PROGRAM WITH ABSTRACTS

WRIGHT STATE UNIVERSITY
BOONSHOFT SCHOOL OF
MEDICINE

5TH ANNUAL BSOM RESEARCH SYMPOSIUM

April 22nd, 2026

4:30 – 7:00 p.m.

Student Union: Apollo,
Atlantis, and Endeavor Rooms

Program

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4:30 p.m.	Welcome from Dean
4:35 p.m.	Research Talks
5:30 p.m.	Poster Session and Refreshments
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Research Talks

Research Talk 1: Unraveling Neurodegeneration Through Neuroengineering

Authors: Sherif Elbasiouny, Bradley LeHoty, John Novak, Sherin Mathews, Teresa Garrett

Neurodegenerative diseases such as amyotrophic lateral sclerosis (ALS) present profound challenges due to their heterogeneous nature, diffuse neuromuscular involvement, and limited options for early and rapid diagnosis. Addressing these challenges requires an integrative framework that bridges experimental neurophysiology, computational modeling, and translational bioengineering. Our research adopts a multidisciplinary neuroengineering approach that combines electrophysiology, immunohistochemistry, machine learning, and computational modelling to characterize motor system dysfunction across multiple biological scales- from cellular pathology to whole-limb motor unit behavior.

Within this framework, we focus on the development of non-invasive electrophysiological biomarkers of ALS using high-density surface electromyography (HD-sEMG). We first evaluate emerging acquisition technologies by comparing a wearable full-coverage HD-sEMG sleeve (Battelle NeuroLife®) with a conventional grid-based system (OT Bioelettronica Novocento+). Using identical motor unit decomposition pipelines, we demonstrate that the wearable system achieves comparable motor unit yield and firing stability while substantially reducing setup time and improving usability. These findings support wearable HD-sEMG as a scalable and patient-friendly platform for studying distributed motor unit dysfunction in neurodegenerative disease.

Building on this technological foundation, we translate a motor neuron firing abnormality identified in computational models and preclinical ALS studies – defined as firing rate adaptation (FRA) – into a human biomarker. Using wearable HD-sEMG during controlled isometric contractions, we identify a distinct FRA signature in ALS patients characterized by an exaggerated firing rate deceleration during force relaxation. This feature significantly differentiates ALS participants from healthy controls and enables classification with high accuracy using machine learning approaches.

Together, this work illustrates how convergent approaches across multiple modalities can be integrated through neuroengineering to interrogate neurodegeneration across biological scales. By linking mechanistic insights from preclinical models with human neurophysiology and machine learning, our lab establishes a cohesive translational framework for ALS research. Within this framework, these results highlight the power of integrating wearable neurotechnology, advanced signal decomposition, and computational modeling to uncover clinically relevant biomarkers. This approach not only facilitates earlier and more rapid ALS diagnosis, but also offers a practical tool for longitudinal disease tracking and the evaluation of therapeutic interventions in both research and clinical settings.

Research Talk 1 Presenters:

Bradley LeHoty, M3

Bradley LeHoty is an MD candidate and medical student researcher at the Boonshoft School of Medicine at Wright State University, where he works in the Neuro Engineering, Rehabilitation, and Degeneration (NERD) Laboratory under the mentorship of Dr. Sherif Elbasiouny. His work focuses on translational neuroengineering, bridging clinical neuroscience and computational approaches to better understand and treat neurodegenerative diseases.

His research centers on amyotrophic lateral sclerosis (ALS), integrating electrophysiology, machine learning, and advanced imaging analysis to identify clinically meaningful biomarkers of motor neuron dysfunction. He has contributed to the development of a patented 3D image-analysis algorithm for quantifying protein organization in motor neurons, led projects investigating EMG-based screening protocols for motor unit firing adaptations in ALS patients, and co-authored multiple peer-reviewed publications and national conference presentations aimed at expanding knowledge of neurodegenerative disease pathophysiology. His work has been supported and recognized with the Boonshoft School of Medicine Research Grant and institutional awards for scientific innovation, and he serves as a student representative on the Boonshoft School of Medicine Research Committee.

He aspires to become a neuromuscular neurologist, leading an ALS-focused clinical practice while developing translational technologies that improve diagnosis, monitoring, and rehabilitation for patients. In his free time, Bradley enjoys producing music, competitive arm wrestling, and bankrupting buffets with his wife.

