No masses, palpable lesions, or bowel wall abnormalities were found. A small bowel resection with primary anastomosis was performed, and pathology revealed vascular congestion but no definitive cause. It was also noted that while lining up the bowel for anastomosis, the small bowel started having very spastic and intense contractions in the area around the resection. This case underscores the challenge of managing adult intussusception without a clear lead point. While most cases are secondary to malignancy, idiopathic intussusception remains a diagnostic dilemma. The presence of spastic peristalsis intraoperatively raises the possibility of an underlying motility disorder. Surgical intervention remains the mainstay of treatment in symptomatic cases to rule out malignancy and prevent complications. Recurrent intussusception in adults without a lead point is rare. This case highlights the importance of thorough diagnostic evaluation and individualized surgical decision-making, particularly when symptoms persist despite conservative management. Further studies are needed to understand the possible role of bowel dysmotility in such presentations.

Abstract #216
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-2

Robotic assisted complete removal of retropubic midurethral mesh sling in a patient with vaginal mesh erosion: a surgical case report

Shannon Sedighim*, Ryan Nazari, Erika Hunter
***Presenting Author**

Midurethral slings are the gold standard for stress urinary incontinence (SUI), but complications such as mesh erosion, voiding dysfunction, and chronic pelvic pain can occur. Vaginal mesh exposure is uncommon with an incidence of 1%- 2%. Risk factors include older age, obesity, smoking, and menopausal status. Symptomatic mesh erosion into the bladder, urethra, and vagina typically requires surgical intervention, although ideal management remains controversial. Few cases of robotic removal have been reported, thus we present a case of robotic total excision of midurethral sling in a patient with vaginal mesh erosion and discuss the technique used. A 50-year-old female with a history of retropubic midurethral sling placement in 2021 presented with dyspareunia, dysuria, overactive bladder, and voiding dysfunction. Her medical history included obesity, menopause, and a 28 pack-year smoking history, making her a high-risk candidate for sling complications. Examination revealed tender vaginal mesh exposure and levator ani muscle tenderness. Patient underwent explant of retropubic midurethral sling using a combined transvaginal and robotic-assisted transabdominal approach. After docking the da Vinci robot, the vesicouterine peritoneum was opened and dissected to the pubic symphysis. The mesh was identified, grasped, and dissected down to the piriformis bilaterally. For the vaginal portion, the anterior vaginal epithelium over the mid-urethra was opened and mobilized. The mesh was undermined, cut, and dissected out to the space of Retzius bilaterally. The right sling arm was removed in three pieces, while the left was removed in one, achieving complete explantation. The vesicouterine peritoneum and vaginal epithelium were closed with running sutures. Vaginal sling erosion can result in many complications. Obesity, diabetes, and smoking impair healing, increasing the risk of mesh extrusion. Robotic-assisted excision is minimally invasive, offering improved dexterity, visualization, and range of motion. Early risk assessment, close monitoring, and appropriate surgical management are crucial for optimizing patient outcomes.

Abstract #217
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Single-Incision Combined Laparoscopic Right Hemicolectomy and Cholecystectomy: A Case Report

Dania Shoaib*, Ayub Ansari, Stephanie Yoo, Ali Thahab, Feng Ming Li, Huy T. Nguyen
***Presenting Author**

Minimally invasive surgery has transformed the management of complex procedures, offering reduced postoperative pain, faster recovery time, and improved cosmetic outcomes. Despite the growing use of minimally invasive techniques, literature specifically addressing single-incision laparoscopic surgery (SILS) for combined hemicolectomy and cholecystectomy is limited. This report seeks to fill this gap by detailing the successful management of a patient case through a single-incision combined laparoscopic right hemicolectomy and cholecystectomy. A 66-year-old female was referred to surgical consultation following a routine screening colonoscopy that identified a greater than 5 cm sessile polyp in the ascending colon. A follow-up computed tomography (CT) scan of the abdomen and pelvis revealed a non-metastatic mass in the ascending colon and gallstones correlating with the patient's reported abdominal discomfort. The decision was made to proceed with a single-incision laparoscopic right hemicolectomy and cholecystectomy. The cholecystectomy and subsequent right hemicolectomy were both performed through a 3 cm umbilical incision using the advanced access platform. Postoperative recovery was uneventful, with the patient passing flatus by day three, starting a clear liquid diet, and being discharged by day four. Pathological analysis of specimens revealed chronic cholecystitis with cholelithiasis and a tubulovillous adenoma of the colon without high-grade dysplasia or metastatic carcinoma. At the 15-day follow-up, the patient reported a full resumption of normal activities and was highly satisfied with the cosmetic results. This case report highlights the benefits of combining SILS right hemicolectomy and cholecystectomy through reducing multiple abdominal procedures, surgical trauma, operating time, and recovery period, all while achieving excellent cosmetic outcomes. Further research and advanced training in SILS combined procedures are needed for broader applicability in more complex cases.

Abstract #218
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Generative Artificial Intelligence in Patients Undergoing Intensivist Care: Ethical Dilemmas and Proposed Solutions

Idrees Siddiqui*, Saif Qaudri, Affan Naveed, Aamir Quadri, Ishaq Siddiqui, Kazi Syed, Mirza Baig, Azad Patel
***Presenting Author**

Introduction: Generative Artificial Intelligence (AI) is rapidly evolving and has the potential to transform healthcare, particularly in intensive care units (ICUs). ICUs are data-rich environments, well-positioned to leverage AI for personalized, data-driven medicine. However, the implementation of AI in intensivist care raises ethical dilemmas that must be addressed to ensure safe and trustworthy use. This study explores ethical challenges and proposed solutions to address ethical dilemmas in ICU settings.

Methods: A comprehensive search was conducted using PubMed and Cochrane databases, following PRISMA guidelines. The selected articles were analyzed to identify key ethical dilemmas associated with AI in the ICU, including privacy and data security, algorithmic bias and fairness, transparency and explainability, accountability, autonomy, informed consent, equity and access, predictive analytics, and medico-legal concerns. Additionally, proposed solutions and future potential applications were suggested based on the findings.

Results: A comprehensive search yielded 193 articles, of which 16 met the inclusion criteria. Each selected article was evaluated to identify their top ethical dilemmas. The analysis highlighted three key ethical dilemmas with the highest frequency: algorithmic bias and fairness (9 articles, 56.25%), transparency and explainability (8 articles, 50%), and accountability (6 articles, 37.5%). Proposed solutions include training AI models on diverse datasets to ensure representativeness, and ongoing monitoring to identify and mitigate biases for algorithmic bias and fairness. For transparency and explainability, implementing Explainable AI (XAI) techniques to enhance interpretability, and clear communication of AI model limitations were recommended. Accountability issues were addressed by establishing defined responsibility frameworks and developing ethical guidelines to ensure responsible AI deployment and prioritize patient safety.

Conclusion: The ethical dilemmas surrounding generative AI in the ICU are multifaceted, requiring careful consideration to ensure patient safety, fairness, and transparency. Addressing them through proposed solutions is crucial to harnessing the full potential of AI in the ICU.

Abstract #219
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Unknown primary site of ms neuroblastoma and use of peripheral IVs for chemotherapy

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***Presenting Author**

Neuroblastoma, the most common solid tumor in children, includes a particularly favorable subtype known as MS neuroblastoma, which is seen in infants under 12 months with metastasis limited to the liver, skin, or bone marrow. Treatment for MS neuroblastoma involves observation or limited chemotherapy typically administered through central venous catheters (CVCs), which carry risks of bloodstream infections and other complications. We describe a female infant with MS neuroblastoma who developed MSSA bacteremia, deep vein thrombosis, and respiratory distress following chemotherapy via a PICC line, requiring its removal. A peripheral IV (PIV) was used for the second round of chemotherapy without complication, suggesting a safer alternative to central lines. Many studies support PIV-administered chemotherapy as a viable option, citing reduced infection rates, fewer complications, and lower costs. While not yet standard practice, PIV chemotherapy administration may be beneficial for patients with high CVC-related risks, warranting further research to establish its role in short-term treatment regimens.

Abstract #220
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-1

The forgotten: death trends in Jackson County's unhoused population

Megan Stacy*, Carolyn Stock, Kathleen Parens, Anthony Olinger
*Presenting Author

INTRODUCTION. Research evaluating persons who are unhoused is lacking nationwide. This study aimed to evaluate death trends in the unhoused community of Jackson County, Missouri in comparison to overall county statistics. **METHODS.** Deidentified death records were provided by the Jackson County Medical Examiner's Office. Search parameters by the medical examiner's office were "homeless" and "unhoused", which produced a list of 277 decedents between the years 2014 and 2024. Overall county comparison data was drawn from the Point in Time Count (PIT Count), a federally mandated census count of the unhoused population through the Department of Housing and Urban Development (HUD), JacksonCounty.gov, and the Missouri Public Health Information Management System (MOPHIMS). **SUMMARY.** Jackson County holds the highest number of chronically unhoused persons within any major metropolitan area in the United States. Though the rate of death in the houseless community is annually ~0.5% of all deaths in Jackson County, unnecessary health disparities are readily apparent. Expected trends were observed in data analysis, such as death rates being higher in men and Caucasians. Disparities in health outcomes were observed in categories such as age at death, manner, and cause of death. The average age of death in Jackson County is 75.5 years old, yet in the unhoused community the average age of death is 49.7 years old. Unhoused persons are overwhelmingly dying from acute drug intoxication, a much lower cause of death in Jackson County. **CONCLUSION.** Though a small part of Jackson County's overall population, the unhoused community is no less deserving of equitable health outcomes. Research into these death trends is important for improvement in preventable causes of death and expanding the conversation around providing accessible and affordable substance use treatment in Jackson County.

Abstract #221
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-1

Preventing Osmotic Demyelination Syndrome: The Critical Role of Safe Sodium Correction

Kazi Syed*, Rachael Rocktoff, Pavan Sakhamaru, Manav Nayeni, Idrees Siddiqui, Anuj Gupta
***Presenting Author**

Osmotic Demyelination Syndrome (ODS) is a rare life-threatening neurological disorder resulting from the rapid correction of chronic hyponatremia. It encompasses Central Pontine Myelinolysis (CPM) and Extrapontine Myelinolysis (EPM), manifesting as altered mental status, dysarthria, dysphagia, and quadriparesis. Risk factors like chronic alcohol use disorder (AUD), liver disease, etc. contribute to impaired sodium homeostasis. Inadequate monitoring of electrolyte correction can lead to devastating outcomes. This case highlights the importance of strict adherence to evidence-based electrolyte correction protocols to prevent irreversible neurological injury. We present a 42-year-old female with PMHx of AUD who endorsed drinking approximately one-fifth of a liter of vodka daily. She presented to the ED due to confusion and lethargy. Laboratory testing revealed profound hyponatremia (98 mmol/L) along with elevated LFTs (AST 292, ALT 154) consistent with AUD and Beer potomania. Sodium replacement via normal saline reaching a rate of 100 ml/hr. Over 48 hours, sodium was corrected from 98 mmol/L to 122 mmol/L, far exceeding the recommended maximum of 8 mEq/L sodium correction per 24-hour period. On day 8, she rapidly deteriorated, and Brain MRI showed CPM and EPM, confirming ODS. Despite aggressive management, she remained on life support and was subsequently transferred to hospice on day 24 with no anticipated meaningful neurological recovery. The literature demonstrates that the rapid correction of profound hyponatremia can lead to increased in-hospital all-cause mortality rates and suggests utilizing hourly serum sodium level checks. A Swiss-cheese model of analysis of this case demonstrates the lack of hourly serial sodium checks. Despite the unfortunate outcome, this case highlights the importance of hourly serum sodium checks in at-risk patients with hyponatremia. Future research should explore integrating electronic alerts for staff when managing severe electrolyte imbalances in critical settings.

Abstract #222
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Fourth-year medical students' perceived readiness to care for patients with disabilities upon graduation

Meghan Taylor*, Kenneth Zaremski
*Presenting Author

Exposure to patients with disabilities (PWD) vary across medical schools with limited research on how curricula prepare students to care for PWD. Few studies assess preparedness to provide care upon graduation. Over a quarter of U.S. adults live with a disability, and less than half of physicians report being comfortable treating PWD. Many medical students report feeling underprepared to care for PWD, especially regarding history taking and physical exams. This study seeks to explore fourth-year medical students perceived readiness to care for PWD upon entering residency. A survey was distributed among all fourth-year medical students at Kansas City University. It assessed students' exposure to PWD prior to and during medical school and their perceived readiness to care for PWD when in residency. Data collection has concluded with an N = 49 at time of abstract submission with data analysis ongoing. We anticipate that students with prior exposure to PWD before or during medical school will report higher degrees of readiness to care for PWD in residency when compared to those students with less exposure. The degree of exposure to PWD during medical school is expected to have a greater impact on perceived readiness, especially for students who had limited exposure to PWD prior to medical school matriculation. This study aims to highlight the need to incorporate disability care into medical school curriculum. Activities can be included throughout the curriculum that target exposure to various disability types and degrees. If exposure prior to medical school is found to also increase perceived readiness, institutions and pre-medical advisors can emphasize the importance of this exposure prior to matriculation and help set up students with shadowing or volunteer opportunities that would provide interactions with and exposure to PWD.

Abstract #223
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-2

Shaping future healers: key experiences molding medical students' perspectives on osteopathic manipulative treatment

Meghan Taylor*, Jessica Bennet, Pedro DeCastro, Kenneth Zaremski
***Presenting Author**

Many osteopathic (DO) medical students already have perceptions of osteopathic manipulative treatment (OMT) prior to matriculation. A few institutions have demonstrated that experiences during medical school influenced students' perceptions of OMT. Touro found that DO students self-reported increased confidence, skill, and interest in OMT after participating in osteopathic programming and OMT procedures. Whether experiences prior to matriculation influence perceptions of OMT has yet to be evaluated. Our goal is to determine which activities prior to and during medical school influence DO students' beliefs in the value of OMT, confidence in their ability to perform OMT, and intent to recommend or perform OMT for future patients. A survey was sent to all current osteopathic medical students at Kansas City University with the chance to win a \$5 Starbucks gift card as an incentive to participate. Questions focused on relationships with DO physicians and manual therapists, clinical responses to OMT and manual therapy, and curricular and non-curricular OMT-related experiences at our institution. Data collection concluded with an N = 454 at the time of abstract submission with data analysis ongoing. Anticipated outcomes include that students with greater exposure to DOs practicing OMT and other manual therapists will have more positive perceptions of OMT and be more likely to recommend or use OMT. In contrast, students with no exposure or negative experiences with OMT may have more negative perceptions and be less likely to recommend or use OMT. Based on this study, osteopathic institutions can tailor curricula to strengthen students' belief in the value of OMT and their confidence in providing it. If pre-medical years are found to be formative, institutions can introduce OMT programming earlier, potentially increasing the number of DO physicians who regularly offer OMT to their patients.

Abstract #224
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-1

Navigating Huntington's disease globally: A case report highlighting treatment challenges for a patient in Mexico

Shweta Thakur*, Nicolas Sesno, Kevin Sullivan, Noel Thomas, Angela Muradov
***Presenting Author**

Huntington's disease (HD) is an autosomal dominant neurodegenerative movement disorder characterized by progressive motor, cognitive, and psychiatric decline. It results from increased CAG (cytosine, adenine, guanine) repeats in the Huntingtin gene (HTT), leading to dysregulation of subcortical motor circuits and eventual functional disability. We present the case of a 39-year-old Mexican female with a history of HD who experienced rapid disease progression after moving to Mexico. During this period, she developed worsening involuntary movements, dystonia, bradykinesia, dysarthria, and rigidity. Upon her second presentation, she was initially treated with haloperidol, which was later transitioned to olanzapine at follow-up, leading to symptomatic improvement. This case highlights a clinical course that deviates from the typical trajectory of HD, emphasizing the challenges faced by patients in resource-limited settings. It underscores the necessity of a multidisciplinary approach that integrates pharmacologic, psychological, and supportive care to enhance quality of life. Addressing these barriers through global health initiatives is crucial to ensuring continuous care and advancing research into improved treatment options for HD patients.

Abstract #225
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-1

Hereditary neuropathy with liability to pressure palsy: a diagnostic challenge in young active individuals

Noel Thomas*, Sunanda Chilukuri, Pierre Pavot, D.O.
*Presenting Author

Introduction: Hereditary neuropathy with liability to pressure palsy (HNPP) is a rare genetic disorder characterized by recurrent, painless episodes of focal neuropathy due to peripheral nerves being more prone to compression. It is associated with a PMP22 gene deletion, located on chromosome 17p11.2-12. PMP22 deficiency disrupts myelin junctions, resulting in diminished propagation of nerve action potentials resulting in neuropathy. Due to its episodic nature and symptom overlap with other neuropathies, HNPP is frequently misdiagnosed, namely in young, active individuals. **Case Presentation:** We present a 19-year-old male golfer with intermittent numbness and weakness in his left hand, initially attributed to a brachial plexus injury from carrying a heavy golf bag. His symptoms, including paresthesias and progressive hand weakness, were recurrent and worsened with activity. Neurological examination and electrodiagnostic studies revealed a demyelinating neuropathy, and genetic testing confirmed a PMP22 gene deletion, establishing the diagnosis of HNPP. **Discussion:** This case and further literature review highlights the diagnostic challenges of HNPP, particularly in young, physically active individuals whose symptoms may be mistaken for overuse injuries, such as cubital or carpal tunnel syndrome. As an avid golfer, our patient's presentation initially indicated brachial plexopathy and subsequently cubital tunnel syndrome. His recurrent symptoms warranted further diagnostic tests which proved the diagnosis of HNPP. Similarly, HNPP in young, active individuals often goes undiagnosed or misdiagnosed for years, delaying measures taken to mitigate the effects of their neuropathic symptoms. **Conclusion:** HNPP should be considered in the differential diagnosis of recurrent focal neuropathies, especially in active individuals presenting with symptoms mimicking classic entrapment neuropathies or even non-neurologic disorders. Further studies can focus on stratifying HNPP occurrence by age and activity level, increasing available data for diagnosticians to reference. Early recognition and appropriate management can prevent unnecessary interventions, give opportunity for early genetic counseling, and optimize long-term outcomes.

Abstract #226
Program: Osteopathic Medicine
Category: Quality Improvement

Poster Session: KC-1

The psychiatric care bottleneck model

Pierce Thompson*, Jiwon Choi
***Presenting Author**

This literature review introduces the Psychiatric Care Bottleneck Model, a theoretical framework that conceptualizes how systemic barriers in mental health care create a cyclical crisis, particularly affecting marginalized populations. The model describes a four-stage process: (1) Limited Access to Preventive & Outpatient Care, (2) Delayed or No Treatment, (3) Over-reliance on Emergency Services, and (4) Revolving Door Effect, where individuals repeatedly cycle through emergency interventions without adequate long-term support. This bottleneck effect exacerbates healthcare inefficiencies, worsens patient outcomes, and perpetuates financial and social burdens on affected individuals. Through comprehensive literature review on psychiatric care disparities and emergency mental health utilization, this review examines how systemic limitations, including provider shortages, financial constraints, and geographic disparities, can contribute to an excess number of untreated individuals getting put into emergency and crisis care. The model highlights the disproportionate impact on marginalized communities with fewer than one in four Black Americans who need mental health care actually receive it. This review explores potential solutions to break the bottleneck cycle, including expanded telepsychiatry, integration of mental health services into primary care, and policy-driven initiatives. The Psychiatric Care Bottleneck Model provides a novel theoretical framework for understanding psychiatric care accessibility and emphasizes the need for further empirical studies to assess its implications in healthcare policy and practice.

Abstract #227
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-1

Hearing aid interventions to mitigate cognitive impairment: A critical review of the literature and meta-analysis

Sumeet Thosar*, Dr. Daniel Llano M.D., Nikita U. Savant
***Presenting Author**

Ageing-related hearing loss (ARHL) is epidemiologically linked to the development of Alzheimer's Disease (AD). The mechanisms underlying this relationship are not known and have important therapeutic implications. If ARHL is causally linked to the development of AD, then correction of hearing loss via hearing aids should mitigate cognitive impairments in AD and more aggressive campaigns to treat ARHL, which is widely undertreated, would be warranted. Here, we critically examine the literature involving the use of hearing aids to treat ARHL and examine the impact of hearing aids on cognition. Although many studies report beneficial effects of hearing aids on cognition, most of these studies have significant flaws in their experimental design, making it difficult to judge their outcomes. After reviewing the literature, we found two randomized placebo-controlled studies that examined the impact of hearing aids on cognition in cognitively-impaired or vulnerable older individuals with minimal risk of bias. Meta-analysis of these two studies did not yield a statistically significant benefit of hearing aid use after 6 or 12 months of use. We propose that the current literature on this topic currently lacks compelling evidence to demonstrate that hearing aid use directly benefits cognition or delays AD. We further recommend strategies for improving clinical trial design to bring greater clarity to this important issue.

Abstract #228
Program: Osteopathic Medicine
Category: Basic Science

Poster Session: KC-1

Characterization of femoral nerve positioning within the femoral triangle: anatomical considerations for nerve block safety

Matthew Tiojanco*, Alexis Ortega, Kevin Stoops, Janice Wang, Dr. Jonathan Leo
***Presenting Author**

Pain of the lower extremity is the second most prevalent site of pain experienced by adults in the United States. The femoral nerve is a critical structure in lower limb innervation and is frequently targeted within the femoral triangle for regional anesthesia to achieve analgesia in the lower extremity. While many nerve blocks are now conducted via ultrasound techniques, there may be instances where the landmark technique is required to identify the nerve's position. In these instances, accurate anatomical measurements of the femoral nerve and its relationship to surrounding structures can improve nerve block precision and reduce complications such as iatrogenic nerve injury and vascular puncture of the neighboring femoral artery. Characterization of the femoral nerve's location in the femoral triangle relative to the anterior superior iliac spine (ASIS) allows for better targeting of the nerve when using the landmark technique of identification for femoral nerve blocks. Fifty-four femoral nerves of formalin-embalmed cadavers were studied as they emerged under the inguinal ligament within the femoral triangle. Measurements taken included the femoral nerve size, its position relative to the ASIS and femoral artery, and the femoral artery size. Statistical analysis of the data was conducted and comparisons made based on laterality, sex, and height. Understanding the precise anatomical relationships of the femoral nerve relative to palpable structures such as the ASIS and the femoral artery pulse allows for improved accuracy of regional anesthesia via femoral nerve blocks, which contributes to the refinement of nerve block techniques and may aid in procedural safety.

Abstract #230
Program: Osteopathic Medicine
Category: Clinical Science

Poster Session: KC-2

Investigating the impact of insurance type on prenatal care adequacy: an analysis of the PRAMS dataset (2018–2020)

Kaitlan Weppner*, Divya Ghoshal, MPH, Pooja Gunnala, MS, Whitney Shae, MS, PhD, Catherine Satterwhite, PhD, MSPH, MPH

***Presenting Author**

Background: Insurance coverage plays a crucial role in improving access to maternal healthcare. Disparities in prenatal care initiation based on insurance status have been shown to exist in past literature. However, little is known about the impact of insurance type on the utilization of prenatal care. **Methods:** Data from the CDC's Pregnancy Risk Assessment Monitoring System (PRAMS), a national surveillance system, were used to compare maternal insurance type and prenatal care adequacy between 2018 and 2020. This study included pregnant individuals who reported insurance status and type throughout pregnancy and delivery, along with prenatal care utilization. The Kotelchuk index categorizes prenatal care adequacy into four groups based on the number of visits between care initiation and delivery date, based on American College of Obstetrics and Gynecology guidelines: inadequate (accessed <50% of expected visits), intermediate (50-79%), adequate (80-109%), and adequate plus (110% or more). Logistic regression was used to determine the odds of inadequate prenatal care given insurance type: private, public, or none. **Results:** Data revealed that 15% of respondents with private insurance, 28% with public insurance, and 42% without insurance did not receive adequate prenatal care. Logistic regression models revealed that respondents with state insurance and no insurance had, respectively, 2.2 times and 3.9 times the odds of receiving inadequate prenatal care when compared to respondents with private insurance. The regression model controlled for maternal highest education degree received, maternal race, and income as potential confounding variables. **Conclusion:** These results provide insights into how different insurance plans influence prenatal care adequacy, highlighting a potential gap in access to prenatal care. Future studies should explore the aspects of high-risk insurance types that are connected to inadequate prenatal care.