Sherif Elbasiouny, PhD

Dr. Elbasiouny is a professor of neuroscience and biomedical engineering at Wright State University, holding appointments in the NCBP and BIE departments. He earned his bachelor's degree with honors (1997) and a master's degree with distinction (2001) in biomedical engineering from Cairo University in Egypt, followed by a Ph.D. in rehabilitation neuroscience from the University of Alberta in Canada in 2007. He then completed postdoctoral training in cellular neuroscience at Northwestern University from 2008 to 2012.

In 2012, Dr. Elbasiouny joined Wright State University as an assistant professor and has since advanced to hold the WSU & Premier Health Endowed Chair in Neurodegenerative Diseases Research. His research focuses on neurodegeneration, neuroengineering, neuroprosthetics, and aging, and has secured more than $16 million in federal funding from agencies including the NIH, DARPA, the National Academy of Sciences, and the Air Force Research Laboratory. Dr. Elbasiouny has received numerous honors, including the Brage Golding Distinguished Professor of Research Award (2023), the Academy of Medicine's Outstanding
Junior Faculty Award (2017), and the Presidential Early Career
Achievement Award (2015).

Research Talk 2: Compounded Stressors and Overwhelming Barriers: A Community-Based Exploration of Postpartum Care Engagement in Dayton, OH

Authors: Cherissa L. Garcia, Kristen A. Waters, Maleka J. James, Sara J. Paton, Sydney M. Silverstein, Rose A. Maxwell, David N. Dhanraj

Introductory Statement: Consistent with national trends, Black mothers in Dayton, Ohio, experience significantly higher rates of maternal morbidity and mortality than their white counterparts.1,2 Postpartum care (PPC) visits offer potential to improve maternal health outcomes.3 However, utilization remains racially disproportionate, and contributing factors are poorly understood.4,5 Understanding stress and self-reported barriers may play a critical role in postpartum health engagement.5–8

Purpose: This study aims to explore patient-identified stressors that negatively influence PPC attendance.

Methodological Approach: Semi-structured interviews (n=10) and focus groups (n=2) were conducted with 31 female members of the community in Dayton, OH. Sessions were recorded, transcribed verbatim, and coded using Taguette software for thematic analysis. A follow-up survey (n=7) assessed specific stressors identified during the initial phase of the study. Findings were shared with community groups and leaders for feedback and content refinement.

Results: Participants identified stressors that made PPC attendance feel burdensome, including long travel times, unreliable transportation, and perceptions that appointments were low value. Social isolation, lack of social support, and relationship stress further compounded these challenges. A follow-up survey examining primary sources of stress revealed that financial strain was a universal barrier among participants. Community leaders corroborated these findings.

Findings: These findings are consistent with recent work demonstrating that postpartum individuals experiencing high levels of stress are more likely to encounter multiple barriers to accessing care. Our results highlight the need for an individualized approach to PPC that incorporates support to address structural barriers at both the community and individual levels.

Research Talk 2 Presenters:

Cherissa Garcia, M1

Cherissa Garcia is a first-year medical student at the Boonshoft School of Medicine. She is a proud alum of Wright State University, where she earned a Bachelor of Arts in Spanish, a Master of Public Health (MPH), and a Master of Science in Anatomy.

Before entering medical school, Cherissa held a variety of roles across multiple sectors. Her experience includes teaching English abroad in several countries, working in cancer research at The Ohio State University Medical Center, working for the federal government, and working as a case manager for the Breast and Cervical Cancer Project through Premier Health.

Cherissa is interested pursuing a specialty in obstetrics and gynecology (OB/GYN). Her academic and professional interests focus on women's health, with a particular emphasis on maternal health outcomes. She is especially interested in addressing disparities affecting Black women across the African diaspora globally, with a focus on reducing maternal mortality and morbidity.

Rose Maxwell, PhD, MBA, CCRP

Dr. Rose Maxwell is Research Director and Associate Professor in the Department of Obstetrics & Gynecology at the Boonshoft School of Medicine. She completed her PhD in Social Psychology at the University of Cincinnati in 1996. She spent 6 years as Statistician and Assistant Professor for the Tristate Tobacco and Alcohol Research Center in the UC Department of Psychiatry before joining the UC Department of Obstetrics & Gynecology in 2003 to lead their clinical trials unit.