Abstract #231
Program: Osteopathic Medicine
Category: Quality Improvement

Poster Session: KC-1

Identifying Gaps in Sickle Cell Disease Healthcare Resources across Hematology Clinics in California

Dennis Yap*
***Presenting Author**

Sickle cell disease (SCD) represents a major health challenge, affecting more than 100,000 people in the United States. Patients develop severe systemic manifestations from vaso-occlusive episodes, leading to severe pain crises and reduction of life expectancy. Despite its prevalence, individuals with SCD face not only dire health complications but also encounter systemic barriers in healthcare access and treatment. This exploratory study aims to provide preliminary insights into these challenges by examining the healthcare landscape for SCD patients in California, focusing on the accessibility and distribution of hematology clinics' resources. Through a collaborative multi-site survey conducted, the study gathered insights from 44 hematology clinics. We explored adherence to treatment guidelines, the availability of specialty referrals, support services, clinic operational hours, and the impact of patient population size on service provision. The findings reveal potential gaps in guideline adherence, specialty referrals, and clinic operation times in clinics that serve ≤ 40 SCD patients. There is a scarcity of support roles such as community health workers and healthcare navigators across all clinics regardless of SCD population size. These preliminary insights underscore the need for further research and strategic interventions to improve access to comprehensive care and support for SCD patients. By highlighting potential disparities faced by SCD patients in California, this study provides a foundation for public health institutes to assess healthcare resources and develop effective solutions to enhance patient outcomes and quality of life.

Abstract #232
Program: Biomedical Sciences
Category: Basic Science

Poster Session: KC-2

Transcriptome analysis of iPSC model derived from patients with schizophrenia

Naa Deede Attoh *, Myris Kramsch, Catherine Kauffman, Mariann Hayes
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Schizophrenia (SZ) is a chronic neurodevelopmental disorder marked by profound cognitive impairments. A leading hypothesis regarding its etiology suggests that synaptic dysfunction disrupts excitatory-inhibitory neurotransmission. This dysfunction arises from alterations in the structure and function of neuronal synapses, potentially driven by genetic mutations or biochemical modifications. These changes lead to an imbalance in neurotransmission, particularly between glutamatergic (excitatory) and GABAergic (inhibitory) systems. Genetic susceptibility to SZ is polygenic, with multiple risk-associated genes, each contributing to the overall risk. Mutations in these genes affect DNA and RNA isoforms by influencing alternative splicing, which alters the alignment of exons. Epigenetic modifications further modulate these processes, potentially influencing the heritability of SZ. To explore these mechanisms, we conducted transcriptome analyses using PARTEK software on RNA isolated from induced pluripotent stem cells (iPSCs) derived from four SZ patients. These iPSCs were reprogrammed into excitatory (NGN2) and inhibitory (AD2) neuronal subtypes, providing a patient-specific model to study SZ pathophysiology. Previous analyses of this dataset revealed an upregulation of synaptic genes and enhanced excitatory synapse formation in inhibitory GABAergic neurons within co-cultures. In this study, we identified shifts in messenger RNA isoform profiles (alternative splicing) that may offer insights into potential biomarkers or diagnostic markers for SZ. Our goal is to further investigate the epigenetic mechanisms contributing to the neurological deficits observed in schizophrenia.

Abstract #233
Program: Health Service Psychology (Dissertation)
Category: Case Reports and Studies

Poster Session: KC-2

The Impact of Anti-DEI Legislation on Diverse Undergraduate Students

Sabrina Bartley*
***Presenting Author**

The implementation of diversity, equity, and inclusion (DEI) initiatives on college campuses has become a hot political topic resulting in state legislation banning the presence of DEI-focused offices, positions, courses, and organizations on public college campuses. The purpose of this research is to examine the impact of anti-DEI legislation on Texas undergraduate students' overall wellbeing, sense of belongingness, and perception of campus climate of the public institution they attend. It is hypothesized that: (1) students will feel a lower sense of belonging after the implementation of Texas State Bill 17 (TX S.B. 17) compared to when a DEI office was present on campus; (2) minority students will experience lower subjective well-being post-implementation compared to when DEI support was available; and (3) the overall campus climate will be perceived as less diverse and inclusive following the removal of DEI offices. Participant data will be retrieved from the Healthy Minds Study 2023-2024 and 2024-2025 school year Texas data sets. A one-way between factors MANOVA will be used to evaluate the differences in students' sense of belongingness, perception of campus climate, and subjective wellbeing before and after the removal of DEI offices on campus. The estimated sample size for a between factors MANOVA with 3 dependent variables and an 0.5 effect size would be 72 participants.

Abstract #234
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

Concussion reporting intentions in collegiate soccer players: the influence of obsessive passion and athletic identity

Hallie C. Beard*
***Presenting Author**

Concussions have the potential to lead to lasting impacts on college athletes' cognitive abilities and overall brain functioning. Researchers have previously been dedicated to understanding what internal forces can push athletes to avoid reporting their concussive symptoms. One of those internal forces has been Athletic Identity, or the magnitude in which the person sees themselves as an athlete. A newer concept in the sports field is how Obsessive Passion impacts player's willingness to report their symptoms. Both Obsessive Passion and Athletic Identity have been found to decrease the player's intention of reporting. Research has been lacking in comparing the two internal pressures together in collegiate athletes. This study aims to build that bridge by investigating which is a stronger predictor in concussion reporting intentions. Collegiate soccer players will be recruited from Division I and II schools around the Kansas City area. They will complete a survey on Qualtrics aimed to measure Obsessive Passion, Athletic Identity, and overall intention to report concussive symptoms. It is hypothesized that Obsessive Passion will act as a stronger predictor for concussion reporting intentions in collegiate soccer players.

Abstract #235
Program: Biomedical Sciences
Category: Basic Science

Poster Session: KC-2

Investigating the Role of SNORD94 in Alternative Splicing of COG3 and Its Implications for Congenital Heart Defects

Kidus Birhanu*
***Presenting Author**

Congenital heart defects (CHDs) are among the most prevalent birth defects, affecting approximately 1 in 100 live births. Increasing attention is being paid to how coding and noncoding RNAs interact with the spliceosome and influence heart development. Small Cajal body-specific RNAs (scaRNAs) are a group of noncoding RNAs that play a crucial role in the biochemical modification of spliceosomal RNA subunits. Our previous studies demonstrated that scaRNAs impact mRNA isoform production by the spliceosome, and we identified a correlation between scaRNA levels and alternative splicing of mRNA in heart tissue from infants with CHDs. For example, SNORD94 was one of 12 scaRNAs that we showed had reduced expression in the right ventricle of infants with a congenital heart defect. In this study we knocked down SNORD94 using antisense oligonucleotides and characterized the effect on mRNA splicing. One critical gene influenced by SNORD94 downregulation is Component of Oligomeric Golgi Complex 3 (COG3), which encodes one of the eight subunits of the conserved oligomeric Golgi (COG) complex. Mutations in COG3 can impair protein glycosylation, disrupting several developmental processes, including the Wnt and Notch signaling pathways. These pathways regulate the differentiation of cardiac progenitor cells into various heart cell types, such as cardiomyocytes (heart muscle cells) and endothelial cells (cells lining blood vessels). Disruptions in these signaling pathways are a known contributor to CHDs. To validate the RNAseq data, we used TaqMan qPCR with isoform specific primers to analyze COG3 isoform levels from Snord94 knockout cells. The goal of this research is to deepen our understanding of the genetic regulatory pathways involved in cardiac development and investigate a new paradigm contributing to the underlying causes of congenital heart defects.

Abstract #236
Program: Health Service Psychology
Category: Basic Science

Poster Session: KC-2

Infants' Preferences for Atypical Body Configurations in Relation to Motor Activity

Abby Bomball*, Carolyn Purdy
*Presenting Author

Examining the progression of body structure knowledge offers valuable insight into how infants develop a representation of their body. Research suggests that adults process bodies in a specialized way, likely due to frequent visual exposure as well as firsthand experience with their own bodies. However, far less research has explored how body knowledge develops during infancy. Previous studies suggest that infants recognize typical adult body configurations and exhibit a spontaneous preference to look longer at reorganized adult bodies. However, this preference has only been tested with adult bodies, so it is unclear whether visual experience is needed for infants to apply their knowledge of typical body configuration to other infant bodies. Experiment 1 examines whether infants exhibit a spontaneous preference for possible versus impossible infant body positions. If infants' motor experience allows them to recognize impossible body postures, then it suggests they possess knowledge of the biomechanical constraints of their own bodies, and they can extend that knowledge to similar bodies. In a replication of studies conducted with adult reorganized bodies, Experiment 2 tests whether infants demonstrate a preference for typical versus reorganized infant bodies. In both experiments, we are also examining whether these preferences correlate with infants' level of motor activity. Thus far, 7-month-old infants have not demonstrated a significant preference for either possible or impossible infant body positions ($t(12) = -1.12, p = .285$), nor for typical versus reorganized infant bodies ($t(10) = -0.78, p = .456$). Additionally, there is no correlation between infants' preferences and their own level of motor activity. These findings suggest that while infants recognize correct adult body configurations, they do not extend this knowledge to infant bodies. This may indicate that visual experience plays a crucial role in developing body perception, as infants have significantly more visual exposure to adult bodies than infant bodies.

Abstract #237
Program: Biomedical Sciences
Category: Basic Science

Poster Session: KC-2

Evaluating the impact of Snord94 knockdown on spliceosome function, changes in RBM5 mRNA processing and potential implications for heart development

Ian Bosman *, Michael Filla, BS, Nataliya Kibiryeveva, MD, James E. O'Brien Jr., MD, Douglas C. Bittel, PhD
***Presenting Author**

Congenital heart defects (CHDs) are among the most common birth defects, affecting approximately 1 in 100 live births. How coding and noncoding RNA interacts with the spliceosome, and in turn affects heart development has recently gained interest. For example, scaRNAs are a group of small noncoding RNAs that are important for biochemical modification of the RNA subunits of the spliceosome. We previously showed that scaRNAs influence mRNA isoform production by the spliceosome. Furthermore, we showed an association between scaRNA level and alternative splicing of mRNA in the heart tissue from infants with congenital heart defects (CHD). We analyzed RNAseq data derived from cells in which the scaRNA Snord94 was reduced after antisense oligonucleotide knockdown. Multiple genes were identified with significant changes in mRNA isoforms. An important example is the RNA-binding motif protein 5 (RBM5) that itself plays a role in the function of the spliceosomal A complex. Mutations or deletions of this gene have the potential to play a role in key cardiac signaling pathways, including those governing myocardial differentiation, endothelial formation, and cardiac morphogenesis. Here we present the results of the quantitative PCR (qPCR) validation of the impact of Snord94 reduction on RBM5 mRNA processing. This research aims to provide new insight into the genetics of the regulatory pathways that control cardiac development and help characterize a new paradigm that may contribute to congenital heart defects.

Abstract #238
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

Categorical Perception of Emotions in Faces of Adults with a History of Parental Incarceration in Childhood

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***Presenting Author**

Mass incarceration continues to be a growing issue within the United States, affecting not just incarcerated individuals but also their families. As the prison population rises, more children experience parental incarcerations, leading to increased stress, instability and disruptions in attachment. These challenges impact cognitive and socioemotional development. Various factors influence adjustment, including the gender of the parent incarcerated, age during initial incarceration, length and number of parents' incarceration, race/ethnicity, and type of caregiving during incarceration. Emotional perception is fundamental for human interaction, enabling individuals to interpret and respond to social cues. Categorical Perception (CP) of emotions in facial expressions refers to the ability to distinguish and classify emotions into discrete categories, such as happiness, sadness, and anger. This proposed study aims to address the gap in the literature regarding CP of emotions in adults who experienced parental incarceration in childhood. Participants will complete a Qualtrics survey on demographics and parental incarceration, followed by emotion discrimination and identification tasks to assess CP. It is hypothesized that adults with a history of parental incarceration will struggle more with distinguishing emotions across categorical boundaries compared to those without parental incarceration. Additionally, participants whose father was incarcerated are expected to struggle the most with distinguishing emotions across categorical boundaries, with the exception of anger. Additionally, adults who experienced parental incarceration between the ages of birth and 6 years (vs. later in life), will struggle more with distinguishing emotions across categorical boundaries.

Abstract #239
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

The effects of stress, burnout, and resilience on urban and rural teachers

Madison Bunner-Rahn, M.A.*
***Presenting Author**

Studies on stress, burnout, and resilience in teachers have been thoroughly tested and observed. The majority of this research has focused on only one or two of the factors regarding job stress, burnout, and resilience. The different experiences between rural and urban teachers have also been examined, but few studies have included all three variables based on teaching population differences. The present study will examine the differences and relationship between job stress, burnout, and resilience in urban and rural teachers. Participants will be recruited through convenience and snowball sampling. The participants in this study will answer basic and teacher-specific demographic questions and complete self-report questionnaires to measure job stress, burnout, and resilience. A MANOVA will be used to analyze the differences in these three factors between urban and rural teachers. A Pearson correlation will be used to examine the relationship between these three factors among teachers. This proposed research will provide implications for future research and further the literature in education and occupational psychology. It is hypothesized that urban teachers will have higher levels of job stress and burnout than rural teachers, whereas rural teachers will have higher levels of resilience than urban teachers. It is also hypothesized that higher resilience will be associated with lower job stress and burnout levels in both urban and rural teachers. This proposed research aims to investigate the effects of job stress, burnout, and resilience between urban and rural primary and secondary teachers.

Abstract #240
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

Attachment Styles and Relationship Satisfaction in Monogamous and Consensual Non-Monogamous Relationships: A Comparison of Swinging, Monogamy, and CNM Consideration

Ashlea Burry*
*Presenting Author

This study aims to explore attachment styles and relationship satisfaction of individuals within three different relationship structures: swinging consensual non-monogamous (CNM) relationships, monogamous relationships, and individuals considering engagement in CNM. This research seeks to address gaps in the existing literature regarding attachment and relationship dynamics of swinging, a type of CNM, and how it compares to/with those in monogamous relationships and those considering CNM engagement. Attachment has been extensively studied in monogamous contexts; research is limited when examining these specific contexts. Past research has more broadly focused on polyamory, which is and has a very different structure than swinging, thus these differences have been neglected in terms of attachment dynamics and relationship satisfaction between these various groups. This study seeks to compare the attachment styles –secure, anxious, and avoidant– across these three groups, hypothesizing that swingers may exhibit higher levels of secure attachment compared to individuals in monogamous relationships and those considering CNM. This study will also investigate whether CNM engagement, due to its perceived flexibility, fosters greater relationship satisfaction due to communication, trust, and intimacy structures. This study's methodology includes survey-based data collection, measuring attachment using measures such as the Experiences in Close Relationships scales, and relationship satisfaction via measures such as Relationship Satisfaction Scales. Data will determine how relational attachment and type of relationship interact and how they influence relational satisfaction. Findings are expected to provide greater insight into relational factors that are unique to swinging relationships and assist in informing clinical practices for therapists working with individuals or couples in various relationship frameworks. This research will also contribute to the broader understanding of attachment theory in the context of these diverse relationship structures.

Abstract #241
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

How do Social Supports Impact Overdose Risk: Utilizing Next-of-kin Interviews to Examine Fatal Opioid Overdoses

Zikeya Byrd*
***Presenting Author**

Per the CDC, the third leading cause of death in 2022 was unintentional injuries. Under this umbrella term, drug overdose is the leading cause, with 107,941 deaths. Specifically, 82,000 of these deaths were directly linked to opioids, hence the ongoing opioid overdose epidemic. The question is, how can we intervene to avoid these fatal overdoses? To investigate this, the Institute for Intergovernmental Research created Overdose Fatality Review (OFR) programs that jurisdictions can implement to review the fatal overdoses occurring in their community. Within these OFR programs is the Next-of-Kin (NOK) interview, a tool used to gain insight into the lives of the decedents through people who played a role in their lives. The NOK interviews provide insight into the types of social supports the decedent had throughout their lives. Although research shows that social networks/support has an impact on overdose rates and can aid in overdose prevention interventions, there are major gaps related to the specific types of support. This study will utilize information gained through the Kansas City (Missouri) OFR board to examine the reported social supports decedents had throughout their lives and the number of nonfatal overdoses. The goal is to identify the types of support (emotional, informational, esteem, and/or instrumental) the NOK identifies and compare those to the number of nonfatal overdoses that occurred. I hypothesize that (1) themes related to lower levels of support will be linked to higher number of nonfatal overdoses, (2) themes related to greater levels of varying forms of support will be linked to fewer nonfatal overdoses before their fatal overdose, and (3) themes related to instrumental support will be linked to more nonfatal overdoses before their fatal overdose. This is a mixed study, with descriptive statistics examining demographics and overdose rate and a thematic analysis examining the levels of support.

Abstract #242
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

Effects of past trauma and empathy on the comfortability of administering psychological first aid in volunteers post disasters.

Meghan Chewning*
***Presenting Author**

Research has shown that when people experience traumatic events such as manmade or natural disasters it can result in those people becoming more empathic. Psychological first aid is a therapeutic technique for helping people after they have experienced a disaster. Anyone can be trained in psychological first aid but typically first responders, disaster relief volunteers, and emergency medical staff are trained to administer psychological first aid. People with a previous trauma history could be more empathic in high stress situations such as disasters thus making them more comfortable to administer psychological first aid. This study will include (N=50) volunteers from Heart-to-Heart International who will participate in a focus group that assesses their comfortability of administering psychological first aid. Prior to the focus group volunteers will also complete two measures to assess their levels of trauma (Trauma Symptom Checklist for Adults) and empathy (Toronto Empathy Questionnaire) and see how these impact participants comfortability levels when administering psychological first aid. It is hypothesized that higher levels of trauma will predict higher levels of comfortability in volunteers who administer Psychological First Aid determined by themes found in the focus group. It is also hypothesized that higher levels of empathy will predict higher levels of comfortability in volunteers who administer Psychological First Aid. If these hypotheses are supported, it will indicate that volunteers with previous experiences of trauma and volunteers with higher empathy levels are more comfortable administering psychological first aid, which may lead to more adequate care for people receiving PFA post disaster.

Abstract #243
Program: Biomedical Sciences
Category: Basic Science

Poster Session: KC-2

scaRNA1-Mediated Spliceosomal function and Impact on EIFG2 Isoform

Niraj Devadoss*
***Presenting Author**

Congenital heart defects (CHDs) are some of the most abundant birth defects. The role epigenetics plays in causing CHDs has received increasing attention in recent years. For example, we showed that small noncoding RNA (scaRNA) expression influences spliceosome function and alternative mRNA splicing and is associated with CHDs. scaRNA1 biochemically modifies U2 snRNA, a critical RNA component of the spliceosome. While scaRNA1 plays a key role in RNA processing, its influence on alternative splicing and gene regulation, particularly in congenital heart defects (CHDs), remains largely unexplored. We used CRISPR to genetically modify HEK cells to delete part of scaRNA1 resulting in reduced expression of scaRNA1. We hypothesize that changes in scaRNA1 expression will change spliceosome function altering mRNA processing. We are specifically focusing on the subsequent changes in mRNA splicing of one gene, Elongation Initiation Factor 4 gamma 2 (EIF4G2) that is part of the translation initiation elongation complex. We present quantitative PCR (qPCR) data using isoform specific primers to analyze the effect of scaRNA1 reduction on the mRNA isoforms of EIF4G2. These studies may provide new insights into the epigenetic role that noncoding RNAs play in regulating cardiac development.

Abstract #244
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

Caring for self while caring for others: An exploration of serve volunteers traumas and psychological needs

Cassie Edmundson*
***Presenting Author**

Secondary Post-traumatic Stress Disorder has been studied in various populations to assess how exposure to trauma through secondary sources impacts individuals. The volunteer medical population is unique as these individuals provide care specifically to individuals in crisis, while in non-familiar areas without the typical support of static employment. The purpose of this research is to gather information from volunteers from Heart-to-Heart International about their experiences while on trips providing aid, secondary traumatic stress, and their experiences in current psychological first aid training. This will be used as a first step to create a program for Heart-to-Heart International to train their volunteers in self-care and personal psychological first aid to prevent secondary trauma and burnout. It is hypothesized that 1) individuals who have been on trips providing aid will have experienced secondhand trauma similarly to other researched vocations, and they likely need additional training to prevent secondary trauma symptoms and increase wellbeing. 2) Information from this specific population will help determine what psychological needs volunteers have as compared to other researched vocations. 3) The number of trips an individual has been on will positively correlate with the level of trauma symptomology they experience. Participant data will be obtained through individual interviews with Heart-to-Heart International volunteers as well as questionnaires such as the Trauma Symptom Scale and Secondary Traumatic Stress Scale. A recurring themes analysis as well as an ANOVA will be used to assess the psychological needs of the volunteers as well as if the number of trips impacts the level of secondary trauma symptoms. Similar studies use a sample size of 40; a G*Power analysis with the predictor variable of trips experienced with a .5 effect size would require 103 participants. The design of this study will be a mixed qualitative and quantitative study for the purpose of program development.

Abstract #245
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

The Impact of Reducing Social Media Usage on Body Appreciation, Self-Esteem, and Body Image in Health Professions Graduate Students

Analyssa Escudero*
***Presenting Author**

Social media use has continued to increase across the United States as Americans turn to various platforms for communication, news, and entertainment. However, excessive use has been linked to increased anxiety, depression, and low self-esteem, particularly among adolescents and young adults. Existing research that focuses on social media and body image has not focused on a specific sector of young adults - health professions graduate students in the United States. This study will examine the effects of limiting social media use to 30 minutes per day for one month on body appreciation, self-esteem, and body image among health professions graduate students. Additionally, it investigates the long-term impact of social media reduction on these variables through a one-month follow-up assessment. Participants will include health professions graduate students enrolled in any Kansas City University program, including Dental, Medical, PsyD, or Bioscience students. Data will be collected through Qualtrics and analyzed through IBM SPSS. It is hypothesized that participants who reduce their social media usage to 30-minutes/day for one month will demonstrate a statistically significant increase in body appreciation, self-esteem, and body image compared to those who do not reduce their usage. It is also hypothesized that participants who previously reduced their social media usage and maintained the reduction will show continued increases in body appreciation, self-esteem, and body image at follow-up.

Abstract #246
Program: Biomedical Sciences
Category: Basic Science

Poster Session: KC-2

Developing Patient- and Parent-Derived Cardiac Organoids to Investigate Genetic and Epigenetic Changes in Tetralogy of Fallot.

Killian Fane, BS*, Lesya Holets-Bondar, PhD, Micheal Filla, James E. O'Brien, MD, Douglas C. Bittel, PhD, Nataliya Kibiryeve, MD
***Presenting Author**

Cardiogenesis is orchestrated by complex molecular pathways regulated by precise temporal and spatial cues. Studying congenital heart defects (CHDs), particularly those arising early in gestation, such as Tetralogy of Fallot (TOF), remains challenging, due to lack of suitable animal models and the difficulty of studying early embryonic development *in vivo*. Previous *in vitro* studies suggest that TOF pathogenesis is influenced by abnormal levels of Small Cajal body-specific RNA, spliceosomal dysfunction, and alternative splicing of key cardiac development genes. However, the precise genetic and epigenetic mechanisms remain poorly understood. To address these challenges, patient-specific induced pluripotent stem cell (iPSC)-derived cardiac organoids offer a promising model to explore the earliest stages of heart development and the tissue specific molecular pathways responsible for cardiogenesis. To investigate the genetic interplay contributing to TOF, we propose generating both patient- and parent-derived induced pluripotent stem cell (iPSC)-derived cardiac organoids from peripheral blood mononuclear cells (PBMCs). By comparing molecular signatures between patient- and parent-derived organoids, we aim to identify heritable and *de novo* genetic and epigenetic factors influencing TOF pathogenesis. Using next-generation sequencing (NGS), including whole-genome sequencing, RNA sequencing, and ATAC-seq, we will identify tissue-specific molecular and epigenetic changes contributing to TOF pathogenesis. This research may provide critical insights into TOF's genetic and molecular mechanisms, facilitating the development of novel diagnostic and therapeutic interventions, including personalized antisense oligonucleotide (ASO) therapies.

Abstract #247
Program: Biomedical Sciences
Category: Basic Science

Poster Session: KC-2

Improving the accuracy of eosinophilic esophagitis diagnosis and clinical therapy by identifying significant alternative spliced transcripts

Killian Fane*, Jaqueline Carreno, Jesse Murphy, Caroline Parry, Joseph Shaffer, PhD, Nataliya Kibiryeve, MD, Douglas C. Bittel, PhD
***Presenting Author**

Eosinophilic Esophagitis (EoE) is a chronic inflammatory disorder characterized by eosinophil infiltration into the esophageal epithelium, triggering inflammation and allergic reactions in response to food-borne antigens. While the prevalence of EoE has risen in recent years, the genetic and molecular mechanisms driving eosinophil overproduction and the inflammatory response are not fully understood. Recent research suggests that EoE may exist along a disease spectrum, with variants including Lymphocytic and EoE-like potentially progressing to conventional EoE. Currently, diagnosis primarily relies on endoscopic biopsy and histological evaluation. In this study we sought to identify alternatively spliced isoforms unique to distinct EoE variants. Our research seeks to further investigate EoE genetic factors by analyzing alternatively spliced transcripts and investigating their role in disease progression and diagnosis. A total of 20 samples were obtained from the Gene Expression Omnibus (GEO) database, including EoE patients and healthy controls. Using bioinformatics tools such as Partek Flow, we identified transcripts with significantly enriched alternatively spliced isoforms in EoE variants that were associated with immune pathways. These findings may offer valuable insights into potential epigenetic factors contributing to EoE, which could improve diagnostic accuracy and provide new therapeutic targets.

Abstract #248
Program: Health Service Psychology
Category: Clinical Science

Poster Session: KC-2

The effect of highly precise emotion words on emotion perception and self-reported emotion regulation

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***Presenting Author**

The ability to differentiate similar emotions is called emotional granularity (EG). Emotion words aid us in being able to make meaningful emotional distinctions in conversation and perception though the role of EG and its effects on emotion regulation and dysregulation are unknown. In our study, participants completed assessments of two self-reported measures of EG, their emotion word knowledge (ability to define and understand precise emotion words), non-emotion words, and emotion regulation and dysregulation. In Study 1a, 74 participants completed computerized trials where they viewed ambiguous emotional faces and asked whether two faces matched. In Study 1b, 81 participants completed the same task, but each trial was preceded with either a basic or precise emotion word. In Study 1c, participants' emotion word knowledge (i.e., usage, understanding, and accuracy), emotional granularity through self-report measures, and their emotion regulation and dysregulation were assessed to measure the possible mediating relationship between emotion granularity and emotion regulation and dysregulation. Data from study 1a supported previous studies which concluded that individuals have a more difficult time determining if two ambiguous faces are “different” compared to “same.” Study 1b was in line with study 1a and added that participants demonstrated slower reaction times when determining that ambiguous faces were “different” when primed with a highly precise emotion word compared to a basic emotion word. The results of study 1c show that one measure of EG mediated the effect of emotion word accuracy on one’s emotion dysregulation. In addition, marginally significant direct effects were observed between emotion word understanding and dysregulation. Our study is the first to examine the path (i.e., the potential mechanism(s)) by which emotion word knowledge impacts emotion dysregulation.

Abstract #249
Program: Biomedical Sciences
Category: Basic Science

Poster Session: KC-2

Novel treatment of iron overloading in hereditary hemochromatosis

Mariann M. Hayes*, Staton McBroom, M.S., Astha Subash, Vincent Barnes, Louise Nienkoetter Hirose, Shamirah Johnson, Diya Anugu, Robert A. White Ph.D.

***Presenting Author**

Hereditary Hemochromatosis (HH) is a iron overloading disease due to uncontrolled absorption of iron by intestinal iron transporter Ferroportin. HH results in high morbidity due to toxic levels of iron storage in the liver, heart, and pancreas. HH is caused by a C282Y recessive mutation in the HFE (Hereditary iron) gene. This impacts the transport of iron from the intestine into the blood by impacting the Heparin signaling complex which destroys Ferroportin to reduce iron absorption. The mutation inactivates the Heparin complex so there is no control of Ferroportin. Treating HH is a challenge since compliance is low with repeated phlebotomy of 500 mls per week for 80 weeks as primary treatment. An alternative treatment involves costly iron chelators which have a serious side. This study focuses on a potential treatment uncovered by a hereditary anemia mouse mutant called flaky skin (fsn) which are iron deficient with a psoriasis-like condition due to a mutation of Ttc7 (Tetratricopeptide repeat domain 7). Mutant fsn mice excrete 100x more iron in urine than normal mice due to the production of an abnormal protein called fsn-TTC7. Ttc7 is a 20 exon gene and the fsn mutant is caused by a viral DNA insertion upstream of exon 15. An extra exon in-frame of 183bp is added to Ttc7 mRNA which produces a larger TTC7 protein with additional 61 amino acids. This study will analyze whether the fsn mutation will prevent iron overloading in 10-week-old HH model mice. This study investigates an alternative treatment for HH leading to greater compliance for patients.

Abstract #250
Program: Health Service Psychology
Category: Clinical Science

Poster Session: KC-2

Infants' sensitivity to emotion conveyed by female and male faces

Misty Huckabey*, Emilia Arroyo, Mya Cobb, Nicki Zieber
*Presenting Author

Infants prefer looking at faces of the gender of their primary caregiver (typically female) and have difficulty distinguishing individual male faces. Perceptual narrowing, or expertise processing frequently experienced faces and deficits processing less frequently experienced faces, occurs for female faces. Research suggests that emotional expressions can facilitate facial recognition and discrimination. For example, despite infants displaying perceptual narrowing for own-race faces around 9-12 months, if the faces display emotional expressions, they are able to differentiate other-race faces. The present study investigated whether infants could discriminate emotions similarly with male and female faces at an age when perceptual narrowing for females has occurred. Fifty-four 7-month-old infants were familiarized for 30 seconds with a male or female face displaying an emotional expression (angry, fearful, or happy). During the test trials, infants viewed a novel model of the same gender posing the familiarized emotion on one side of the screen and a novel emotion on the other side. Familiarity preference was assessed across the 2, 10 second test trials to determine whether infants could discriminate between emotions posed by the new model. A 2 (gender) x 3 (emotion) ANOVA revealed a significant main effect of emotion, $F(2,50) = 6.613$, $p = .003$, indicating differences in infants' looking behavior based on emotion. Infants' avoided viewing angry expressions ($M = 38.29$, $t(18) = -3.678$, $p = .002$), but exhibited no significant preference for fearful or happy faces. However, infants displayed a greater familiarity preference for fearful faces over angry faces, $t(36) = -3.859$, $p = .001$. Infants discriminated emotional expressions with both male and female faces, despite known difficulties distinguishing neutral male identities. These findings suggest emotional expressions override perceptual narrowing for gender, allowing infants to discriminate emotions irrespective of face gender. These findings parallel other-race face research, suggesting that emotions can mitigate perceptual narrowing.

Abstract #251

Poster Session: KC-2

Program: Health Service Psychology (Dissertation)

Category: Clinical Science

Seeing fear differently: The role of perinatal anxiety in infant gaze allocation for emotional faces

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***Presenting Author**

Previous research has identified attentional bias in infants for fearful facial expressions beginning around 7 months, with gaze pattern preference for eye regions. This bias is thought to be an evolutionary trait for adaptive threat detection; however, heightened attention to threat-related cues past the developmental period is linked to hypervigilance, a symptom of anxiety. Environmental factors, such as maternal anxiety, may influence this bias by modeling heightened emotional reactivity. The impact of psychopathology, specifically perinatal anxiety, influencing infants' attention to salient emotional features has yet to be studied. This dissertation investigates the influence of perinatal anxiety on 7-month-old infants' perception of emotion through the percentage of gaze allocated to emotionally informative facial features, such as the eyes. Using a mixed methods approach, this study will compare mother-child dyads with and without the endorsement of perinatal anxiety on the Perinatal Anxiety Screening Scale (Somerville et al., 2014). Dyads will be studied using a preexisting data set collected using the EyeLink 1000 Plus video-based eye-tracking system. Infants were shown an attention grabber, followed by a face depicting happiness, anger, or fear from the Amsterdam Dynamic Facial Expression Set (ADFES) by Van der Schalk and colleagues (2011) for 700 milliseconds. Areas of interest (AOIs) will be created for the entire face, mouth, and eye regions. An ANOVA will analyze the effects of group (perinatal anxiety vs. no perinatal anxiety) and stimulus type (fearful, angry, and happy) on dwell time for each AOI, with follow-up t-tests examining group differences for any main effects or interactions. The dissertation hypothesizes that infants of anxious mothers will dwell longer on the eye regions of fearful stimuli, producing a hypervigilant gaze pattern. Findings in line with the hypothesis may suggest that infants of anxious mothers demonstrate heightened sensitivity to threat-related cues, increasing the risk of developing later anxiety.

Abstract #252
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

The effects of teaching emotional granularity through an emotion word training protocol on emotion regulation and well-being in low SES adolescents

Samuel Kalmus*
***Presenting Author**

Emotional granularity refers to one's ability to describe and make nuanced distinctions between their emotions. Differentiating between one's emotions provides information that assists in effective emotion regulation. In turn, emotion regulation abilities are strongly associated with one's well-being and their ability to adaptively function in their environment. Past research has shown that adults' emotion regulation abilities can be improved through an intervention aimed at improving their emotional granularity, subsequently improving their well-being. The present study aims to apply this concept to the adolescent demographic. Adolescence is a critical development period for both emotion differentiation and emotion regulation strategies. Additionally, past research has found that a majority of adolescents endorse one or more maladaptive regulation strategies, especially since the COVID-19 pandemic. Participants will include low socioeconomic status (SES) high school-age adolescents recruited through PREP-KC. Participants will be randomly assigned to participate in either an emotion word or control word training protocol, as well as experiential sampling of their real-time emotions over the course of twenty-two days. At pre and post, participants will complete measures assessing their emotion word knowledge (Usage and Accuracy) for 14 precise emotion words, emotion regulation (CERQ-18), emotion dysregulation (DERS-SF), and well-being (MHC-SF). It is hypothesized that participants assigned to the emotion word training protocol (compared to the control word protocol) will experience increases in emotional granularity that will mediate improved emotion regulation and well-being. If the hypotheses are supported, the present study will provide clinical implications for improving the well-being and adaptive functioning of low SES high school-age adolescents.

Abstract #253
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

Climate change anxiety, academic burnout, and reproductive concerns in graduate students

Jayden Kasiska-Pettersen*
***Presenting Author**

Climate change has been found to negatively influence individuals' mental health. A common focus of psychological climate research has been climate change anxiety, which is yet to be well-defined. For this study, climate change anxiety will be defined as a psychological response to climate change. Climate change anxiety is more likely to be found in younger populations and has been linked to poorer mental health. Academic burnout, defined as psychological and physical exhaustion resulting from a student's academic life, has also been associated with increased mental health symptoms. Additionally, as birth rates continue to decline in the United States, climate change concerns have been identified as a common reason people are questioning having children. The potential relationship between climate change anxiety and burnout, as well as climate change anxiety and reproductive concerns, have yet to be adequately researched. The first aim of this study is to assess if climate change anxiety predicts academic burnout in a graduate student population. The second aim of this study is to determine if climate change anxiety predicts increased reproductive concerns in this same population. Participants will be recruited via email from a graduate university and be asked to complete a questionnaire. The measures used are the Climate Change Anxiety Scale, the Maslach Burnout Inventory-Student Survey, and the Climate Change-related Reproductive Concerns Scale. Multiple regressions will be used to analyze the data. It is hypothesized that higher climate change anxiety will predict higher academic burnout. It is further hypothesized that higher levels of climate change anxiety will predict an increase in reproductive concerns. If these hypotheses are supported, it will indicate that climate change anxiety may be significant enough for some that it impairs both their current well-being and their plans for the future. Key words: climate change anxiety, burnout, reproductive intentions, mental health

Abstract #254
Program: Biomedical Sciences
Category: Clinical Science

Poster Session: KC-2

Pharmaceutical target for treatment of Duchenne Muscular Dystrophy: the human retinal dystrophin core promoter

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***Presenting Author**

Duchenne Muscular Dystrophy (DMD) is one of the most common neuromuscular disorders and is an X-linked recessive muscle degeneration disease affecting 1 in 3500 male births. Mutations in the dystrophin gene cause an absence of muscle dystrophin in skeletal muscle. Current treatment strategies involve genetic manipulation with risks including immunosuppression. We will investigate a novel alternative treatment using a dystrophin isoform found in retina. Human retinal dystrophin (Dp260; 260 kDa) is encoded by first Exon R1 and exons 30 to 79 of the dystrophin gene. Dp260 contains four functional domains similar to full-length dystrophin. Dp260 is endogenously expressed which removes the need for immunosuppressive therapies. We wish to pharmaceutically induce Dp260 promoter activity to a therapeutic level of Dp260 expression in skeletal muscle. The Dp260 promoter is located upstream of exon 30. We will identify the human retinal dystrophin Core Promotor by cloning four candidate DNA sequences into a Luciferase expression vector and performing a reporter assay by transfecting human WERI-Rb cells (retinoblastoma derived). This will determine which of four candidate DNA segments includes the human retinal dystrophin gene promoter. Additionally, we will perform methylprednisolone treatment of DMD model and control mice to detect expression of retinal dystrophin in skeletal muscle. Previously, methylprednisolone treatment of WERI-Rb cells yielded an increase in Dp260 mRNA expression. Finally, we will establish tissue Dp260 expression in various mouse tissues. Our overall goal is to identify drugs that induces retinal dystrophin expression in skeletal muscle to replace lack of dystrophin and provide effective treatment.

Abstract #255
Program: Biomedical Sciences
Category: Basic Science

Poster Session: KC-2

scaRNA1-Mediated Spliceosomal Regulation and Its Impact on EIF1 Isoform Expression and Association with Congenital Heart Defects

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***Presenting Author**

Pre-mRNA splicing is essential for proper gene expression and relies on the spliceosome and small nuclear RNAs (snRNAs). Small Cajal body-associated RNA 1 (scaRNA1) biochemically modifies U2 snRNA, a critical component of the spliceosome. While scaRNA1 plays a key role in RNA processing, its influence on alternative splicing and gene regulation, particularly congenital heart defects (CHDs), remains largely unexplored. We hypothesize that reduced scaRNA1 expression impairs U2 snRNA pseudouridylation, resulting in the mis-splicing of key cardiac genes. In particular, we hypothesize that dysregulation of scaRNA1 expression leads to significant alterations in mRNA isoforms of EIF1 expression. To test this hypothesis, we will use CRISPR to delete part of scaRNA1 in HEK cells and evaluate scaRNA1 expression level and subsequent impact on mRNA splicing. Specifically, we present quantitative PCR (qPCR) data analyzing the effect of scaRNA1 reduction on the mRNA isoforms of EIF1, a translation initiation factor that has been associated with regulating development. This study aims to elucidate the role of scaRNA1-mediated RNA modifications in alternative splicing and gene regulation, potentially uncovering novel mechanisms underlying congenital heart defects. Investigating these molecular interactions may provide new insights into the role of RNA modifications in CHDs.

Abstract #256
Program: Biomedical Sciences
Category: Basic Science

Poster Session: KC-2

Exploring Diatoms as Innovative Bio-dosimeters for Ionizing Radiation Exposure

Travis Lee*, Ehab Sarsour, MSc, PhD, Nicole R. Ford, PhD
***Presenting Author**

This study will investigate the potential of diatoms as biological dosimeters – biological systems used to detect ionizing radiation (IR) exposure. IR, whether from natural or artificial sources, can damage DNA via direct or indirect effects, leading to cellular damage, oxidative stress, and death. Direct effects are physical breakages of DNA when IR directly excites/ionizes DNA molecules. Indirect effects occur when IR causes radiolysis of water to form reactive oxygen species (ROS) capable of breaking DNA helices. Diatoms, unicellular eukaryotic microalgae with silica cell walls found in most aquatic environments, are promising organisms for detecting DNA damage. Several species of diatoms will be exposed to X-ray IR at specific dosages. DNA damage will be assessed using four assays. Two assays will directly measure DNA damage: The Comet assay, which detects DNA breaks; and Terminal deoxynucleotidyl transferase dUTP nick-end labeling assay (TUNEL), which detects DNA breaks and some cell death mechanisms. The remaining two assays will evaluate replication cycle defects of DNA damage: The Cytokinesis-Block Micronucleus (CBMN) assay, which detects micronuclei formation from chromosomal damage; and monitoring the growth rate, which detects changes in replication rate over time. To select effective diatom species as dosimeters, parameters sensitive to IR damages and their changes will be identified, such as increased doubling time or reduced silica content. Diatoms will be characterized by origin (saltwater vs. freshwater), growth rate, frustule shape, and silica content.

Abstract #257
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

Effects of reduced social media use on gratitude, life satisfaction, and optimism in health professions graduate students

Caitlin D. Long*
***Presenting Author**

Social media has made a massive impact on society as it has increasingly become a part of everyday life. Many studies have highlighted the negative impacts of social media use, including increased anxiety and depression, as well as decreased self-esteem and life satisfaction. These studies have never included the health professions graduate student population. Moreover, no studies have specifically examined the impact of social media use on variables such as gratitude and optimism, despite evidence suggesting that its reduction is associated with increased life satisfaction. This study will investigate the effects of reducing social media use to 30 minutes per day for one month on state optimism, gratitude, and life satisfaction among health professions graduate students at Kansas City University. Additionally, the study examines the long-term impact of this intervention through a one-month follow-up assessment of participants in the intervention group. Participants will answer surveys related to the aforementioned variables, with the intervention group answering additional qualitative questions to identify barriers and any other benefits. Data will be collected via Qualtrics and analyzed using SPSS. It is hypothesized that participants who successfully reduce their social media use to 30 minutes per day for one month will show statistically significant increases in gratitude, life satisfaction, and state optimism, when compared to the control group. For the one-month follow-up, it is hypothesized that participants who engaged in the intervention and maintained social media use reduction will continue to demonstrate increases in gratitude, life satisfaction, and state optimism.

Abstract #258
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

The Impact of the Impostor Phenomenon on Undergraduate Student Psychological Well-Being, Self-Efficacy, and Academic Success

Matthew Long*
***Presenting Author**

The impostor phenomenon, or impostorism, is a psychopathological complex involving feelings of incompetence and of lacking skill and/or intelligence despite clear evidence of competence, skill, and intelligence. Impostorism has been found to be predicted by various measures of mental health, constructs related to competence and self-esteem, and academic success, though the exact relationship between these constructs and impostorism is unclear. Whether and to what extent impostorism predicts the above constructs is similarly unclear. Certain undergraduate students may be especially impacted by the impostor phenomenon, as students frequently receive information about their academic success in the higher education environment. Research suggest Undergraduate students who feel like an impostor and/or identify as an impostor may therefore discount their academic successes and self-efficacy in general and suffer from poorer psychological well-being compared to students who do not feel like or identify as an impostor. The proposed study will investigate how psychological well-being (PWB), general self-efficacy (GSE), academic self-efficacy (ASE), and grade point average (GPA) are related to impostorism scores (IMP). The study will also investigate possible significant differences in IMP, PWB, GSE, ASE, and GPA scores between participants who endorse feeling like an impostor (FEELS) and/or endorse self-identifying as an impostor (ID) and participants who do not. High PWB, GSE, and ASE are hypothesized to have a negative relationship with IMP, while GPA is expected to have no relationship with IMP. Significant differences in PWB, GSE, ASE, and IMP scores are hypothesized between participants who are in the FEELS group, the ID group, both groups, and neither group. If the hypotheses are supported, the relationship between PWB, GSE, ASE, and IMP will be clarified, and endorsing feeling like an impostor and/or identifying as an impostor will be shown to have an effect on PWB, GSE, and ASE.

Abstract #259
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

Resilience and depressive symptoms in service members with a history of a traumatic brain injury (TBI)

Sydni Long*
***Presenting Author**

Previous research has observed the coupling of veterans with TBI and depressive symptoms and veterans with TBIs and resilience. When service members are faced with traumatic experiences, it can take a toll on their mental health, which can lead to depressive symptoms. Research has lacked in observing a mediating model linking active-duty service members, depression, and TBIs. A mediating model is needed to determine if higher resiliency scores mediate depression in TBI. The purpose of the current study is to assess the resilience and depressive symptoms in active-duty, Reservist, and National Guard members with a history of Traumatic Brain Injury (TBI) when compared to healthy controls. Participants will be recruited from the Whiteman Air Force Base, 509th medical group. A proposed total of 112 participants will be recruited, 56 in each group (TBI vs no TBI). The research will be conducted on an active Air Force base where participants will be given the surveys, Patient Health Questionnaire (PHQ-9), Brain Injury Screen Questionnaire (BISQ), and the Predictive Six Factor Resiliency Scale (PR6). The analysis of the current research will discern a mediating model that observes if higher resiliency scores mediate depression in TBI. A structural equation modeling analysis will be utilized. The current study is critical to analyze how resilience, depressive symptoms, and history of service member TBIs are connected.

Abstract #260
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

The Effect of Psychological Distress on Emotional Granularity and Relationship Satisfaction

Maureen McKillip*
***Presenting Author**

Emotional granularity is the ability to make minute distinctions between similarly valenced emotions. Poor emotional granularity is directly related to increased psychopathology and psychological distress. Emotional granularity is also connected to relationship satisfaction among married couples. Furthermore, psychological distress (e.g., depression and anxiety) is known to directly impact relationship satisfaction. While direct relationships have been established between these three factors, it is yet unknown if these factors can be established in a mediated relationship such that psychological distress mediates the relationship between emotional granularity and couples' satisfaction. Individuals in a committed relationship will be asked to fill out several self-reported surveys of emotional granularity, as well as psychological distress and couple satisfaction. To test the relationship among surveys of emotional granularity, I will first use these measure to create a latent variable. To test the hypothesis that psychological distress will affect the relationship between emotional granularity and couples' satisfaction, I will perform a mediated analysis. I hypothesize that higher emotional granularity will predict fewer symptoms of psychological distress, which in turn will predict higher satisfaction in couples. Specifically, I hypothesize that symptoms of depression from the psychological distress scale (rather than anxiety) will contribute more to the relationship between emotional granularity and relationship satisfaction. If these hypotheses are supported, it would highlight the clinical importance of addressing and improving emotional granularity in therapeutic settings for couples where one or more individuals are experiencing symptoms of psychological distress, namely depression. Key words: Emotional granularity, emotion differentiation, alexithymia, psychological distress, depression, anxiety, relationship satisfaction

Abstract #261
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

Examining empathy among veterans and non-veterans, with and without PTSD

Franchesca Millan-Daniel*
***Presenting Author**

Few studies have examined empathy in U.S. veterans with posttraumatic stress disorder (PTSD) or differences in empathy between veterans and non-veterans with and without PTSD. This proposed dissertation aims to explore these differences by comparing empathy levels among veterans and non-veterans, both with and without PTSD. The sample will consist of 230 veterans and non-veterans with and without PTSD, for a total of 72 participants in each of the four groups. This cross-sectional study will gather quantitative data. The Empathy Quotient-60 (EQ-60) will assess participants' overall empathy. Additionally, the Beck Depression Inventory (BDI) and PTSD Checklist for DSM-5 (PCL-5) will be administered to control for active depressive and PTSD symptoms. It is hypothesized that military veterans with PTSD will have a lower EQ-60 score compared to non-veterans. Additionally, military veterans' EQ-60 scores will be significantly lower than non-veterans. When controlling PCL-5 and BDI scores, EQ-60 scores will be significantly lower for veterans than non-veterans.

Abstract #262
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

The Effect of Awe on Self-Concept

Maryn Palmer*
***Presenting Author**

Awe is an emotion defined in literature as an experience of perceived vastness that is difficult to integrate into existing perceptions of reality and self. Self-concept is a psychological construct describing perceived identity through beliefs about the self. A well-developed self-concept has been observed to increase psychological well-being, while awe has been linked to prosocial and meaning-making behaviors. The influence of awe on self-concept has largely been studied through trait-based conceptualizations, with findings suggesting that people predisposed to awe experience a minimized self and greater prosocial behaviors, which influence self-concept. This study will explore the influence of awe on self-concept through a state-based conceptualization rather than trait-based. This research will explore awe's influence on self-concept through a randomized between-subjects design using pre- and post-test measures assessing awe and self-concept on an anticipated 75 participants. Three conditions will be induced through video stimuli, awe, joy, and neutral, to observe awe's impact on self-concept in comparison to positive and neutral emotional. Awe will be assessed through the Awe Experience Scale (AWE-S), emotional states through the Positive and Negative Affect Scale (PANAS), and self-concept through the Self-Concept Identity Measure (SCIM). It is hypothesized that awe will increase self-concept, awe will have a greater effect on self-concept than joy, and awe will alter the physiological response. Once data is collected, an ANOVA will be used to analyze the effect of awe, joy, and neutral states on the experience of self-concept. The psychophysiological experience of awe will be explored by monitoring heart rate. The outcomes of this study will allow an understanding of awe's influence on the average individual and how it might be used therapeutically to create meaning with self-concept, identity development, and prosociality. This research will examine heart rate to understand the physiological response to awe as it compares to other emotions.

Abstract #263
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

Exploring Mental Health Familiarity and its Influence on Firefighters' Willingness to Seek Psychological Support

Macy Rademaker*
***Presenting Author**

Firefighters are a unique population that are especially vulnerable to psychological distress. Due to the intense and stressful nature of their job, firefighters are at a higher risk of experiencing mental health concerns, including depression, Posttraumatic Stress Disorder (PTSD), and substance abuse. While this population continues to be at high risk, research shows persistent barriers that result in a lack of seeking out proper mental health treatment. Significant barriers include firefighter culture and mental health stigma, generational attitudes toward mental health, and a lack of providers specializing in treating this population. This study aims to examine whether familiarity with mental illness and mental health services, as well as presence of department mental health services, impact a firefighter's willingness to seek psychological support. This study also aims to explore whether a firefighter's age plays a role in their willingness to seek help. Participants will include active duty career firefighters who will participate in completing quantitative survey measures to assess age and their levels of familiarity with mental health, as well as their overall willingness to seek mental health treatment. It is hypothesized that younger generational firefighters will report increased willingness to seek mental health treatment compared to older generational firefighters. It is also hypothesized that familiarity with mental illness and mental health services will positively correlate to attitudes toward seeking mental health care. Lastly, it is hypothesized that firefighters who report having access to department mental health resources will report a higher willingness toward seeking mental health care. If hypotheses are supported, this will indicate that firefighters who have familiarity with various aspects of mental health will be more willing to seek out psychological support when necessary, which may reduce stigma and increase mental health understanding for both firefighters and clinicians, leading to overall better psychological treatment for this population.

Abstract #264
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

The effects of gratitude journaling on older adults' life satisfaction, perceived social support and connectedness.

Karlee Ranville, MA*
***Presenting Author**

In recent years, the increasing older adult population in the US has led to a greater need for interventions and techniques to continue to assist older adults in living a well-fulfilled life. Life satisfaction, connectedness, and perceived social support for older individuals have been areas that can diminish and decrease with age due to several factors. The effect of gratitude journaling on older adults' life satisfaction, connectedness, and perceived social support scores will be examined. The intervention's effects on these three areas have not been examined in older adults previously. The participants will be recruited through a senior center in Kansas City. Individuals in this study will be randomly assigned to either the control group or the experimental group. The experimental gratitude journaling intervention group will be run for one hour a week for six weeks. Participants in both groups will be assessed using the Satisfaction with Life Scale (SWLS), Multidimensional Scale of Perceived Social Support (MSPSS), and the Social Connectedness Scale (SCS) pre-intervention and post-intervention and a repeated measures MANOVA will be run to examine the changes across the pre-test and post-test between the control and experimental groups. The proposed hypothesis for this study is that the gratitude journaling intervention will increase individuals' life satisfaction, connectedness, and perceived social support scores compared to the control group. This study will add to the growing literature around older adults' satisfaction with life and possible interventions to increase sustainability in life satisfaction for older adults.

Abstract #265
Program: Biomedical Sciences
Category: Basic Science

Poster Session: KC-2

The role of TTC7 protein in a potential treatment for iron overloading in hereditary hemochromatosis

Sreenidhi Rao, B.S.*, Staton McBroom, M.S., Vincent Barnes, Louise Hirose, Shamirah Johnson, Diya Anugu, Robert White, M.S., PhD.

***Presenting Author**

Hereditary Hemochromatosis (HH) is a genetic disorder characterized by excessive tissue iron accumulation, which leads to serious morbidity including liver, heart, pancreatic damage, and death. HH is primarily due to a mutation (C282Y) in the HFE (Hereditary Iron) gene, which disrupts regulation of iron absorption. Uncontrollable iron absorption leads to accumulation in organs causing toxic effects. Despite availability of treatments like repeated phlebotomy and iron-chelating drugs, patient compliance remains a significant challenge. Patients find it difficult to maintain phlebotomy treatment. Iron-chelating drugs present some problems, such as side effects and high costs. This research aims to address treatment challenges in HH by studying the Hereditary Anemia mouse model called fsn (flaky skin). The fsn mice suffer from iron deficiency due to impaired iron reabsorption in the kidney resulting in excess iron (100X normal) being excreted in urine. This results from a mutation in Ttc7 (Tetratricopeptide repeat domain 7) which generates an abnormal protein that may play a role in regulating iron reabsorption in the kidney. By investigating how TTC7 functions in normal iron homeostasis and how its mutation leads to iron deficiency in fsn mice, we hope to uncover its potential as a therapeutic target for HH. Understanding the mechanism by which TTC7 influences iron reabsorption in the kidney potentially leads to a novel approach to treating iron overload disorders. By targeting TTC7 or its protein partners, treatment will not only address iron overloading in HH patients but also improve treatment compliance by offering a less invasive and more effective alternative to current therapies.

Abstract #266
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

The Effects of Appearance Satisfaction and Self-viewing on Client Satisfaction with Telepsychology

Britney Slater*
***Presenting Author**

COVID-19 saw the rise of video-conferencing platforms, leading to increased telepsychological services to provide therapy to patients. Despite lockdown policies being lifted, telepsychological services remain more prominent today than pre-COVID. While telepsychological services have many benefits, there has been mixed data on how effective telepsychology can be compared to in-person services. Despite data showing a strong therapeutic relationship is possible, clients overall prefer a mix of in-person and telepsychological services to strictly telepsychology services. Zoom fatigue might impact client satisfaction in telepsychology, which can be higher for women with lower appearance satisfaction. Appearance satisfaction in online spaces can be impacted by the self-view available on most video-conferencing platforms. This study aims to examine the effects that appearance satisfaction and self-view have on clients' satisfaction in telepsychology. Participants will be women utilizing telepsychological services who will complete the Client Satisfaction Questionnaire, the 14-item Body Parts Satisfaction Scale-Revised, and report on their self-view tendencies using self-developed measures. Study aims to recruit 53 participants via Amazon Mturk and social media ads. In the proposed statistics, a mediation analysis will be run to determine the indirect and direct effects of appearance satisfaction and self-view on client satisfaction. It is hypothesized that women clients with lower appearance satisfaction will find telepsychological services less effective than women with higher appearance satisfaction. Furthermore, it is hypothesized that the client's self-view tendencies will mediate this relationship. If the hypotheses are supported, it will indicate particular attributes of telepsychology that need to be addressed by clinicians.

Abstract #267
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

The Experiences and Exclusion of Asexual Men

Kirby Slaughter, MA*
***Presenting Author**

Within broader society, interest and engagement in sex are often conceptualized as normative and necessary components of the human experience. Asexuals are significantly impacted by the privileging of sex within society and as a result often experience having their identities pathologized, erased, and delegitimized. Asexuals also frequently experience exclusion and discrimination. Asexual men may be particularly vulnerable to these experiences given that sexuality is often conceptualized as a fundamental aspect of masculinity. This may lead to asexual men experiencing significant identity conflict and may result in delayed identification with asexuality or nonidentification with asexuality despite having experiences that align with the identity label. This is reflected in the data that has been collected about the composition of the asexual community that suggests that there are significantly more women who identify as asexual than men who identify as asexual. This study aims to gain greater insight into this gender discrepancy by exploring the intersection of masculinity and asexuality through a qualitative study focused on the lived experiences of asexual men. More specifically, this exploration will focus on the barriers that men may face when exploring the possibility of being asexual and the differential experiences of exclusion, pathologization, and discrimination that asexual men face within society. The study will consist of semi-structured interviews that will be analyzed using a thematic analysis.

Abstract #268
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

Adherence and Engagement to Behavioral Health Treatments in People with Multiple Sclerosis

Kole Wagener*
***Presenting Author**

There is significant variability in adherence to medication-based treatments among people with multiple sclerosis (pwMS). In addition to medication-based treatment there has also been research demonstrated efficacy in behavioral health treatments, however, few studies examine adherence to these treatments. The proposed project will evaluate adherence to behavioral treatments in pwMS through evaluating the frequency providers refer behavioral treatments, assessing the engagement to these treatments, and identifying the potential barriers with engagement to these treatments. The study will survey participants from an MS clinic at University Health Kansas City. The data will be then collected and analyzed to determine the frequency, engagement, and barriers to behavioral treatments pwMS. The overarching goal of the work is to improve access to efficacious behavioral treatments among pwMS. This study is currently in the stages of survey development and formulation.

Abstract #269
Program: Health Service Psychology (Dissertation)
Category: Clinical Science

Poster Session: KC-2

Developing a dual process coping model for chronic disease management: A systematic literature review

Leah Barreca, Ph.D.*, Nichmarie Soto Bonilla, Ph.D. , Madison McCormick, Grace Vallis, Karsen Wilkins
***Presenting Author**

Chronic Disease affects nearly six in ten adults in the U.S., resulting in physical, psychological, and social consequences, necessitating innovative treatments. With the growing acceptance that psychological factors influence health behavior, psychological approaches are essential in comprehensive medical care to improve treatment adherence and outcomes. Current psychological intervention models and treatments (e.g., motivational interviewing and cognitive behavioral therapy) empower change and growth. However, they fail to address the concurrent challenges of the active disease process while managing the pragmatic aspect of daily life. A dual process coping model (DPM) may fill the void. DPM, initially applied to decision-making and clinical judgment, emerged as an evidence-based framework for bereavement coping through two distinct but interconnected systems addressing (a) emotional aspects of grief (e.g., sadness) and (b) practical and functional considerations of adjusting to life after loss (e.g., new roles). Widely used DPMs for dynamic coping with chronic disease currently do not exist. Developing new content for a novel psychological protocol applying a DPM framework to chronic disease management supports patients and providers as they address (a) active symptoms, impairment, and the disease burden and (b) the practical and functional aspects of adjusting to chronic impairment. This systematic literature review aims to (1) identify existing psychological interventions currently incorporating DPMs for coping with aspects of chronic disease and (2) define how they differ from existing models. The initial literature screening resulted in ten articles collected from the following databases: Google Scholar, PubMed, Psychiatry Online, and ScienceDirect. They were included for consideration if they met the following criteria: peer-reviewed, full text, English language, date range: 1995 to 2024, and addressed DPMs for chronic disease and related psychological distress. Currently, these articles are being critically reviewed to determine their relevance to the aims of this study.

Abstract #270
Program: KCU GME
Category: Medical Education

Poster Session: KC-2

Evaluation of Patient Safety and Quality Improvement in Residency Education

Kerrie Jordan*, Juan Jaramillo
***Presenting Author**

Background: Different studies have reported a decrease in adverse patient safety events that may improve through quality improvement education. Also, the Accreditation Council for Graduate Medical Education (ACGME) Clinical Learning Environmental Review (CLER) findings have proven underutilization of the event-reporting systems. Data from CLER site visits reveal that many resident physicians do not receive adequate patient safety training. Objective: This study evaluated the culture of patient safety and quality improvement within residency programs with different healthcare systems from November 2020 to January 2022. Methods: Data from a quarterly questionnaire was analyzed to understand reporting systems, resident involvement, quality improvement methodologies, and patient safety events. Results revealed diverse reporting systems, with 33% utilizing Midas and 67% employing alternative methods. The preference for online reporting systems was evident, with 66% exclusively using digital solutions. Resident engagement in disclosing patient safety events (83%) and addressing healthcare disparities (83%) underscored a commitment to transparency, accountability, and equitable care. A decrease in the use of the PDSA methodology (67% to 50%). Notably, 50% of the programs reported an increase in patient safety events in both 2020 and 2022, highlighting persistent challenges in patient safety. However, 67% consistently reported more patient safety investigations, indicating proactive efforts to address safety concerns. Conclusions: These findings offer valuable insights into patient safety practices, reporting systems, and resident involvement in healthcare systems. And a further research to understand the reasons behind these trends and develop effective strategies to enhance patient safety in healthcare systems.

Abstract #273

Poster Session: KC-2

Program: University of Oklahoma Health Sciences Center

Category: Case Reports and Studies

Refractory ascites, spontaneous bacterial peritonitis, and hepatorenal syndrome in a young female with autoimmune cirrhosis: a management dilemma

Parsa Lessani*, Ryan Nazari, Erik Holbrook

***Presenting Author**

Refractory ascites, spontaneous bacterial peritonitis (SBP), and hepatorenal syndrome (HRS) are severe complications of cirrhosis, requiring careful management. In patients with autoimmune hepatitis (AIH)-related cirrhosis, additional complexities can arise due to concurrent autoimmune-driven hematologic and renal dysfunction. This case underscores the necessity of an individualized approach in a multidisciplinary setting, as these patients often require dynamic treatment adjustments based on their unique clinical course. We present the case of a 36-year-old female with AIH-related cirrhosis who was admitted with worsening ascites and fatigue, later diagnosed with SBP-triggered HRS. She had frequent paracenteses for refractory ascites and was initially treated with terlipressin and albumin for HRS. However, terlipressin was discontinued due to blurred vision, necessitating a switch to midodrine and octreotide, which led to continued renal improvement. Her case required continuous adjustments based on organ involvement and medication tolerance, emphasizing the complexity of managing AIH-related cirrhosis and its complications. This case highlights the challenges of treating a multifaceted disease process involving hepatology, nephrology, hematology, and interventional radiology. It underscores the need for multidisciplinary coordination and patient-specific strategies when standard treatments fail or need modification. Additionally, it raises the question of whether earlier TIPS could have reduced the need for recurrent paracentesis and improved outcomes. Managing refractory ascites, SBP, and HRS in autoimmune cirrhosis requires individualized, multidisciplinary decision-making. This case contributes to the discussion regarding optimal timing for TIPS in patients with recurrent ascites and the importance of flexible, patient-centered approaches when first-line therapies are contraindicated or poorly tolerated.

Abstract #274
Program: University of Kansas
Category: Basic Science

Poster Session: KC-2

The Effects of Teaching Emotion Words on Emotional Granularity, Emotion Regulation/Dysregulation and Satisfaction with Life

Helenna Shcherbinin*, Samuel Kalmus, Jayden Kasiska-Pettersen, Rochely Negron, Yvette McRoy, Jennifer Fugate, Ph.D.
***Presenting Author**

People differ in their ability to discriminate emotions, known as emotional granularity (EG). We hypothesized that participants assigned to learn highly-precise emotion words (compared to control words), would show increases in their EG that would mediate their emotion regulation and dysregulation, and satisfaction with life. Participants (n = 86) were asked about their emotion word knowledge (accuracy to define precise emotion words and how often they used these words), and completed measures of self-reported EG, satisfaction with life, and emotional regulation and dysregulation. All measures were collected initially after 21 days. Between the two sessions, participants were randomly assigned to either an emotion or control word-learning group, in which they received a new word each day. During this time, participants also completed ESM sampling on the current mood. We also calculated EG directly from the ESM data. For the emotion word learning group, increased emotion word accuracy was associated with reduced emotional dysregulation and less emotional suppression, and increased emotion word usage was associated with less emotional dysregulation and more emotional reappraisal. Only the last relationship was mediated by one self-reported EG measure. Participants in the control word learning group improved the use and accuracy of control words, but also emotion words. There was one direct effect: Increased control word use increased satisfaction with life. This effect continued to be significant when controlling for emotion word use increases. Self-reported EG measures and behaviorally-derived EG measures were not correlated.

Abstract #332
Program: Osteopathic Medicine
Category: Case Reports and Studies

Poster Session: KC-2

An analysis of the diagnosis of pneumonia with emphysema and its impact on hospital length of stay

Annie Goikhman*, Mohamed Alqashmi , Timothy Chon, Angelina Miley
***Presenting Author**

Objective: This study examines the impact of concurrent pneumonia and emphysema diagnoses on hospital length of stay (LOS). By analyzing patient characteristics and outcomes, we aim to identify factors contributing to prolonged hospitalization and inform strategies for optimized patient management. **Methods:** A retrospective observational study was conducted using electronic medical record data from Freeman Health System, including hospital discharges from January 1, 2019, to December 31, 2022. The study population included adults diagnosed with pneumonia, emphysema, or both. Statistical analyses were performed to compare the proportions of extended hospital stays (≥ 6 days) across different patient groups while considering age, gender, and comorbidities. **Results:** Patients diagnosed with both pneumonia and emphysema exhibited the highest percentage of extended hospital stays compared to those with only one condition. Pneumonia patients had longer LOS than non-pneumonia groups, and patients with comorbidities were more likely to have extended stays. No significant difference was observed between elderly and younger adults in the pneumonia and emphysema cohort, possibly due to sample size limitations. Gender analysis revealed similar trends, with both male and female patients in the combined pneumonia-emphysema group experiencing prolonged LOS. **Discussion:** The coexistence of pneumonia and emphysema significantly increases hospital LOS, emphasizing the need for integrated healthcare approaches. Patients with both conditions may require specialized treatment plans to reduce hospitalizations and improve outcomes. Although the study was limited by its retrospective nature and potential data inaccuracies, the findings support the development of clinical guidelines for concurrent disease management. **Conclusion:** The study highlights the need for targeted interventions to reduce LOS in patients with pneumonia and emphysema. Future research should focus on preventive strategies, early interventions, and optimizing healthcare resource allocation to improve patient outcomes.

GME Research Day Abstracts

Abstract #275

Transition of Care from Pediatrics to Adult

Ehab Abdelaziz-KCU-Freeman Family Medicine, Terrance Kelly, Brandyce Elia, Lee Cong

Transitioning from pediatric to adult medicine is critical for continuity, this is difficult for a young adult independently navigating the healthcare system. Many components need to work in harmony for young adults to navigate the healthcare system on their own for the first time. This is a barrier to establishing care further regressing their healthcare literacy. Transition of care specific visits can help soften the barriers. Our team believed by presenting about Six Core Elements to transition of care we may increase prospective patient knowledge about the healthcare system and encourage them to make a transition of care visit. To study this, students were surveyed between the ages of 18-21 following a transition of care presentation. From the survey results we found a vast majority of participants felt comfortable with the components transition of care. The largest disparity was with the physician's offices and availability. As an action our practice has created a pamphlet to spread awareness of transition of care. The intent is to build a young adult population within the academic family medicine clinic to allow for enactment of transition of care visits within the clinic.

Improving Quality Metrics in a Primary Care Setting with Targeted Interventions

Charles Shipley-St. Luke's Des Peres Family Medicine Program, Allison Politsch, DO, Alex Downey, DO, Grant Paterson, DO, Kailyn Baalman, MD, Nick Gutzmer, DO, Efren Shahabeddin, MD, Kirstie Mabitad, DO, James Liu, DO, Alexander Holbrook, DO, Anna Livingstone, DO, Colton Pluff, MD, Brittany Herrin, DO

Introduction Primary care provider (PCP) follow-up after hospitalization, regular mammogram screening, and diabetic eye exams are essential components of preventive care that improve health outcomes, reduce complications, and support proactive disease management. However, adherence to these follow-up recommendations is often low, highlighting the need for effective interventions to increase compliance. This study aimed to improve follow-up rates on the above metrics. **Methods** We collected baseline and post-intervention data to determine the impact of the following interventions: continuous resident presence in the emergency department (ED) and hospital to coordinate follow-up appointments, verbal education for patients on the importance of mammograms with encouragement to use a mobile mammogram van visiting the clinic, and regular reminders to junior residents from attending physicians and senior residents about the importance of diabetic eye exams. **Results** PCP follow-up rates within 30 days of hospitalization increased from 62.9% → 64.7% (HT 70%, LT 65%)($p=0.3524$). We missed the high target by 10 patients. Mammogram completion rates improved from 80.0% → 85% (HT 81.9%, LT 74.1%)($p=0.7718$). We surpassed the high target for this intervention. Diabetic eye exam adherence rates increased from 64.8% → 80.83% (HT 78.5%, LT 70.7%)($p=0.0108$). We surpassed the high target for this intervention. Although only the diabetic eye exam shows statistically significant results, all tests show an increase trend in post-test. **Conclusion** Our findings support the effectiveness of coordinated, resident-led interventions in enhancing quality care metrics. **Discussion** These strategies may serve as a model for other residency programs and primary care practices aiming to improve patient adherence to essential preventive services. We will continue to implement these interventions into our daily practice and follow with quality metrics quarterly to ensure we are hitting our goals and providing exceptional care to our patients.

Abstract #277

QR Code Labeling to Enhance Nasogastric Tube Management

Max Cayo, MD, PhD-St. Anthony Hospital, General Surgery, Ana Vila Irigoyen, MD, Samantha Hutzley, DO, Michelle Won, DO

Background: Nasogastric tube (NGT) decompression is a mainstay of the treatment of small bowel obstruction, which represents a major indication for hospital admission to Surgical services in the United States. Often, NGT setup is sub-optimal. We hypothesize that QR code labels linked to educational materials instructing proper setup will improve outcomes for this patient population. **Study Design and Results:** We designed video and QR code materials which are connected to patient NGT, when admitted to the hospital with obstruction, and analyze frequency of QR code access by nursing staff as well as overall outcomes of patient admission.

Smoky Cerebrovascular Condition

Rajesh Dhakal-PGY 2 at Reid Health, Novera Inam

Introduction: Moyamoya is a progressive cerebrovascular disease. According to the National Inpatient Sample, the overall incidence of Moyamoya Disease was three per one million people. Presentation of hypertension urgency and stroke-like symptoms are the highlights due to stenosis vessels. **Case:** A 63 year old female with Moyamoya disease, basilar tip aneurysm status post pipeline embolization, left Posterior communicating artery aneurysm, mild cognitive impairment, stroke, lupus, Hashimoto's thyroiditis, diabetes mellitus, hypertension who presented with hypertensive urgency with confusion worse than baseline and word finding difficulty. Patient began having symptoms in 2013 with pain in the posterior neck/head, vision changes in both eyes. She denied surgery for stent placement. She is taking clopidogrel, aspirin, statin for stroke prevention. Her CTA showed worsening left internal carotid stenosis and mild stenosis of the proximal right internal carotid artery. MRI showed mild chronic small vessel ischemia. We controlled her hypertension with clonidine, hydralazine, labetalol, losartan and metoprolol. Blood pressure steadily came down to her base line 160/90 mm of Hg and her mental status improved. She has been following PCP and Neurology. **Discussion:** Moyamoya disease is a progressive occlusive disease of the cerebral vasculature. CTA of head often shows "puff of smoke" appearance from development of a network of fragile collateral vessels. There is a presumed hereditary component. Her daughter, who was never diagnosed with this disease, died at the age of 31 of a stroke. Death due to Moyamoya disease is usually from Intracranial hemorrhage. The outcome and prognosis of the disease depend on how frequently attacks occur and the extent of hemorrhage. The mortality rates associated with Moyamoya disease are estimated to be around 10% in adults. **Conclusion:** Moyamoya is a rare disease; surgical treatment is the promising treatment. Patients, if refused surgery, need medical management and often present with hypertension urgency and stroke-like symptoms.

Abstract #279

Hyperopic PRK for ET

Alex Downey- St. Luke's Des Peres Family Medicine Program, James Liu , Nick Faron

Introduction Reports of excimer laser keratectomy performed to treat esotropia have been limited to small series or case reports. Here we analyze outcomes of children and adolescents with hyperopia treated using the excimer laser. **Methods** Clinical outcome data were collated prospectively in 84 children and adolescents (147 eyes) treated for hyperopia using excimer laser keratectomy. All children had esotropia; fully accommodative or partially-accommodative/mixed mechanism and difficulties with spectacle or contact lens wear. Mean age at refractive surgery was 11.49 ± 4.91 yrs (range 1 to 20 years); mean follow-up was 4.38 ± 3.66 yrs. **Results** Preop spherical refractive error averaged 3.88 ± 1.56 D (range +0.50 to +6.75) and was corrected to 0.79 ± 0.92 D and 0.56 ± 1.13 D at three and five years postop, respectively. Hyperopic UDVA improved a mean 0.36 logMAR and CDVA 0.06 logMAR. Pre-operative esotropia averaged 5.47 PD wearing refractive correction and 19.8 PD not wearing correction. Esotropia after refractive surgery (not wearing correction) was reduced to an average 2.7 PD and 0.8 PD at three and five year postop, respectively. During the follow-up period 11.9% (10 children) required strabismus re-operation. **Discussion** Excimer Laser Keratectomy for hyperopia reduces substantially the angle of accommodative esotropia in children who have difficulties with spectacle or contacts lens wear. In addition, Excimer laser surgery is an effective means for improving visual function and quality of life in special needs children and adolescents.

Abstract #280

Expanding the Differential Diagnosis: Dual Case Report of Nodular Fasciitis in the Head and Neck

Elijah Elliott- Freeman ENT, Amanda Sonnenburg, Scott McClintick

Introduction: Nodular Fasciitis is a benign, self-limited, proliferative lesion of fibroblasts typically forming in subcutaneous tissues, often mimicking malignant tumors by growth features and histopathology. There are many case reports showcasing nodular fasciitis in the extremities, trunk, and gluteal region, but reports of head and neck nodular fasciitis is limited.

Case: We present two cases of young females that presented with small masses with histopathology correlating to be nodular fasciitis. One 18 year-old female presented to our clinic with a one year history of a right posterior ear mass that was intermittently painful but otherwise asymptomatic. Ultrasound revealed a 3.1x3.0x1.8 cm well circumscribed mass. In another case, a 19 year-old female presented to our clinic with a two month history of a painful, rapidly enlarging mass lateral to the left supraorbital rim. She had associated symptoms of episodic difficulty opening and closing the eye and left blurry vision. Initial pathology of both cases revealed spindle cell proliferation and were sent off to dermatopathology consultative review where the diagnosis of nodular fasciitis was confirmed. **Discussion:** These cases demonstrate the importance of including nodular fasciitis on a differential diagnosis of rapidly growing facial masses and avoiding unnecessary testing, treatment, and burden to patient.

Patient-Reported Satisfaction with Treatment Options for Outpatient Management of Opioid Use Disorder: Extended-release Injectable Buprenorphine versus Daily Sublingual Buprenorphine-naloxone

Ayesha Fatima MD-Ozark Center/KCU, Larayeb Wazir, MD, Savitha Kumari Satyasi, MD, Suporn Sukpraprut-Braaten, Nauman Ashraf, MD

Introduction The purpose of the study is to evaluate patients' satisfaction with extended-release monthly injectable buprenorphine and daily sublingual buprenorphine for opioid use disorder (OUD) treatment. By assessing satisfaction levels, we aim to guide clinicians in creating personalized care plans to improve patient's satisfaction and OUD management. **Methods** A cross-sectional study evaluated overall patient satisfaction with monthly extended-release buprenorphine injections (injectable group) versus daily sublingual buprenorphine-naloxone (sublingual group). A survey was conducted to assess overall satisfaction, convenience, effectiveness in reducing opioid cravings, support provided by healthcare providers, treatment regimen, long-term recovery goals, cost, maintaining stable daily activity routine, and perception of family members about treatment using a Likert scale. Side effects and withdrawal symptoms associated with both treatments were also evaluated. **Results** A total of 64 patients were recruited. Sixteen patients in the injectable group were identified. Out of 48 patients in the sublingual group, 16 patients were matched by age and gender with those in the injectable group. Patients in the sublingual group reported having significantly higher overall treatment satisfaction than the injectable group (mean difference=1.18; $p=0.0088$). Patients in the sublingual group are more satisfied with their long-term recovery goals than those in the injectable group ($p=0.0220$). Patients in the injectable group were more likely to experience side effects than those in the sublingual group. (OR=9.53; 95% CI=1.85, 49.2; $p=0.0044$). **Discussion** While extended-release injectable buprenorphine offers the convenience of monthly dosing, patients on sublingual buprenorphine reported higher satisfaction and fewer side effects. The increased adverse effects in the injectable group may impact adherence. Clinicians should consider patient preferences, side effect profiles, and recovery goals when prescribing OUD treatments. **Conclusion** Patients on the sublingual group reported higher satisfaction and fewer side effects than those on injectable group. This information can empower clinicians when creating personalized care plan for their patients.

Abstract #282

Traumatic C5 Nerve Root Avulsion with Pseudomeningocele

Robert Garner, DO-HCA-KCU Orthopedic Surgery , Kyle Barner, DO, Andre Jakoi, MD

Introduction: Traumatic cervical nerve root avulsions are rare injuries associated with high-speed motorcycle accidents, males, mean of 28 years of age, alcohol use, no driver's license, and concurrent long bone fractures. The traction forces from the injury pull the nerve root sleeve into the intervertebral foramen with tearing of the meninges followed by proximal nerve root retraction and cerebrospinal fluid filling the neural foramen resulting in a pseudomeningocele
Case: A 22-year-old helmeted male involved in a motorcycle versus automobile at highway speeds was ejected a long distance. He sustained multiple upper extremity fractures and was intubated in the emergency department. His upper extremity injuries were treated surgically within two weeks of the accident. He continued to have upper extremity weakness three months after the accident. A cervical spine MRI was obtained and demonstrated a C5 nerve root avulsion with pseudomeningocele formation. He was referred to a specialist for further evaluation and treatment. **Discussion:** The C5 nerve root avulsion with pseudomeningocele formation diagnosis was delayed likely due to concomitant bilateral upper extremity injuries. Cervical nerve root avulsions should be considered in patients with asymmetric upper extremity neurological physical exams with a high energy mechanism. Treatment consists of nerve transfers versus physical therapy with bracing.

Abstract #283

Percutaneous Biceps Tenodesis Using Needle Arthroscopy and Regional Anesthesia: The Infinity Technique

Garrett Gilbert -*SANO Orthopedic Sports Medicine*, Matthew Daggett, Kevin Witte, Michael Dempewolf, Michael McCabe, Andrea Redler, Bryan Beutel

Introduction: Biceps tendinopathy serves as a common source of shoulder pain and functional limitation. Arthroscopic Biceps tenodesis has been shown to be a successful procedure for alleviation of pain, improvement in functional ability, and the avoidance of some of the negative outcomes associated with biceps tenotomy. The purpose of this article is to describe a percutaneous biceps tenodesis technique utilizing needle arthroscopic instrumentation under regional anesthesia. **Technique:** After insertion of the scope, the diagnostic procedure is started by first examining the intra-articular long-head of biceps tendon and its attachment at the superior labrum. The high-flow needle arthroscopy trochar is then placed through the anterior portal to both create the percutaneous portal as well as confirm appropriate trajectory of the biceps anchor. The drill guide with inserting trochar is then inserted through the anterior portal through the rotator interval. The sharp trochar is then inserted through the biceps tendon in the bicipital groove. A drill is then taken to the positive-stop through the guide and then a 1.8 Fiber Suturetak is secured. The “repair” suture is then passed above the biceps and then retrieved beneath of the biceps tendon and out the anterior portal. The repair suture is then placed through the loop of the passing suture and passed through the anchor and gently tighten the biceps into the groove. Tenotomy is then performed. **Discussion:** Needle arthroscopy is a recent advancement in orthopedic technology. Less fluid inflow leads to less postoperative swelling, leading to the potential for improved postoperative pain and range of motion. Furthermore, it has been performed with reduced anesthetic requirement compared to traditional arthroscopy. As needle arthroscopic technology continues to expand, standardized technique guides for the performance of common arthroscopic orthopedic procedures will serve as a basis for future comparative studies.

Abstract #284

Factors That Influence the Decision to Get Vaccinated Against COVID-19

Dr. Brandy Gotti-Freeman ENT

Since the start of the COVID-19 pandemic and the launch of the vaccine, healthcare workers have been encouraging people to get vaccinated to prevent the spread of the virus. However, there is a significant number of people who are vaccine hesitant, or uncertain about receiving the COVID-19 vaccine and its booster. Vaccine hesitancy represents a state of opportunity to make positive change; therefore, it is crucial for healthcare workers to identify those who are in this population. The purpose of this study is to identify factors that do and do not influence the decision to get vaccinated against COVID-19. An anonymous survey was distributed to participants at the COVID-19 vaccination clinic located at the Rowan University School of Osteopathic Medicine that considered demographics, risk factors, accessibility to appointment scheduling and transportation, and factors that influence their decision to get vaccinated. Statistical analysis was carried out using SPSS statistical software. Preliminary statistical analysis of the data collected from the survey revealed that gender, education, and ethnicity were significant contributing factors in determining willingness to receive the vaccine, but income, age and future verification requirements were not significant contributing factors.

Abstract #285

Standardizing Postoperative Hypocalcemia Management: A Quality Improvement Initiative for Enhanced Patient Outcomes Following Thyroid and Parathyroid Surgeries

Dr. Brandy Gotti-Freeman ENT, Dr. Randall Hansen, Dr. Alex Otto, Dr. Elijah Elliott, Dr. Shane Miller

Postoperative hypocalcemia is a common and potentially serious complication following certain head and neck surgeries, particularly those involving the parathyroid or thyroid glands. The management of post-operative hypocalcemia requires prompt identification and intervention to prevent severe outcomes such as arrhythmias, muscle weakness, muscle spasms, and tingling sensation. This Quality Improvement project attempts to develop a comprehensive and accessible order set found in our hospital's EMR system to manage postoperative hypocalcemia. The order set will provide appropriate laboratory test orders, monitoring protocols, and guideline-oriented calcium supplementation for patients that undergo thyroidectomies and parathyroidectomies to help monitor, diagnose, and treat hypocalcemia. Through this QI initiative, we aim to create a single modality to treat postoperative hypocalcemia utilized throughout many different medical subspecialties which will in turn reduce complications, variability in care, and improve patient outcomes.

PE vs. EKOS: A High-Stakes Showdown

Samuel Griffin-Reid Health

Introduction: Endovascular Catheter-Directed Online System (EKOSTM) is a catheter-based treatment for pulmonary embolism (PE) that first began testing in 2014. This case is notable as EKOS sees less use than traditional management for PE. **Case Description:** 83-year-old male with a history of essential hypertension, GERD, hyperlipidemia, peripheral arterial disease (PAD) s/p left lower extremity angioplasty with stent on Plavix, presented to the emergency department with chest pain and shortness of breath worsening over several days with dyspnea on mild exertion. Exam was notable for crackles in the left upper and lower lungs. Subsequent CT angiogram of the chest found multiple diffuse pulmonary emboli present in both lungs primarily in the distal branches of the lower lobes. With risk stratification he qualified for EKOS. He tolerated the procedure well and rest of hospitalization and recovery was uneventful. **Discussion:** For most patients with acute PE who do not have hemodynamic compromise, thrombolytic therapy is not warranted. However, thrombolysis may be considered on a case-by-case basis when the benefits of rapid lysis are assessed by the clinician to outweigh the risk of hemorrhage, the bleeding risk is low, and the patient's values and preferences have been taken into consideration. When the decision is made to administer thrombolytic therapy to hemodynamically stable patients with intermediate-high-risk PE, the optimal method of administration remains unknown. However, catheter-directed thrombolytic therapy (CDT) rather than systemic therapy is a viable option, Our Patient was elderly and had multiple health issues with multiple PE, He had intermediate risk PE was hemodynamically stable and tolerated the EKOS procedure well. **Conclusion:** EKOS catheterization is presents a viable option for patients with intermediate-high-risk PE, that are hemodynamically stable. As was the case with our patient.

Proficiency Of Surgical Trainees in Performing Focused Assessment with Sonography for Trauma

Sendy Ha, MD-St. Anthony Surgery, Jorge Arango, MD, Jennifer Pekarek, RN, Lane Mellor, DO

Introduction: Ultrasonography is highly dependent upon operator skill and experience. Focused Assessment with Sonography for Trauma (FAST) is a valuable tool to identify bleeding around the heart, abdomen, and pelvis with a reported sensitivity of 85% and specificity of 98% when performed by experienced operators. In many trauma centers, surgical residents are responsible for performing the exam, and most programs don't include structured training or evaluation for FAST. This study aimed to evaluate the accuracy of FAST amongst surgical residents. **Methods:** A retrospective chart review was performed of blunt trauma patients in which FAST exams were performed by surgical trainees with corroborating imaging or operative findings. The frequency of FAST performed by residency year of training and the results of FAST compared to confirmatory imaging was collected. Crosstabulation assessed the accuracy among residents by year of training. **Results:** Between December 2022 and June 2024, 83 FASTs were performed by surgical residents which also had confirmatory imaging or surgery. Forty-six (55%) of the evaluations were performed by first-year residents, 32 (39%) by second-year residents, and 5 (6%) by third- and fourth-year residents. The overall level of agreement between FAST and imaging and/or operative findings was 92%, with a sensitivity of 45% and specificity of 99%. The level of agreement, sensitivity, and specificity observed among first-year residents were 87%, 36% and 97%, respectively. The level of agreement for second-year residents was 96% and fourth-year residents was 100%. **Discussion:** Despite the lack of standardized training for surgical residents on FAST, our results demonstrate proficiency is rapidly attained. However, the lack of positive FAST and the relatively small number of assessments are limitations. Further research is needed to evaluate training exposure and improve proficiency faster. **Conclusion:** FAST is an accurate tool to identify intra-abdominal fluid and a skill rapidly acquired by surgical residents.

Abstract #288

Trust your gut: a case report on abdominal compartment syndrome

Megan Hammersla-Reid Health Family Medicine

Abdominal compartment syndrome (ACS) occurs when fluid accumulates within the abdominal cavity, causing an increase in intra-abdominal pressure above 20mmHg. There is a risk of abdominal compartment syndrome with severe acute pancreatitis. It is important that this condition be recognized and treated in a timely manner, as not doing so can result in multi-system organ failure and death. A 40-year-old male presented to the emergency room for abdominal pain, nausea, and vomiting. He was admitted for his first episode of acute pancreatitis secondary to his alcohol use and incidentally found hypertriglyceridemia. He met SIRS criteria on admission. CT abdomen confirmed acute interstitial pancreatitis. Triglycerides were elevated at 921. Within 24 hours of admission, his condition significantly deteriorated. With his worsening symptoms and lab work, a repeat CT scan was ordered showing worsening acute pancreatitis. His blood pressure readings became soft; and with concerns for abdominal compartment syndrome, he was transferred to the ICU. He developed hypotensive shock and was placed on vasopressors. Patient then went into asystole, was mechanically intubated, and ROSC was achieved 16 minutes later. Abdominal pressures taken that morning showed a reading of 28mmHg. Labs showed worsening electrolyte/acid-base abnormalities and patient required hemodialysis. The patient went into new onset atrial fibrillation with RVR to the 180s. He was subsequently transferred to outside facility for higher level of care. Abdominal compartment syndrome is diagnosed by measurement of intra-abdominal pressure and organ failure attributable to elevated intra-abdominal pressures. Management consists of supportive and careful observation. If conservative medical management doesn't lead to improvement, surgical intervention may be considered. It is important to realize the relationship between severe acute pancreatitis and abdominal compartment syndrome, recognize the warning signs, and intervene as early as possible to reduce adverse outcomes and decrease mortality.

Abstract #289

Symptomatic Stage I Medullary Carcinoma of the Colon: A Case Report

Augustine Nguyen- St. Mary's Surgery, Matthew Hentges

Medullary carcinoma of the colon, first described in 1999, is an exceedingly rare subtype of adenocarcinoma. Histopathology findings are often found to be poorly differentiated or undifferentiated cancers. The medullary subtype is most often associated with deficient mismatch repair and has been difficult to diagnose on an immunohistochemical basis alone. Even so, medullary carcinoma of the colon often does not meet high risk criteria to qualify for chemotherapy giving it a highly favorable prognosis after resection. This case report serves to present a case of stage I medullary carcinoma specifically of the right colon in a 69-year-old female who presented with symptomatic malignant stricture and relate it to the current literature and recommendations regarding the rare disease.

Abstract #290

Increasing CGM prescriptions in a residency clinic

Nicole Hountz, DO-Reid Health Family Medicine, Jeffrey Lee, MD, Bothaina Afifi, MD, Novera Inam, MD, Jesse Smallwood, DO, Megan Hammersla, MD, Rajesh Dhakal, MD, Vivien Nsonwu, MD, Christine Miller, DO

Use of continuous glucose monitor (CGM) has been shown to lower A1c, even in the absence of other interventions. CGM allows patients to modify health behavior and improve self-management. The plan for this project was to increase CGM use in adult patients with Type 2 Diabetes Mellitus (T2DM). We implemented different methods of education for residents to increase awareness and benefit of CGM for our patients. This education consisted of pharmaceutical representatives providing information in our clinic, a faculty lecture on CGMs covering indications, benefits of CGM use, and insurance coverage, continued announcements about CGMs during weekly didactic sessions, and a virtual didactic lecture from Dexcom about their CGM. Using Slicer Dicer in Epic, we compared the percentage of adult patients who were seen at our residency clinic with a diagnosis of T2DM with CGM prescriptions prior to our intervention to the percentage of patients with T2DM with CGM prescriptions after our intervention. Our goal was to increase the percentage of patients with T2DM who are prescribed CGM by 5%. We increased the percentage of patients with T2DM prescribed a CGM from 3.7% in January of 2024 to 7.4% in December 2024. This was a 3.7% increase, below our goal of a 5% increase. Our interventions spanned the transition into a new academic year and the start of new residents starting their training. This likely played a large role in the impact of our intervention. This project could be taken further with more training and education for residents along with clinic staff and hopefully looking into the impact of increased CGM prescriptions on our patients' A1c and glucose control.

Abstract #291

Evaluation of Post Operative Urinary Retention of Mepivacaine in Patients Undergoing Total Knee or Hip Arthroplasty

Mark Jarosz-Freeman Health System, David Black, Steve Marquardt, Adrienne Carey, Travis Hilburn, Scott Goade

Introduction: Spinal anesthetics are generally preferred over general anesthetics for total knee and hip arthroplasty due to their rapid onset and fewer post-surgical complications. However, one of the most common complications seen is post operative urinary retention (POUR) with reported rates between 10-84% in patients undergoing outpatient orthopedic procedures.(1,2) One of the barriers to performing spinal anesthetics since there is no standardized spinal agent to use for arthroplasty. This study will observe the outcomes of utilizing mepivacaine and record the rates of POUR with the need for additional medication. **Materials and Methods:** This study is a retrospective analysis that was reviewed and approved by the affiliated hospital's Institutional Review Board. The study examined adults who underwent total knee arthroplasties (TKAs) and total hip arthroplasties (THA) between August 2024 - November 2024. Procedures were performed by a single surgeon. Inclusion criteria were the following: individuals >18 years of age; underwent TKA or THA and received mepivacaine as a spinal anesthesia. Data was collected from the hospital's electronic health record and data mining software. **Results:** 198 procedures were performed at that time. 150 met inclusion criteria and 48 individuals were excluded. Only 5 patients received tamsulosin postop for urinary retention and 0 patients received bethanechol. No patient included required a urinary catheter to be placed. **Discussion:** Mepivacaine, being a short acting anesthetic, 1.5 to 2 hours, allows the patient's functions to return quickly making it an ideal agent for same day procedures.(3-5) As this was a retrospective study, analyzing the effects of one agent, no comparisons can be made comparing it to standard treatment or similar acting medications such as bupivacaine. **Conclusion:** Mepivacaine has shown to have a low rate of POUR, making it an ideal agent for lower extremity outpatient procedures such as total knee arthroplasty and total hip arthroplasty.

Abstract #292

"Not So Funny After All: The Neurological Punchline of Nitrous Oxide Abuse"

Sadia Khan- Reid Health Family Medicine, Novera Inam

Introduction: Nitrous oxide, primarily used in the medical field and in the food industry, can cause symptoms of euphoria and analgesia. Recreational use of nitrous oxide is rising, as are reports of its adverse effects. **Case Description:** 20-year-old male presented to the hospital with a 3-week history of progressive weakness and sensory changes in his extremities, starting in the feet and gradually spreading upward. The clinical course raised concern for Guillain-Barré Syndrome. However, diagnostic tests, including an MRI of the brain and lumbar puncture were unremarkable. Patient was treated with IVIG, but his symptoms worsened. A subsequent MRI of the cervical spine the third day revealed dorsal column changes, suggesting myelopathy. The patient volunteered his use of nitrous oxide around the time of symptom onset. This, combined with the MRI findings, pointed to a diagnosis of nitrous oxide-induced B12 deficiency myelopathy. Treatment with methylprednisolone and B12 supplementation led to improvement of symptoms. **Case discussion:** Nitrous oxide is a colorless gas that is used as a sedative for various dental and medical procedures. It is also available for purchase, intended to be used in dispensers to give whipped cream the fluffy consistency found in store-bought cans. When inhaled, nitrous oxide can produce short-lived feelings of euphoria or relaxation. Recreational nitrous oxide use stems all the way back to the late 18th century, shortly after its invention in 1772 by English chemist Joseph Priestly. Nitrous oxide can have sobering consequences, including permanent, full, or partial paralysis. The good news is that the damage can be reversed, but clinicians must be quick to diagnose and appropriately treat patients. **Conclusion:** This case emphasizes the growing need for awareness of nitrous oxide-induced myelopathy, Early diagnosis can significantly improved recovery, especially in young patients who may otherwise be misdiagnosed

Abstract #293

Enhancing HS Care: A QI Project Focused on Early Screening & Diagnosis

Dr. Hannah Kopelman, ADCS- Orlando Dermatology, Aashni Bhukhan, DO, Jessika Sanz, DO, Jere Mammino, DO, FAAD, FAOCD, Suporn Sukpraprut-Braaten, PHD

Introduction: Hidradenitis Suppurativa (HS) is a chronic inflammatory skin condition characterized by recurrent nodules and abscesses in intertriginous areas arising from follicular occlusion and immune dysregulation. Existing HS assessment tools focus on disease severity rather than early detection. The purpose of a questionnaire-based diagnostic screening tool is to assist dermatology providers and primary care providers in earlier identification of HS to ultimately yield improved outcomes. **Methods:** Using the Plan-Do-Study-Act (PDSA) methodology, a multidisciplinary team of healthcare professionals led by dermatology residents was established. The goal is to create a provider-administered screening tool aimed at early identification of HS. **P:** Establish a team and identify screening needs **D:** Conduct a literature review and acquire knowledge from HS dermatology experts to examine relevant diagnostic questions, common HS chief complaints and associated comorbidities **S:** Evaluate existing HS severity tools, published patient-reported questionnaire studies, prevalent symptomatology and current comorbidity screening guidelines **A:** Develop the evidence-based screening tool utilizing expert opinions and literature review **Results:** The team successfully created the screening tool for early detection of HS. We propose the use of this tool as a 2-step process: • **Step 1:** Automated identification of high-risk patients via EMR based on integrated chief complaints and comorbid medical problems entered by staff. • **Step 2:** A positive screen prompts the concise questionnaire targeting diagnosis of HS, followed by a manual process where the healthcare provider gathers more detailed history and physical exam. **Discussion:** Diagnostic delays underscore the need for an efficient tool to identify HS in high-risk populations. The tool aims to reduce diagnostic delays and improve patient outcomes in HS treatment by focusing on early detection. **Conclusion:** This screening tool is designed for dermatology and primary care clinics, focusing on efficiency and integration into clinical workflows.

Abstract #294

Assessing Health Resources in a Rural LGBTQ+ Community

Michael Kulasekera-Freeman Family Medicine, Mariam Akhtar

Introduction: In rural communities, many LGBTQ+ individuals do not receive the care they need locally and have to travel. This study ascertained the number of individuals traveling to receive care and compiled their reasons for doing so. This study was implemented in the rural community of Joplin, MO with an approximate population of 53,000. A survey was conducted to outline how members of the Joplin LGBTQ+ community experience healthcare. **Materials and Methods:** The survey captured healthcare experiences of LGBTQ+ individuals living in Joplin and the surrounding area. The survey included individuals over the age of 18 who self-identified as members of the LGBTQ+ community. The survey included a needs assessment and questions regarding travel and experiences within the medical system. The survey was administered at local events and distributed online using a QR code. **Results:** Between January and October 2024, 27 participants completed the survey. Of these participants, 37% reported traveling outside the Joplin area for LGBTQ+ healthcare services. Of those that traveled, 41.7% reported traveling due to an inability to find LGBTQ-friendly providers. Other reasons for traveling included: unavailable services (20.8%), lack of awareness of services provided (16.7%), and fear of violations of privacy (16.7%). **Discussion:** Traveling for care creates additional barriers for LGBTQ+ individuals looking to access medical services. These barriers include major financial costs such as travel expenses and time away from work. Other individuals do not have the means to travel, further limiting their ability to access necessary care. **Conclusion:** Patients likely find LGBTQ-friendly providers through word of mouth. There needs to be an easier way for patients to find healthcare providers that are LGBTQ-friendly, so that it is no longer a barrier to care.

Abstract #295

Evans Syndrome in a 19-year-old Female

Kelly Langeluttig-Patrick-Freeman *Emergency Medicine*

This case report will cover a 19-year-old female with a history of Evans syndrome that presented to the emergency department with a GCS score of 7. The grandmother provided the history, stating that she had been taken to the bathroom early in the morning when she had a syncopal episode and didn't regain consciousness. Her physical exam revealed dried blood coming out of the ears, nose, and mouth with scattered petechiae and ecchymoses over the entire body. Her labs revealed RBC 3.37, Hgb 9.3, Hct 29.1, and a platelet count of less than 8. Her Brain CT revealed a large intraparenchymal hematoma in the frontoparietal lobe causing right to left midline shift measuring 6mm. She was intubated in the ED, given a platelet transfusion, and had to be transferred to Children's Mercy in Kansas City for surgery. Evans syndrome is a rare disorder in which the body's immune system produces antibodies that mistakenly destroy red blood cells, platelets, and occasionally neutrophils. The cause is idiopathic. The symptoms and severity can vary greatly from one patient to another. The manifestations have the potential to be catastrophic, so being aware of this condition and its signs are vital to identifying and properly treating these patients.

Optimizing Clinical Flow with Order Sheets

Cuong Le-Freeman Family Medicine, Ehab Abdelaziz, Upagya Kompalli, Michael Kulasekera, Andrea Pelate

Introduction: Delayed orders are a hindrance to efficient medical practice and a detriment to a patient's health. Although orders may be placed into an electronic medical record, many components are involved with implementation. These components include calling the clinics or departments to transfer patient's information to schedule referrals or imaging studies. It was theorized that the use of standardized order sheets would decrease the number of delayed orders through improved communication with staff. The order sheet listed common imaging studies available in the health system. The sheet has a designated spot for physicians to communicate referrals. Additionally, the sheet would function as a reminder for the clinical staff to revisit the orders on the following day to complete the task. **Method:** Each current FM resident at the Joplin clinic (n=5) completed the order sheet at the time of the patient's encounter and was collected by the clinic staff. To measure the number of delayed results, a retrospective chart review was conducted through the EMR by tallying the number of "outstanding orders" per month for a duration of 5 months. **Result:** The results indicated a gradual, but significant improvement with an approximately 30% decrease in delayed processing orders after implementing the order sheets. **Discussion:** This study suggests that other outpatient practices could benefit from adopting similar standardized order sheets. **Conclusion:** This study highlights the critical role that standardized order sheets play in improving communication and ensuring timely clinical interventions within a large health system.

Abstract #297

Excimer Laser Keratectomy for Accommodative Esotropia in Spectacle-Aversive Children

James Liu-St Lukes Des Peres Family Medicine, Alex Downey, Nick Faron, James Hoekel, Margaret Reynolds, Lawrence Tychsen

Introduction Excimer laser keratectomy for accommodative esotropia has been explored in limited case series. This study analyzes treatment outcomes in a larger cohort of children and adolescents to assess the efficacy and safety of photorefractive keratectomy (PRK) in reducing hyperopia and improving alignment. **Methods** We retrospectively reviewed clinical data from 84 children and adolescents (147 eyes) treated with PRK for hyperopia. All had either fully or partially accommodative esotropia and experienced difficulties with spectacle or contact lens wear. Among them, 68% had amblyopia, and 81% had at least one neurodevelopmental disorder, such as autism spectrum disorder, cerebral palsy, or developmental delay. Mean age at surgery was 11.5 ± 4.9 years (range: 1–20), with a mean follow-up of 4.4 ± 3.6 years. The primary outcome measures included changes in spherical equivalent refraction (SEQRE), uncorrected and corrected distance visual acuity (UDVA, CDVA), ocular alignment, and the need for additional surgical intervention. **Results** Preoperative SEQRE averaged $+3.9 \pm 1.5$ D (range: +1.0 to +6.75), improving to $+0.6 \pm 1.1$ D at last follow-up. UDVA improved by a mean of 0.36 logMAR, and CDVA by 0.06 logMAR. Preoperative esotropia measured 5.5 PD with glasses and 19.8 PD without. Post-PRK, esotropia without glasses reduced to 2.7 PD. Over 4.4 years, 11.9% required strabismus reoperation, and 5% developed non-degrading paracentral corneal haze. No cases of corneal ectasia, infection, or severe adverse effects were observed. **Discussion** Hyperopic PRK effectively reduces accommodative esotropia in children with spectacle intolerance, improving visual function and quality of life, particularly in those with special needs. The long-term stability of refractive correction and strabismus improvement supports PRK as a viable alternative for select patients. Further studies are warranted to refine patient selection criteria and optimize surgical parameters.

Abstract #298

Stroke or Glioblastoma Multiforme?

Christine Miller, DO-Reid Health Family Medicine

Case Presentation: Patient is a pleasant 63-year-old male who presented to the clinic with his brother for concerns of stroke-like symptoms. His brother stated he was in normal state of health until 1 month prior when he had an abrupt onset of stroke-like symptoms including altered mental status, aphasia, left upper extremity weakness. Patient recalls he remembers a 24-hour period of inability to read, write, recall passwords, as well as inability to move his LUE. The brother stated the patient called him to report his symptoms, however, did not go to the emergency room for evaluation. He has a cardiac history of atrial fibrillation s/p ablation. Elevated blood pressure readings in the office but no diagnosis of hypertension. Physical exam was notable for pleasant male who was otherwise well appearing. Alert and oriented x 4 however becomes confused with conversation. Neuro exam intact. Upper extremity exam unremarkable other mild inability to control the left upper extremity. Basic labs were obtained which were unremarkable. CT Head was obtained which showed a 6 x 5.3 cm lesion in the left parietal lobe with significant vasogenic edema and a 1.1 cm mass effect, mass suspicious for glioblastoma multiforme. The patient was ultimately sent to the emergency department to transfer to an outside facility for neurosurgical evaluation. Discussion: It is very important to consider the differential for altered mental status including stroke vs neoplasm given timeframe of symptoms. The patient had abrupt onset of symptoms, with known past medical history of atrial fibrillation not on coagulation, in the setting of high blood pressure made stroke etiology likely. However, given his extensive timeframe since onset and wax/waning nature of symptoms, neoplasm had to be ruled out. Given the 1.1 cm shift on the CT, neurosurgical intervention was required.

Optimizing a Visiting Rotation in PGY-1 Family Medicine

Robert Morris-Freeman Family Medicine, Kayla Wooldridge, Tammy Wicke, Barbara Miller

Introduction: During PGY-1 year, family medicine (FM) interns from Freeman Health rotate for one month in inpatient pediatrics at Children's Mercy Hospital (CMH) in Kansas City, Missouri. In this rotation, residents rapidly adapt to the following challenges: navigating a new physical hospital and electronic medical record (EMR), participating in formal pediatric rounding with handoffs, and managing work-life imbalance away from home program support. The initial goal of this project was to capture the experience of visiting PGY-1 residents and identify areas for Quality Improvement (QI). **Methods:** Current FM PGY-1s (n=5) were confidentially surveyed with Google Forms about their experience at CMH. **Results:** The data show 80% of interns identified "minimal experience" to "no experience" with inpatient pediatrics prior to this visiting rotation. 100% of interns had "no experience" with the EMR (Cerner), and 80% had "no experience" at the physical hospital. 75% of interns found the "PedsGuide" app as "helpful." 75% of interns responded with "I didn't use it" or "kind of helpful" regarding the "Harriet Lane app" and accompanying "Harriet Lane" textbook. Both "mentorship" and instructional Powerpoint files ("EMR PowerChart", "FM Visiting Rotation") were either "helpful" or "very helpful" to 100% of interns. At the end of the survey, interns were given opportunity to elaborate using open-type about the challenges faced. Previous and newly identified challenges include, 1) work-life imbalance, 2) isolation of being away from the home institution, 3) burden of food costs and budgeting, and 4) EMR learning curve. **Conclusion:** These data suggest several areas for continued QI. The long-term goals of this project are to develop a formal introduction or orientation for FM visiting residents at CMH, provide pre-instruction to Cerner EMR, connect residents with mentors, overlap residents (outgoing-incoming residents), maintain a Google Drive, and create basic wellness goals prior to the visiting rotation.

Abstract #300

Case Series: Laparoscopic Common Bile Duct Exploration

Robert Murrell-St. Mary's Surgery, Dr. Charles Harper

Introduction: Laparoscopic common bile duct exploration (LCBDE) is a minimally invasive surgical procedure utilized to address common bile duct stones, also known as choledocholithiasis. This technique has emerged as a valuable alternative to endoscopic retrograde cholangiopancreatography (ERCP). The advent of LCBDE has revolutionized the management of choledocholithiasis, combining the benefits of laparoscopic surgery with the ability to directly visualize and treat bile duct pathology. This abstract aims to provide an overview of the procedure, discuss two case reports of LCBDE, and discuss the outcomes and implications of this surgical approach. **Cases:** A 37-year-old man with no previous medical history presented to the ED with 2 weeks of right upper quadrant abdominal pain worsened after eating food. An ultrasound obtained in the ED demonstrated cholelithiasis and acute cholecystitis. The decision was made to take the patient to the operating room for robotic cholecystectomy and intraoperative cholangiogram. Intraoperatively, the patient was found to have choledocholithiasis. The decision was then made to perform common bile duct exploration. A 37-year-old man with previous medical history of gastric bypass presented to the ED with complaint of epigastric abdominal pain after eating Mexican food. During his workup, he was found to have cholelithiasis and gallbladder wall thickening. Additionally, an MRCP was obtained which showed small stones and debris in the common bile duct. We considered performing laparoscopic assisted ERCP versus laparoscopic common bile duct exploration. **Discussion:** Laparoscopic common bile duct exploration offers several advantages over traditional open surgery and ERCP. The minimally invasive nature of the procedure results in reduced postoperative pain, shorter hospital stays, and faster recovery times. Additionally, LCBDE allows for direct visualization and extraction of stones, providing a definitive treatment for choledocholithiasis.

Catastrophic Traumatic Injury of the Aortic Valve After Skiing Accident: A Case Report of Survival

Mollie Mustoe-St. Anthony Surgery, Maximilien Bergman, Shyanie Kumar

Refractory hypotension and sinus tachycardia in severe chest trauma should raise suspicion for blunt cardiac injury. Aortic valve rupture is rare and carries high mortality. This is a case report of acute cardiogenic shock due to aortic valve cusp rupture from blunt chest trauma. A 67-year-old male skier attempted a backflip off a 60-foot jump. He suffered bilateral rib, pelvic, femur, and unstable spine fractures. On arrival to our Level One Trauma center the patient became profoundly tachycardic and hypotensive. Physical examination revealed a diastolic murmur, imaging was negative for hemorrhage, and EKG was normal. Transthoracic echocardiography revealed acute severe aortic insufficiency with valve rupture. Cardiac surgery was consulted. Due to hemodynamic instability, worsening respiratory status, and risk of expanding epidural hematoma, the consensus was to proceed with transcatheter aortic valve replacement. Intra-operative transesophageal echo revealed rupture of both the non-coronary and right coronary cusps of the aortic valve. Valve deployment was complicated by hemodynamic collapse with ventricular fibrillation. Aortic root angiogram demonstrated occlusion of the left main coronary artery. The patient was emergently placed onto cardiopulmonary bypass and underwent sternotomy. A torn cusp of the non-coronary leaflet was found to have occluded the left main coronary artery, resulting in arrest. The valve was successfully replaced, mechanical left ventricular support was temporarily required, and he later underwent spine and femur fixation. Left ventricular function recovered and the patient was discharged neurologically intact to a rehabilitation facility 46 days later. Blunt cardiac injury resulting in aortic valve rupture with acute cardiogenic shock is rare. To our knowledge, there is no published evidence of survival following traumatic rupture of two aortic valve cusps and discharge from the hospital neurologically intact with normal cardiac function. High index of suspicion, accurate diagnosis, and urgent operative intervention are imperative for improving survival.

Abstract #302

When Wellbutrin is a Risk to Wellness

Vivien Nsonwu, MD-Reid Health Family Medicine, Novera Inam, MD

Objective: The inhibition of dopamine and norepinephrine reuptake by Wellbutrin can lead to side effects such as agitation, anxiety, and psychosis. Stroke patients are more susceptible to these effects considering history of brain injury. **Case Presentation:** Patient is a 59 year-old male with past medical history of left MCA who presented to his Neurologist after experiencing worsening expressive aphasia, irritability, and generalized weakness leading to falls. He had similar symptoms after his stroke in 2004, however they had been managed for years with therapy and start of appropriate medications. So why would symptoms return in 2024? The most significant change noted that year was the start of Wellbutrin by a mental health provider in late-March. Recalling a similar situation when the patient was started on Effexor, the Neurologist recommended discontinuation of Wellbutrin with close follow up. The patient later reported that his symptoms resolved within five days of discontinuing the medication.

Discussion: Rehabilitation following stroke is often complicated by the presence of depressive disorders, with a prevalence as high as 40%. Consequently, many post-stroke patients are likely to receive treatment with antidepressive medications. However, use of certain antidepressants like Wellbutrin requires close monitoring as post-stroke patients are at increased risk of serious side effects. These include hypertension, postural hypotension (increasing risk of falls), seizures, and neuropsychiatric symptoms. In this case, our patient exhibited hypotensive and multiple neuropsychiatric symptoms in the months after starting Wellbutrin. In light of significant past medical history, decision to discontinue Wellbutrin should be made quickly before other side effects can arise. **Conclusion:** Though Wellbutrin is a useful drug that is becoming more common for treatment of patients with depression and tobacco dependence, there needs to be vast knowledge of possible side effects and thorough review of a patient's medical history before deciding to start the medication.

Abstract #303

"Sweet Victory Turns Sour: A Case of EDKA with SGLT2 Inhibitors"

Victor Odoma-Reid Health Family Medicine

Introduction: Sodium-glucose cotransporter 2 (SGLT2) inhibitors, is indicated for heart failure, Chronic renal failure and DM. However, there are side effects that should not be ignored. Case: 82-year-old female with a significant medical history of asthma, coronary artery disease, Atrial fibrillation (A-fib) presented with complaints of chest pain and shortness of breath. In the Emergency Department (ED), Electrocardiogram (EKG) shows A-fib with Rapid ventricular rate (RVR), chest x-ray shows cardiomegaly, and CT chest shows small left pleural effusion. BMP shows potassium of 3.3, BUN of 11, and creatinine of 1.0. Glucose of 105. While in hospital, cardioversion was attempted. On day 3, the patient was started on Dapagliflozin (SGLT2 inhibitor). On day 5, the patient started developing Acute kidney injury (AKI) with increased anion gap metabolic acidosis and hyperkalemia. On day 6, the patient started improving with the cessation of Dapagliflozin (Farxiga®), fluid resuscitation, intravenous D50, insulin, and bicarb administration. On day 7, the patient fully recovered from EDKA. Discussion: Canagliflozin, the prototype SGLT2 inhibitor, was approved in 2013 for use in type 2 diabetes. The U.S. Food and Drug Administration (FDA) Adverse Event Reporting System database accumulated 20 cases of acute ketoacidosis over 18 months (from March 2013 to June 2014) FDA released a "black box" warning in May 2015 regarding SGLT2 inhibitors. EDKA is an uncommon, acute, life-threatening condition marked by euglycemia, metabolic acidosis, and ketoacidosis. The diagnosis of EDKA is frequently missed due to the lack of hyperglycemia, in contrast to DKA. Conclusion: SGLT2 inhibitors have rapidly established themselves as a cornerstone in the treatment of diabetes and heart failure. Physicians must be proficient in EDKA and its triggering variables to educate patients on the signs and management of EDKA in patients using SGLT2 inhibitors.

Abstract #304

FDG-Avid Calcification of Cervical Lymph Nodes Post Chemoradiotherapy Mimicking Oropharyngeal Squamous Cell Carcinoma Cancer Recurrence: A Case Report

Alex Otto-Freeman ENT

Head and neck squamous cell carcinoma (HNSCC) pose significant diagnostic challenges due to their propensity for recurrence and metastasis. While PET-CT imaging plays a critical role in disease surveillance, its interpretation remains complex. In the context of post-radiation changes, such as lymph node calcification, it can become challenging to discern true recurrence versus metastatic mimicry. We report a case of a 41-year-old African American male who initially presented with a sore throat, hoarseness, and neck swelling. Given the concern for malignancy of the oropharynx, a biopsy was obtained and confirmed HPV-positive (p16+) oropharyngeal squamous cell carcinoma (OSCC). Following treatment with concurrent chemotherapy and radiation, PET-CT imaging revealed calcified cervical lymph nodes with avid uptake suspicious for disease recurrence. The patient underwent bilateral modified radical neck dissection which ultimately revealed a benign diagnosis of lymphadenopathy. We highlight the complexity of diagnosing HNSCC recurrence amidst post-radiation changes. An understanding of the limitations of PET-CT in these circumstances is necessary for accurate diagnosis as well as optimal long-term management and outcomes.

Abstract #305

A rare case of well-differentiated spindle cell liposarcoma of the larynx in a patient with a history of a benign laryngeal lesion

Alex Otto-Freeman ENT, Megan Watson, Randall Hansen, Kent McIntire

Liposarcomas of the larynx are rare, with less than 50 cases in the literature. While liposarcomas are malignant soft tissue masses, they can often present similarly to benign conditions, such as lipomas when they appear in the larynx. Liposarcomas require both histologic studies and positive expression of CD34 and MDM2 amplification to diagnose. Only one case in the literature describes a well-differentiated spindle cell liposarcoma, with spindle cells intermixed with adipocytes and myxoid features on pathology. We present a 74-year-old male presenting with dysphagia for two months who had a history of a benign laryngeal lesion removed many years prior. Nasal endoscopy presented a benign-looking supraglottic lesion that obstructed the view of the right vocal cord without affecting cord motion or position, consistent with a recurrent internal laryngocele, lipoma, or saccular cyst. The patient underwent excision by direct microlaryngoscopy with a CO₂ laser without difficulty, and his postoperative course was unremarkable. However, the histologic studies revealed significant proliferation of spindle cells within some myxoid fibrous stroma, and further evaluation demonstrated positivity for CD34 expression and amplification of the MDM2 gene. A diagnosis of well-differentiated spindle cell liposarcoma was made as a result. Treatment of these lesions is primarily wide local excision, and due to high rates of recurrence, regular postoperative surveillance is necessary. The patient has done well after surgery and will be monitored in accordance with the standard of care. From this case, it can be concluded that liposarcomas of the larynx should be part of the differential diagnosis of laryngeal masses, even when they appear benign. Research for risk factors as well as the prognosis of laryngeal liposarcomas is limited, and further studies are needed to better understand these topics and how they affect the diagnosis and treatment of laryngeal liposarcomas.

Abstract #306

The case of a 60-year-old female with a suspected GI bleed and Hermansky-Pudlak Syndrome

John Phillips-Freeman Emergency Medicine

Hermansky-Pudlak Syndrome (HPS) is relatively rare, with an estimated prevalence of about 1 in 500,000 to 1,000,000 individuals worldwide. HPS is an autosomal recessive disorder characterized by oculocutaneous albinism, platelet dysfunction, and pulmonary fibrosis. Notably, HPS is associated with mucosal bleeding due to a failure in platelet activation, resulting from a 16 base pair duplication in the AP3B1 gene. I present a case of a 60-year-old female with a known history of HPS that presented to the emergency department with a chief complaint of rectal bleeding. The patient reported recurrent episodes of rectal bleeding over the past few years. On physical examination, she exhibited skin pallor, horizontal nystagmus, and decreased visual acuity, all of which are consistent with the manifestations of HPS. Initial laboratory results showed a normal platelet count, and mild anemia was present. These findings were not immediately concerning in isolation. However, in the context of HPS, such presentations can be misleading, as the platelet dysfunction inherent in the syndrome may not be evident in standard blood work. This makes the diagnosis challenging in an emergency setting. The patient was managed conservatively with supportive care, including a platelet transfusion. This case highlights the importance of considering HPS in patients presenting with recurrent mucosal bleeding, particularly in the emergency department, where subtle findings can be easily overlooked.

Abstract #307

Missed Acute Traumatic Central Cord Syndrome in a 36-Year-Old Female Initially Presenting with Syncope

Dr. Michael Phillips -Freeman Emergency Medicine

Central Cord Syndrome (CCS) is a common incomplete spinal cord injury, typically presenting with predominant upper extremity weakness, with less severe sensory and bladder dysfunction. It is often associated with hyperextension injuries of the neck, as well as tumors, vascular abnormalities, and cavitation within the spinal cord. Acute traumatic CCS is more frequently observed in patients over 50 years of age with underlying spinal stenosis. However, CCS can also occur in younger individuals following trauma. This case describes a 36-year-old female who initially presented with syncope and was subsequently found to have acute traumatic CCS. The patient's presentation was initially misdiagnosed, as syncope was the primary complaint and there was no immediate recognition of spinal cord injury. Key findings such as upper extremity weakness, particularly in the hands and arms, were not promptly identified. The pathophysiology of CCS involves damage to the central portion of the spinal cord, typically affecting the corticospinal and spinothalamic tracts. Missed diagnosis and delayed treatment can result in permanent neurological impairment, including weakness and functional disability. We highlight the importance of thorough history-taking and physical examination, especially in trauma cases. Early recognition of CCS is critical for optimal management, which may include immobilization, surgical intervention, and rehabilitation. Failure to diagnose can lead to long-term complications and worsened outcomes. Take-home message: If a patient is unable to remove their own cervical collar, consider Central Cord Syndrome

Abstract #308

Subcutaneous metastasis of high-grade neuroendocrine tumor: A Case Report

Jesse Rincon-St. Mary's Surgery, Dr. Adam Swiger

This is a case reports of a 67 F with a past medical history of skin cancer, hyperlipidemia, hypertension and 1 ppd smoker for 25 years who presented as a referral for evaluation of a expanding soft tissue mass located on the right temporal region. The patient reports she first noticed the right temporal mass approximately 3 weeks prior to being seen in clinic. She was originally prescribed oral antibiotics and reported little to no effect. A follow up Ultrasound was obtained and demonstrated an oval hypoechoic solid lesion measuring 2.7 x 2.2 x 1.2 cm. It was determined to be non-specific and indeterminate as to if this was a regional lymph node or mesenchymal solid nodule. Doppler flow as identified and as such was uncharacteristic for a simple lipoma. She was taken for excision of right temple soft tissue mass and during surgery a cystic mass with necrotic components was identified deep to the temporals muscle. This was sent for pathological examination and found to be consistent with high-grade neuroendocrine carcinoma with extensive necrosis. Approximately one week later she presented with right-sided paresthesias and weakness. A CT head, chest, abdomen and pelvis were obtained and demonstrated right frontal lobe mass, metastatic lesions at the level of C7 and throughout the thoracic spine, a large right lower lobe lesion with right hilar and mediastinal adenopathy, left upper lobe pulmonary nodule with metastasis to the liver and right adrenal gland. Recent literature has described an increased incidence of neuroendocrine tumors (NETs). Among grade groups, prevalence increased the most with GI NETs and amount sites, prevalence was highest in the rectum, followed by the lung and small intestine. This case reports will further discuss the incidence, typical presentation, and workup for atypical neuroendocrine tumors presentations.

Swallow at Your Own Risk: The Rise of Eosinophilic Esophagitis

Natalia Rosca-Reid *Health Family Medicine*, Dr. Novera Inam, MD

Introduction: Dysphagia can be a diagnostic puzzle with various differentials. One increasingly recognized cause is eosinophilic esophagitis. **Case Description:** A 34-year-old male presented with a two-week history of dysphagia primarily affecting solids. He reported a longstanding issue with swallowing both solids and liquids, consuming mostly soft foods for the past two years due to persistent symptoms. His condition worsened over the last two weeks. The patient denied weight loss, hemoptysis, melena, vomiting, or abdominal pain.

Esophagogastroduodenoscopy revealed multiple esophageal rings and a lower esophageal stricture, which was successfully dilated. Histopathological examination showed eosinophils focally up to 25 per high-power field. The patient was diagnosed with EOE and discharged. At a one-year follow-up, the patient reported good symptomatic control. **Discussion:** EoE is a relatively young disease; the first cases were described in the 1970s as a form of eosinophilic gastroenteritis with esophageal involvement. Given its increasing incidence, it is now a leading cause of dysphagia and food impaction in the United States. Eosinophilic esophagitis is most common in men and has a high concurrence rate with other atopic conditions like allergic rhinitis and bronchial asthma. The initial presentation includes symptoms of esophageal dysfunction and solid-food dysphagia. Without treatment, inflammation can progress to fibrosis with the formation of strictures. It is a clinicopathologic disease requiring compatible clinical symptoms and histologic evidence of eosinophil-predominant inflammation of the esophageal epithelium with more than 15 eosinophils per high-power field. The mainstay of management includes the three Ds (diet, drugs, and dilation). Untreated can have a spectrum of complications, including perforation. Timely diagnosis and intervention have long-term impacts, as in the case of our patient. **Conclusion:** EOE incidence is rising partly due to heightened awareness. As primary care physicians, we should be familiar with this common scenario.

Abstract #310

“Cardiac Imposter: When a Tumor Mimics Heart Failure”

Vivek Roy, MD-Reid Health Family Medicine

Abstract Objective: “Dyspnea with exertion”, a common presentation to our clinics. However, can have a long list of differentials. Case: 73-year-old Caucasian female with a known medical history of Atrial fibrillation, carotid artery stenosis presented to the ED with a 4-day history of dyspnea and pleuritic chest pain. Hemodynamically stable. Physical examination was unremarkable. Pertinent labs include Hb 7.7 g/dL, Hct 24.7%, BNP level of 799, troponin 0.15, 0.13, 0.18, EKG demonstrates sinus rhythm with borderline ST depression diffusely. Cardiology involved, Transthoracic Echo showed an EF of 55-65 %, mitral valve regurgitation and large fixed mass in the atrial cavity. Transesophageal echo demonstrates solid mass within LA measuring 3.3 X 4.9 X 3 cm. Diagnosis of LA myxoma was made and consulted CT surgery. Discussion: Myxomas are the most common primary cardiac tumor. Cardiac tumors may be symptomatic or found incidentally during evaluation for a seemingly unrelated problem or physical finding. Since symptoms may mimic other cardiac conditions, the clinical challenge is to consider the possibility of a cardiac tumor so that the appropriate diagnostic test(s) can be conducted. The specific signs and symptoms of cardiac tumors generally are determined by the location of the tumor in the heart and not by its histopathology. Atrial myxoma are rare and 75% of the cases occur in the Left Atrium. Mostly CT surgery will resolve the tumor, however there is a high chance of recurrence. Conclusion: Atrial myxoma is a rare disease but has a broad clinical presentation and complication that involves several systems- heart, lungs, brain, and systemic. Timely diagnosis requires a high index of suspicion in patients presenting with presumably common complaints.

Monkeypox Presenting as Periorbital Cellulitis: A Case Report

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Introduction: Monkeypox, a viral disease caused by the monkeypox virus is well known for its characteristic rash with macular, papular, and vesicular stages. Although the skin is one of the most affected organs by monkeypox, the virus can also impact the respiratory, ophthalmologic, genitourinary, and gastrointestinal systems, among others. It is extremely common for the disease to begin with flu-like symptoms in the prodromal phase before cutaneous manifestations emerge. **Case:** A 38-year-old female presented to the hospital as a transfer for management of periorbital cellulitis. The patient presented with elevated blood pressure along with significant erythema and swelling on the right upper and lower eyelid. Symptoms started one week prior with periorbital swelling, erythema, lacrimation, and pain. An MRI of the face and neck showed pronounced periorbital cellulitis. Over the course of her hospitalization, she developed erythematous papules along the medial periorbital skin on the affected side along with similar scattered vesicular lesions on her upper extremities, lower extremities, and abdomen. The lesions ranged from 2-3 mm in size and appeared vesicular with an overlying crust. After she tested negative for HSV, varicella zoster, and HIV, a monkeypox PCR was ordered and she was discharged on oral valacyclovir and amoxicillin/clavulanate. After her discharge, her PCR results reported positive for monkeypox, and she reported no residual periorbital erythema after 3 weeks of antibiotic and antiviral treatment. **Discussion:** This case is unique in its atypical presentation of periorbital cellulitis preceding the development of skin lesions, stressing the importance of keeping monkeypox on the list of differential diagnoses when evaluating a patient presenting in a similar way. A detailed examination of oral, ocular, and anogenital mucosal membranes is necessary for a comprehensive workup when considering communicable etiologies.

Patient Education on using NSAID to Reduce Opioid use Post-surgery

Dr. Karson Schroeder PGY1- *St Mary's Surgery*, Dr. Adam Kramer DO, Dr. Charles Harper DO, Dr. Adam Swiger DO, Dr. Ben Murrell, Dr. Jesse Rincon, Dr. Jake Wiepen, Dr. Matt Hentges, Dr. Augustine Nguyen, Suporn Sukpraprut-Braaten PhD

Introduction: The opioid epidemic and misuse of unused opioid prescriptions are concerns for physicians. A study showed US patients have significantly higher opioid prescriptions than non-US patients for common general surgery. This study will evaluate if incorporating NSAID or acetaminophen (Tylenol) would reduce opioid need for post-operative pain management after appendectomy, cholecystectomy, or inguinal hernia repair. **Methods/Materials:** Using the Plan-Do-Study-Act, a team of healthcare professionals led by general surgery residents was created. The goal was to evaluate the need for opioids post-operatively. **P:** Establish a team and create a survey to evaluate opioid use post-operatively. **D:** Administer the survey regarding the use of NSAID, acetaminophen, or opioids post-operatively. **S:** Evaluate patients' post-operative use of opioids as pain management regimens 1. Total opioid use 2. Number of opioid pills taken within 7 days post-operatively 3. Unused opioid pills left from the prescription **A:** Analyze the survey data to determine if patients do require opioids for common general surgery procedures by dividing patients into groups: Group 1: Without taking NSAID or acetaminophen Group 2: Without taking NSAID, but taking acetaminophen Group 3: Taking NSAID but not taking acetaminophen Group 4: Taking both NSAID and acetaminophen **Results:** A total of 169 patients who underwent standard general surgery procedures were included. • Patients in group 2 took 2.3 fewer opioid pills in total on average than group 1 ($p=0.208$) after controlling for surgery technique and history of opioid use. • Patients in group 2 took 1.4 fewer opioid pills within 7 days post-operation than group 1 ($p=0.284$). • Patients in group 3 has fewer unused opioid pills left from the prescription than group 1 ($p=0.740$). • The results may not show statistical significance, but incorporating NSAID and acetaminophen in post-operative pain management may reduce opioid use and the number of unused opioid pills in clinical practice.

Abstract #313

"Playing Hide and Bleed: The Mystery of Dieulafoy Lesions"

Rohit Shrestha-KCU Reid Health Family Medicine

Dieulafoy's lesion is a rare cause of gastrointestinal bleeding, characterized by an aberrant, tortuous submucosal artery that erodes the overlying epithelium. Upper gastrointestinal bleeding (UGIB) is common, but its diagnosis is often complex and challenging, requiring thorough evaluation. **Case Description:** We report the case of an 85-year-old male with a medical history including hypertension, coronary artery disease, heart failure with reduced ejection fraction (HfrEF), hyperlipidemia, anemia, and GERD, who was admitted for an upper GI bleed. Initial diagnostic tests, including a red blood cell-tagged nuclear scan and endoscopy, revealed a large hiatal hernia with gastric erosions, but no active bleeding in the duodenum. However, abdominal CT angiography later confirmed active bleeding in the second part of the duodenum, consistent with Dieulafoy's lesion. The patient underwent embolization of the gastroduodenal artery and received proton pump inhibitors and 10 units of packed red blood cells. He was later transferred to a tertiary facility for further management. **Discussion:** Dieulafoy's lesion, first described in the early 20th century, is a rare cause of recurrent gastrointestinal bleeding. The lesion consists of a dilated submucosal vessel that erodes the overlying epithelium without a primary ulcer. It most often occurs in the proximal stomach but can also affect the duodenum. Dieulafoy's lesions should be considered in the differential diagnosis of UGIB when more common causes, such as peptic ulcers, are excluded. Endoscopic evaluation may show a characteristic shallow ulcer or a raised nipple-like lesion. Management typically involves endoscopic hemostasis, with surgery reserved for refractory cases. **Conclusion:** Dieulafoy's lesion, though rare, is an important cause of UGIB, requiring early recognition for effective treatment.

Abstract #314

Quite the Headache: A case of spontaneous bilateral subdural hygromas in a newborn

Jesse Smallwood-Reid Health Family Medicine

Objective: Reflux and vomiting in an infant may be an isolated herald of increased ICP. **Case Presentation:** A 5-month-old male ex-premature infant presented to the Emergency Department with episodes of vomiting presumed to be gastroenteritis and evaluation ruled out causes of gastrointestinal obstruction. The patient was discharged home and presented to his primary care office with persistent projectile vomiting, macrocephaly, strabismus, and bulging fontanelles. He was sent to the Emergency Department for reevaluation where CT imaging revealed subdural hygromas and coagulated subdural hematomas. The patient was transferred to higher level institution with pediatric neurosurgery and ophthalmology consulted. Repeat imaging revealed minimal rightward midline deviation with stable subdural hygromas and ophthalmology evaluation showed optic nerve edema. Skeletal Survey to evaluate for NAT was without fracture. He was taken to the Operating Room with burr holes placed with subdural drains. Subdural fluid was collected for analysis. Analysis yielded no growth on culture, and only mild protein. The patient was discharged after repeat CT revealed stable hygromas. **Discussion:** Subdural Hematomas in infants occurs most often due to non-accidental trauma (NAT). Suture closure begins at 2 months of age, making infants susceptible to increased ICP even with small accumulations. Premature infants in particular are susceptible to spontaneous hematomas due to fragile cerebral vasculature, systemic infection and coagulopathy. Evaluation for NAT is paramount. Infants may present with bulging fontanelles, oculomotor abnormalities, and persistent vomiting as signs of increased intracranial pressure. Management includes evacuation with burr holes to prevent hygroma formation, fluid analysis, and treatment of the underlying cause. In this case, the original hematoma was likely due to microtrauma and ICP due to old hematoma with subsequent CSF hygromas. **Conclusion:** It is easy for physicians to presume vomiting infants to be self-limited. Having a higher index of suspicion however can catch increased ICP requiring intervention.

Abstract #315

Acetaminophen-Induced Hepatotoxicity: The Need for Vigilance and Rapid Response

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Introduction: Acute liver failure from acetaminophen toxicity is a life-threatening condition requires timely intervention. Readily available and being Over the counter, acetaminophen is a wolf in lamb's clothing. Case report: 53 y.o. old female with Crohn's disease, and limited health access presented with acute on chronic abdominal pain and diarrhea. She regularly uses acetaminophen, however had taken 12-16 acetaminophen pills the night before admission. On admission AST,ALT elevated 414 and639 respectively. Previous AST, ALT normal. CT abdomen showed no acute findings. Lactic acidosis noted initially that resolved. Overnight AST, ALT trended up to 1862 , 2496 respectively. INR elevated at 1.56. Meld score 14. Acetaminophen level initially 19, dropping below 1. Poison control involved. NAC was initiated.GI involved, patient transfer to facility with higher level of care. She continued NAC during her stay at tertiary center, with improving aminase levels that normalized at discharge. Discussion: Since its clinical introduction in 1955, Acetaminophen, has become the most widely used analgesic-antipyretic in the United States. Although the drug is considered safe when taken at usual therapeutic doses (up to 4000 mg every 24 hours), overdose of acetaminophen has been recognized since 1966 to cause fatal and nonfatal hepatic necrosis. Even repeated therapeutic or slightly excessive doses can be hepatotoxic in susceptible individuals. Acetaminophen is the most common cause of acute liver failure in the United States, accounting for 50 percent of all reported cases and approximately 20 percent of liver transplant cases. Treatment include Activated Charcoal, If the ingestion occurred within a few hours, N-acetylcysteine and Liver transplantation. Starting with first and foremost "early recognition" and appropriate management. Conclusion: Acetaminophen toxicity can lead to severe liver damage. Early N-acetylcysteine (NAC) administration is crucial for preventing liver damage and improve outcomes.

Abstract #316

Enhancing Psychiatry Residents' Knowledge and Comfort with Clozapine Prescribing Through Educational Interventions

Dr. Alexander Hunter-Ozark Center Psychiatry , Dr. Jennifer Stettler, Dr. Nicholas Mccarroll, Dr. Nauman Ashraf

This quality improvement (QI) study aims to educate residents about clozapine, including how and when to prescribe it. The project also addresses the significance of the Clozapine REMS ending. Clozapine is an effective antipsychotic medication, but its use is often limited due to stringent monitoring requirements and concerns about side effects. With the REMS program recently discontinued, it is crucial to ensure that psychiatrists are well-informed about clozapine's benefits, risks, and monitoring requirements. The QI study discussed in the current study included an educational intervention for psychiatry residents. A pre-test was administered before the intervention, followed by educational sessions covering various aspects of clozapine, including its mechanism of action, pharmacokinetics, FDA-approved uses, off-label uses, dosing guidelines, side effects, contraindications, and monitoring requirements. A post-test was administered after the intervention to assess the improvement in knowledge. Statistical analyses, specifically a paired t-test will be run to determine if the educational intervention improved resident knowledge base and comfortability of clozapine prescribing. The data is still currently being collected to determine if our educational intervention was effective. This project provides information on the benefits of clozapine, such as improving negative symptoms, aggressiveness, cognitive dysfunction, and affective symptoms. It also reviews the cost-effectiveness of clozapine and its potential as a good option for patients who develop tardive dyskinesia (TD). The presentation includes case-based examples to illustrate the practical application of clozapine in different clinical scenarios. One example highlights the importance of considering smoking patterns when adjusting clozapine doses. Educating residents about clozapine can improve their knowledge and confidence in prescribing this medication. Emphasizing the monitoring guidelines and side effect management strategies may help increase appropriate clozapine use and improve patient outcomes.

Mollaret Meningitis: A rare and under-appreciated syndrome

Salecah Rahmat Ullah-Reid *Health Family Medicine*

Objective: Mollaret Meningitis is an extremely rare and under-discussed disease. It is benign recurrent aseptic meningitis characterized by recurring, self-limited episodes of aseptic meningitis. The episodes of recurrent meningitis are physically and emotionally debilitating for these patients. **Case presentation:** 50-year-old female with a past medical history of depression, hypertension, and multiple episodes of meningitis presented with reports of headache, neck stiffness, body aches, and nausea. The patient stated symptoms started 2 days ago and have gotten worse since then. The patient reported similar symptoms in the past when she was diagnosed with meningitis. On Physical exam, she had a low-grade fever and neck stiffness. CT head without contrast showed no acute intracranial process. CSF analysis is significant for protein 110, WBC 392, 89% monocytes, and PCR positive for herpes simplex virus 2. She was treated with IV Acyclovir in the hospital and was discharged on the second day after significant improvement. She was given a 14-day course of oral Acyclovir on discharge. **Discussion:** Mollaret meningitis is a Recurrent benign lymphocytic meningitis that was first described by the French neurologist Pierre Mollaret in 1944. The word 'Mollaret' is derived from Mollaret (epithelial) cells seen in CSF in the first 24 hours of the disease. In our patient, this was the 4th episode of meningitis since 2009. It was confirmed by PCR positive for HSV 2 in CSF. It is typically characterized by fever and signs of meningeal irritation lasting up to 5 days, with spontaneous recovery. HSV-2 has been responsible for the majority of cases, with few cases caused by HSV-1 and Epstein–Barr virus. Early diagnosis prevents prolonged hospital admissions. The disease is usually benign and does not cause long-term sequelae.

Abstract #318

Gallbladder Neuroendocrine Tumor

Jacob Wiepen- *St. Mary's Surgery*, Dania Shoaib

We will be discussing a case of a patient initially presenting with acalculous cholecystitis. Patient subsequently underwent laparoscopic cholecystectomy. Pathology indicated positive cystic duct margin for neuroendocrine tumor. Gallbladder neuroendocrine tumors represent a rare form of biliary tumors. This presentation will include case discussion and proposed management strategies of this rare pathology.

Summer Student Research Fellowships

Abstract#319

Integration and frequency usage data of 3D printing technologies

Hima Patel*, Brandon Chow, Brandon Shin, William Hermann, Jessica Villela, Melissa Zolnierz, PhD, Aaron David
***Presenting author**

The integration of 3D printing into medical and dental education offers a hands-on learning experience, yet challenges remain regarding accessibility and effective implementation. This study evaluated the frequency of 3D printing usage and student preferences when granted access to stereolithography (SLA) and fused deposition modeling (FDM) printers. First- and second-year medical and dental students were provided with pre-selected anatomical and non-anatomical models relevant to their curriculum and were trained either in-person or virtually before printing. Results showed that SLA printers were predominantly used for anatomical models, while FDM printers were preferred for non-anatomical models ($p = 3.84E-6$). Additionally, students who received in-person training demonstrated a significantly higher print success rate compared to those trained virtually ($p = 0.036$). While no overall differences in failure rates were observed between SLA and FDM, model type and training modality influenced outcomes. These findings highlight the effectiveness of SLA and FDM printing in medical education and underscore the importance of in-person training for skill acquisition. SLA printers' capability to produce highly detailed anatomical structures makes them a preferred educational tool, whereas FDM printers are favored for rapid, general-purpose printing. This study suggests that structured training and access to 3D printing technologies can enhance student engagement and learning outcomes in medical and dental curricula.

Abstract #320

Establishing novel salivary flow cell capabilities to study the oral microbiome

Philip Yusuf*, Dennis Wolff, Amolika Saini

***Presenting author**

Facultative anaerobe *Streptococcus mutans* significantly contributes to tooth decay due to localized acid production (sustained pH < 5.5 erodes tooth enamel), but caries also occur in its absence. More than 600 species of microorganisms live in the oral cavity where they have found a niche in which they can proliferate and form biofilms resistant to cleansing by normal flushing of the teeth with salivary enzymes (e.g., amylase, lipase). Typical laboratory cell culture conditions utilize 5% CO₂ in room air at 37 ° C, but many other microenvironments exist in the oral cavity. Expired air has 5% CO₂ while many oral surfaces are exposed to inspired air with only 0.04% CO₂. Similarly, while O₂ is about 19.3% in Joplin inspired air it normally falls to about 5% in spaces surrounded by well-vascularized tissues and is likely much lower (e.g., 1%) in avascular pockets filled with debris. While normal body temperature (T) is ~37 ° C, some oral surfaces will be cooler due to exposure to room temperature air. We therefore built a portable microincubator to regulate set points for O₂, CO₂, and T within these physiological ranges to better study oral microbes in their normal environment. Nutrients for much of the oral microbiome are derived from saliva supplemented with remnant sugars, starches, proteins, and fats from ingested food. Oral microbiome biofilm formation has typically been studied in small flow cells seeded with a few strains of oral microbes and then fed with a steady supply of diluted saliva. We have designed a small 20x40x2.5mm flow chamber in which an optically clear gel sandwiched between 2 coverslips has 4 parallel lanes with supply ports to add selected nutrients. By perfusing at a slow rate, we can observe how different microbial communities survive once their preferred nutrients are depleted.

Abstract #321

Effects of PXR Activation on Cancer Cell Viability

Chi Pham*, Bradley Creamer, PhD

***Presenting author**

Pregnane X Receptor (PXR) is a nuclear receptor found in various tissues including liver, colorectal, breast, and is activated by xenobiotic or endobiotic ligands, sequentially regulating the expression of genes involved in drug metabolism and cell cycle regulation. Due to its involvement in cell viability and proliferation, PXR has been of particular interest to researchers studying the pathogenesis of various cancer types, in which the implication between PXR and chemotherapeutic resistance is suggested. To elucidate relationships between specific cancer cell lines and their response to PXR activation, we conducted a viability experiment using LS180 (colorectal cancer) and T-47D (breast cancer) cells with endogenous (LS180) and exogenous (T-47D) PXR expression. Cells were seeded at an initial density of 5000 cells/well overnight, and at 24 hours were treated with various PXR agonists (SR12813 and/or rifampicin. The cells were subsequently treated with a chemotherapeutic agent (doxorubicin or cisplatin) or vehicle (DMSO). An alamarBlue assay was run for each group at 72-hour post treatment to identify the half-maximal inhibitory concentration (IC₅₀) values. Our experiment revealed that the addition of a PXR agonist appears to lower the chemotherapeutic agent's IC₅₀ value in both LS180 and T-47D compared to the control groups. This experiment potentially demonstrates the pro-apoptotic effect of PXR activation in cancer cells LS-180 and T-47D as both cell lines exhibited a higher sensitivity for the selected therapeutic agents' cytotoxicity. However, due to potential technical errors and a lack of reproducible data, this observation needs to be further correlated with future experiments. Nonetheless, unveiling the regulatory roles of PXR in cancer in general and breast cancer in specific can help advance efforts in modulating cell response to therapeutic agents and targeted therapy.

Abstract #322

Pathway of Genetic Load Analysis Within a High-Risk Population in Nigeria to Analyze Genetic Risk for Developing Kernicterus

Katie Bussard-Serrano*, Yuristika Salsabila, Nataliya Kibiryeveva, MD, Douglas C. Bittel, PhD, Sean Riordan, PhD, JB Le Pichon MD, PhD

***Presenting author**

Access to healthcare, patient education, and prompt treatment with light therapy or blood transfusions can prevent hyperbilirubinemia from progressing to Acute Bilirubin Encephalopathy (ABE) or Kernicterus Spectrum Disorder (KSD). However, in many developing countries, such as Sub-Saharan Africa, Southeast Asia, and parts of China, hyperbilirubinemia remains a leading cause of lifelong disability. When a newborn's body cannot process bilirubin properly, excess levels of free, lipid-soluble bilirubin accumulate and can cross the blood-brain barrier, causing neurotoxic brain injury. Kernicterus is often marked by dyskinetic cerebral palsy and sensorineural hearing loss. Socioeconomic factors and limited healthcare access contribute to the higher prevalence of kernicterus in these regions however, genetic risk factors may also be at play. This study builds off the hypothesis that genetic variations increase susceptibility to ABE and kernicterus (Riordan et al., 2016). DNA samples from 82 newborns in three Nigerian regions (Jos, Kano, and Zaria) were analyzed for gene variants linked to hyperbilirubinemia. These variations may contribute to increased hemolysis, impaired bilirubin elimination, or greater bilirubin susceptibility. Total bilirubin (TB) and bilirubin-induced neurologic dysfunction (BIND) scores categorized infants into groups with and without ABE. Infants were followed for 12 months to track kernicterus development. The results aim to deepen our understanding of genetic factors influencing hyperbilirubinemia and kernicterus risk.

Abstract #323

Anthracycline and targeted TGF-beta pathway combination therapy of triple negative breast cancer

Ejiroghene Davies-Okarevu*, Shixin Tao, Melissa Cobb, Nataliya Kibiryeveva, Eugene Konorev

***Presenting author**

Triple negative breast cancer (TNBC) cells do not express estrogen and progesterone receptors, and do not produce increased amounts of the human EGF receptor 2 (HER2) protein. Due to the lack of targeted therapy options, anthracyclines, including doxorubicin (Dox), are often used in the treatment regimens of TNBC. Albeit an effective anticancer agent, Dox is notoriously known to cause cardiovascular complications in treated patients. We have previously shown that Dox increases activity of the transforming growth factor (TGF)-beta/Smad3 pathway in cardiac cell types, and inhibition of this pathway alleviates cardiovascular complications induced by Dox. Given the critical role of TGF-beta in promoting cancer progression, we set out to test the hypothesis that Dox enhances activity of the TGF-beta pathway in TNBC cells. We have treated 4T1 TNBC cells with Dox, SB431542 (SB, a selective inhibitor of the TGF-beta pathway), and their combination to examine activation of Smad3, a transcription factor in the pathway; Smad3 transcriptional activity using reporter plasmids; and RNA-seq/transcriptomic analysis of the 4T1 cells responses. Phosphorylation of Smad3, one of the transcription factors in the pathway, was increased in the Dox-treated 4T1 cells, indicating increased activity of the pathway. This concept was further supported in experiments with the CAGA12-luciferase reporter plasmid that also showed increased activation of the pathway upon exposure of the Dox-treated 4T1 cells to TGF-beta1. Transcriptomic analysis further demonstrated increased activity of Smad2, Smad3, and Smad4 upstream regulators upon Dox treatment of the TNBC cells. Notably, SB significantly reduced activation of the pathway in the Dox-treated 4T1 cells, as shown in both Smad3 phosphorylation and RNA-seq experiments. These results suggest that Dox enhanced activity of the TGF-beta canonical pathway in cultured TNBC cells and targeted inhibition of the pathway may become a novel approach to prevent deleterious effects of Dox therapy.

Abstract #324

Interconnected anatomy and clinical relevance of the dorsal scapular and long thoracic nerves: a cadaveric study

Robert Heins*, Sara Sloan

***Presenting author**

Background: The dorsal scapular nerve (DSN) and the long thoracic nerve (LTN) exhibit variable anatomical pathways, which may contribute to upper back pain and impaired scapular movement in affected patients. This study investigates these variations to enhance clinicians' diagnostic and surgical approaches. **Methods:** Bilateral cervical regions of 32 formalin-embalmed cadavers (64 sides) were dissected to document the origin of the DSN, the relationship with the scalene muscles of the DSN, and anatomical connections between the DSN and LTN. Measurements of the distance between the mastoid process and the piercing point of the DSN to the scalene muscle were obtained with digital calipers. Additional measurements were obtained from the medial border of the scapula at two specific locations: the scapular spine (zone 1) and the mid-point between the scapular spine and the inferior angle of the scapula (zone 2). **Results:** The DSN demonstrated four distinct cervical spinal nerve root origins and five unique scalene muscle piercing patterns. The average distance between the DSNs scalene muscle piercing point and the mastoid process was 94.87 ± 10.09 mm, with significantly greater distances observed in male specimens compared to female specimens ($p < 0.001$). Connections between the DSN and LTN were identified in 65.2% of the examined cervical regions. The mean distance of the DSN from the medial border of the scapula at zone 2 was significantly greater than at zone 1 ($p < 0.001$). **Conclusion:** Anatomical variation findings and classification of the DSN provide valuable insights, offering guidance involving clinical procedures of the scalene and rhomboid musculature to minimize the risk of iatrogenic injury. The documented variations may also assist in the diagnosis and management of DSN-related pathologies such as DSN neuropathy.

Abstract #325

Investigating the Role of Small Canal Body Associated RNA's (scaRNAs) In Congenital Heart Defects: A Study of SNORD94 Regulation of Alternative Splicing

Kaylahn Jones *, Michael Filla, Nataliya Kibiryeveva, MD, James E. O'Brien Jr., MD, Douglas C. Bittel, PhD
***Presenting author**

Congenital heart defects (CHDs) are the most common type of birth defect, affecting nearly 1% of newborns. Despite their prevalence, the underlying mechanisms that contribute to CHDs are poorly understood. Our lab has previously demonstrated that small Cajal body-associated RNAs (scaRNAs), specifically SNORD94, play a crucial role in regulating alternative splicing during embryonic development. Abnormalities in spliceosomal regulation have been implicated in the pathogenesis of Tetralogy of Fallot, a common CHD. Here, we investigate the role of SNORD94 in cardiac developmental abnormalities using a novel approach involving CRISPR-Cas13, an RNA-targeting tool. We demonstrate that knockdown of SNORD94 in quail myoblast 7 cells using CRISPR-Cas13 leads to aberrant alternative splicing and possible altered cardiac development. Our findings provide evidence for the first time that snoRNAs, particularly SNORD94, contribute to the development of CHDs, and highlight the potential of CRISPR-Cas 13 as a tool for functional analysis in developmental studies. This research has significant implications for our understanding of the molecular mechanisms underlying CHDs and may ultimately lead to the development of novel therapeutic strategies for their treatment

Abstract #326

Breaking bad: when calcium signaling goes awry and leads to a depressing episode

Tahlia Korin*, Kimberley Beier, Kami Pearson, Hector Cotto, Dr. Asma Zaidi

***Presenting author**

Introduction: Approximately 40% of patients diagnosed with clinical depression are treatment-resistant; highlighting the need for greater understanding of underlying mechanisms. Upregulation of the kynurenine pathway (KP), a branch of tryptophan metabolism diverts it from serotonin synthesis. Additionally, KP generates neurotoxic metabolites including 3-hydroxyanthranilic acid (3-HAA), a producer of reactive oxygen species. Intracellular Ca²⁺ plays a critical role in key neuronal functions including maintenance of cell viability, gene expression and neurotransmitter release. There is very little information on the effects of 3-HAA on calcium signaling. The goal of this study was to determine the effects of 3-HAA on (1) the plasma membrane Ca²⁺-ATPase (PMCA), a critical Ca²⁺ transporter and (2) all known 126 neuronal Ca²⁺ signaling proteins. **Hypothesis:** 3-HAA will alter PMCA and impact neuronal Ca²⁺ signaling proteins. **Methods:** SH-SY5Y cells were exposed to various doses of 3-HAA for 24 hours. PMCA activity and protein levels were quantified by monitoring generation of Pi from ATP hydrolysis, and immunoblotting, respectively. Alterations in Ca²⁺ signaling proteins were determined by a protein array. **Results:** PMCA activity showed a biphasic effect with stimulation observed at lower concentrations and inhibition at higher concentrations of 3-HAA. Immunoblotting showed PMCA aggregation and fragmentation, likely due to oxidative damage. Of the 126 Ca²⁺ signaling proteins, 31 were altered with varying degrees of change. Examples of proteins that decreased are calmodulin, NMDA receptor, and ORAI calcium release channel. Examples of proteins that increased are nitric oxide synthase, voltage-gated calcium channel, and protein kinase C. **Conclusions:** Alterations in PMCA are likely to have significant effects on Ca²⁺ homeostasis. Changes to Ca²⁺ signaling proteins are likely to cause neuronal dysfunction which may lead to the onset of depression. Our findings may help identify novel targets for the development of interventions that may improve the outcome for patients with depression.

Abstract #327

Identification and Therapeutic Benefits of Retinal Dystrophin Promoter Activity in Duchenne Muscular Dystrophy (DMD) Skeletal Muscle

Sruthi Kundur*, Staton McBroom M.S, Robert A. White Ph.D.

***Presenting author**

Duchenne Muscular Dystrophy (DMD) is an X-linked neuromuscular disorder caused by mutations in the DMD gene, leading to the absence of Dp427 (dystrophin protein 427 kDa) in skeletal and cardiac muscle. Patients typically experience progressive muscle degeneration, losing ambulation by age 12, and facing premature death in their late 20s due to cardiopulmonary failure. Current therapeutic strategies include viral-mediated gene therapy, exon skipping, stop codon read-through, and CRISPR-Cas9 gene editing but remain limited due to immune responses, inefficacy in producing full-length dystrophin, and challenges in systemic delivery. An alternative approach involves using an endogenously expressed dystrophin isoform, retinal dystrophin (Dp260), which is encoded by Exons R1 and 30–79. Dp260 is primarily restricted to the retina but 30% of DMD patients exhibit its expression despite lacking Dp427. Data from our lab demonstrate that expression of Dp260 in severe DMD mice significantly improves survival, rescues scoliosis, and attenuates myopathy. This suggests that pharmacological activation of the Dp260 promoter in skeletal muscle could serve as a viable therapeutic strategy for DMD. This study aims to identify and characterize the Core Promoter of Dp260 in human cells. Our approach involves cloning candidate promoter sequences, assessing transcriptional activity via luciferase assays, and screening potential pharmacological activators. Results indicate that methylprednisolone enhances Dp260 expression in human retinal cells, suggesting a viable pathway for pharmacological modulation. Future directions include high-throughput drug screening to identify compounds capable of inducing Dp260 expression in muscle. This research potentially circumvents immunogenicity issues associated with current DMD treatments while providing long-term benefits for patients.

Abstract #328

Overview of asexual identity for healthcare protocols and medical education curriculum.

Alesia Lokshina*, Jan Anderson Talley PhD, MA, MSW

***Presenting author**

Asexuality is defined as little to no sexual attraction or desire for sexual relationships and is best understood on a spectrum between asexual and allosexual identities. Patients may avoid disclosing their asexual identity to healthcare providers due to discomfort, provider unawareness, or pathologization. This study provides a replicable review of published research about human asexual identity within the context of quality medical care. Systematic review methodology was used to examine human asexuality using PRISMA protocols and the Systematic Review Accelerator. Eight databases were searched, and the results were managed in Rayyan. Two reviewers independently screened abstracts (Cohen's Kappa > 0.6), conflicts were resolved by a third reviewer. Full-text screening followed the Population-Concept-Context framework. The included studies were assessed using the Critical Appraisal Skills Program Checklist. Participatory research protocols were followed to include a key informant to validate overview topics. This review summarized findings from seven studies focused on asexuality, defining it as a lack of sexual attraction, which causes no stress for the patient, and is distinct from romantic or non-sexual attraction. The studies highlighted diverse sub-asexual identities and romantic orientations. Many individuals reported fulfillment upon acknowledging their asexual identity. Online communities significantly contributed to fostering identity awareness and support. Asexual individuals reported having lower dyadic sexual desires/arousal despite physiological responses comparable to allosexual individuals. Asexual people reported fear of disclosing their identity due to stigma, microaggressions, and pathologization in healthcare settings, experienced as acephobia, compulsory sexuality, and social isolation that contributed to higher rates of depression and anxiety. Studies recommended healthcare providers affirm asexual identity as a sexual orientation, call for inclusive healthcare environments, and emphasize incorporating asexuality care into curricula. Limitations in existing research included nongeneralizable findings, biased recruitment, and publication clustering. Research should adopt intersectional approaches, investigate minority stress, and develop clinical guidelines for asexual patients.

Abstract #329

Targeting Lipolysis, Go/G1 switch gene 2 (GoS2) as a major player in age-related metabolic dysfunction

Dominic N. Nkemngong*, Mahogany McKnight, Gretchen Nelson, Ehab Sarsour, MSc, PhD

***Presenting author**

By 2030, an estimated 20% of the U.S. population will be 65 years or older, increasing the prevalence of age-associated diseases and burdening healthcare systems. Aging is a multifaceted biological process leading to metabolic and functional decline, yet the mechanisms driving these changes remain poorly understood. Understanding the basic biology of aging is essential for identifying novel therapeutic strategies to enhance health span and mitigate age-related deterioration. This study focuses on cellular lipid metabolism, specifically the regulation of lipolysis, as a key factor in aging-related dysfunction. Investigating the role of Go/G1 switch gene 2 (GoS2) in maintaining cellular quiescence and metabolic homeostasis, our research aims to establish lipolysis as a potential target for future pharmacological interventions. This study employs CRISPR-guided lentiviral gene editing to generate a stable fibroblast model for investigating the role of GoS2 in aging. Unlike transient gene silencing, CRISPR-based knockout provides precise, long-term genetic modification, allowing sustained functional analyses. This approach ensures specificity while preserving fibroblast quiescence and proliferation capacity, offering a robust model to study metabolic regulation in aging cells. To establish causality, we will generate a GoS2-knockout fibroblast model using a CRISPR-guided lentiviral system. The lentivirus will be produced by cloning CRISPR constructs into DH5 α bacteria for plasmid amplification, followed by transfection of 293T cells to generate viral particles. These will then be used to infect fibroblasts. Currently, all plasmids and viral support genes (VSG) are prepared, along with fibroblast and 293T cell lines, with lentivirus production and fibroblast transfection as the next steps. This study is expected to confirm that GoS2 loss promotes lipolysis, disrupting cellular quiescence and contributing to aging-related metabolic shifts. By defining the role of lipid metabolism in aging, this research may identify new therapeutic targets for promoting a healthier lifespan.

Abstract #330

A review of osteopathic and related manipulations for treating gut dysfunction in neurological populations

Joseph Peters*, Grant Runnels, Alexa Lauinger, Tanner Murphy, Turner Slichko

***Presenting author**

Objective: To determine the clinical utility of osteopathic manipulative treatments (OMT) for improving gastrointestinal distress in patients with neurological disorders (ND). **Methods:** A database search through PubMed, Embase, Scopus, and Ovid was conducted to identify randomized and non-randomized clinical trials that analyzed the effects of OMT on gut health in patients with ND. Two independent reviewers screened articles for inclusion and extracted information related to participant characteristics, intervention details, outcome measures, and significant outcomes. Methodological quality of eligible studies was assessed using the Standard Quality Assessment Criteria. **Results:** Twelve studies (nine randomized controlled trials, two pre-post trials, and one non-randomized controlled trial) with a total of 516 individuals with ND were analyzed. All twelve studies showed improvements in symptoms of gastrointestinal distress following OMT and related treatments. Meta-analysis revealed significant reductions in constipation severity following OMT and related treatments (Standardized Mean Difference = -1.83; 95% Confidence Interval -2.12 – -1.53; $p < .001$). **Conclusion:** Evidence supports OMT and related treatments as an effective intervention for improving symptoms of gastrointestinal distress like constipation severity. Future randomized controlled trials should examine the dose-response of OMT and microbiome changes associated with these treatments.

Abstract #331

Treatment of dmd with methylprednisolone to induce increased retinal dystrophin promotor activity and expression

Jacob Welsh*, Staton McBroom M.S., Julie Koester M.S., Madeline Meyer, M.S., Robert A. White Ph.D

***Presenting author**

Dystrophin, the protein deficient in Duchenne Muscular Dystrophy (DMD), has multiple isoforms, including Dp427, primarily found in skeletal muscle, and Dp260, most abundant in the retina. Previous studies using transgenic mice expressing human Dp260 in skeletal muscle demonstrated rescue effects in a DMD mouse model (Utrophin $-/-$, mdx), significantly improving lifespan and disease severity. Additionally, treatment of WERI-Rb human retinal cells with methylprednisolone (MPSL) led to a 3.7-fold increase in Dp260 expression, suggesting a potential strategy to upregulate this isoform. To investigate whether this effect can be replicated in vivo, Dp427, Dp260, and β -Actin primers were identified and optimized using mouse tissue. Wild-type, classic mdx, and DMD model mice will receive intraperitoneal (IP) injections of 33.3 μ g MPSL/g body weight for four consecutive days. Following treatment, skeletal muscle mRNA will be extracted and analyzed for increased Dp260 expression. This study aims to determine whether pharmacological upregulation of Dp260 in skeletal muscle could provide therapeutic benefits for DMD.

Abstract #333

The Brain on Bilirubin – Genetic Analysis of Hyperbilirubinemia and Kernicterus Susceptibility in Nigerian Newborns

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Neonatal jaundice, commonly caused by elevated levels of unconjugated bilirubin, affects approximately 60-80% of newborns. While temporary hyperbilirubinemia and jaundice in newborns are common, persistent elevations of unconjugated bilirubin (“free bilirubin”) poses neurotoxicity risks which can lead to Acute Bilirubin Encephalopathy (ABE) that can then progress to Kernicterus Spectrum Disorder (KSD) if not promptly treated. KSD is a permanent disorder which often involves movement disorders, auditory impairments, and cerebral palsy, among others. Certain brain regions appear to be more sensitive to bilirubin, notably those that regulate motor control and movement, auditory processing, and oculomotor function. Studies have found associations between certain variants and sequence alterations of genes (for example, G6PD and UGT1A1) with hyperbilirubinemia and KSD susceptibility. This research further examines sequence variants in genes (CNVs and SNPs) with differential expression in the bilirubin susceptible versus resistant brain regions (derived from the Allen Brain Atlas, Riordan et al 2016). We hypothesize that these variations will contribute to KSD and brain regional susceptibility to bilirubin (Riordan et al, 2016). Here we present DNA sequence analysis data from 75 newborns from three different regions in Nigeria (Jos, Kano, and Zaria). The infants were followed clinically for 12 months to monitor for the development of KSD. The Bilirubin-induced Neurological Dysfunction (BIND) score 24-hours following birth was used to categorize patients into the ABE group, while the 12-month neurological exam and dystonia score were used to categorize patients into the KSD group. CNV analysis suggest that certain gene variants found in the globus pallidus and inferior colliculus of the newborns are involved in hyperbilirubinemia or encephalopathy pathways. These analyses will expand the current knowledge of hyperbilirubinemia and KSD susceptibility, especially in an area of the world where socioeconomic factors and genetic predisposition play key roles in the increased occurrence of KSD.

Abstract #334

Optimization of Human Plasma-Derived Exosome Storage Under Cryoprotection Conditions

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Background: Exosomes are nano-sized extracellular vesicles that play a critical role in cell-to-cell communication by transporting proteins, lipids, and genetic material. They are found in various body fluids and hold immense potential as non-invasive biomarkers for diseases such as cancer, neurodegenerative disorders, and cardiovascular conditions. However, their structural integrity is highly sensitive to storage conditions, limiting their long-term usability in research and clinical applications.

Objective: This study aimed to evaluate different cryopreservation methods for human plasma-derived exosomes to determine which best preserves their integrity and functionality over time.

Methods: Exosomes were isolated using Size Exclusion Chromatography (SEC) with the Izon qEVoriginal 70 nm column. Three storage conditions were tested: Lyophilization, Lyophilization with trehalose stabilization, and 6% DMSO cryoprotection. Western blot analysis was performed to assess the presence of key exosome markers (TSG101, CD9, CD63, and CD81) and evaluate structural preservation.

Results: Exosomes stored under lyophilized conditions with trehalose exhibited better structural preservation compared to those stored with 6% DMSO or without a cryoprotectant. Trehalose likely forms a protective layer, preventing dehydration and maintaining membrane stability. While some oligomeric tetraspanins were detected, the presence of monomeric forms suggests that lyophilization with trehalose effectively preserved exosome integrity.

Conclusion: Lyophilization with trehalose presents a promising method for long-term exosome storage, offering a stable and practical alternative to traditional cryopreservation techniques. Future research should explore further optimization of cryoprotectant formulations and long-term storage effects.