She has been teaching, both in and out of the classroom, since 1993 on topics including research design, psychology, statistics, and human subjects protection. She has served on numerous research committees including protocol scientific review, institutional review boards, and standard operating procedures committees. She has extensive experience in grant writing, contract and budget negotiation, and statistical consultation.

Dr. Maxwell has served in her current role at Wright State University for 11 years mentoring and collaborating with students, residents, and faculty. She has more than 70 presentations and has published over 60 articles on a wide range of topics including HIPAA guidelines for data management, addiction, physiological response to stress, maternal stress, health disparities, surgical site infection, preeclampsia, and infertility.

Research Talk 3: Cancer Risk Perceptions and Health Risk Behaviors Among Asian Americans: Insights from HINTS 6 and 7

Authors: Ashni Patel, Victoria Nguyen, Jeannette Manger and Alperen Korkmaz

Introduction and Objective: Unlike other racial groups, cancer is the leading cause of death in Asian Americans (AA) yet little is understood about this discrepancy. With the rapid AA population growth in the US, it is essential to identify factors contributing to this disparity. This study examines health behaviors and cancer risk perceptions among AA that may contribute to increased cancer mortality risk. To understand lifestyle habits, we focused on diet and exercise, perception of personal risk, and knowledge of relevant health information.

Methods: We analyzed data from the Health Information National Trends Survey 6 and 7 (HINTS 6 and 7), which included 6,252 respondents and 7,278 respondents, respectively. We explored the relationship between cancer risk perception and high-risk cancer behaviors. Our analysis examined lifestyle-based risks including smoking and vegetable servings. Additionally, we compared cancer screening awareness among AA populations to other racial groups.

Results: Awareness of the link between Hepatitis B and cancer was significantly lower in AA (1.10%, $p< 0.001$) highlighting a knowledge gap for a high-risk population. AA reported higher rates of sedentary lifestyle while alcohol consumption was the lowest There was no significant correlation between smoking and vegetable servings among groups. Additionally, compared to other racial groups, AA were least likely to associate cancer with death, with only 3.24% ($p<0.05$) holding this belief.

Conclusion: We recommend development of cancer-risk guidelines specific to AA to guide physicians in educating their patients and prompt further clinical studies to determine the causes of the increased risk.

Research Talk 3 Presenters:

Ashni Patel, M2

Ashni Patel is a second-year medical student at Wright State Boonshoft School Of Medicine. She is from Dublin, Ohio and received her Bachelor of Science degree in Biochemistry and Microbiology from Otterbein University in 2024. During her undergraduate studies, she completed an honors thesis characterizing genes within a bacterial strain affecting agriculture in the United State, with a focus on its role in antibiotic interactions. She was selected for the BSOM Summer Research Program this past summer where she worked alongside Dr. Jeannette Manger to investigate unique cancer related health considerations within the Asian American population. Through her research, Ashni aims to advance health equity, promote inclusivity, and support the delivery of more personalized care to patients from diverse backgrounds.

Victoria Nguyen, M2

Victoria Nguyen is a second year medical student at Boonshoft School of Medicine. She is from Westerville, OH and earned a Bachelor of Science in Biology from the Ohio State University in 2023. Prior to medical school, she conducted cancer immunology research at the Ohio State University, focusing on chaperone proteins in multiple myeloma. During her gap year, she worked as a clinical research assistant at Nationwide Children's Hospital involved in research aimed at improving accessibility to early detection of infant movement disorders. These experiences have developed an interest in advancing accessibility to education and healthcare, particularly for underserved communities. Last summer, she participated in the BSOM Summer Research Program with the Department of Medical Education where she had the opportunity to combine her interests. Victoria hopes to use her research to improve healthcare access and outcomes for her future patients.

Research Talk 4: Unpacking Depression Risk in Women Over 50: Caffeine Intake and Mediating Factors

Authors: Maia Sethi, Nowshin Islam, Lisa Journell, and Alperen Korkmaz

Introductory Statement: Previous research suggests a protective effect of caffeine on depression risk in the adult population. However, there is limited research on this interaction in women over 50. Perimenopausal and postmenopausal women may have distinct physiological and behavioral responses to caffeine.

Purpose: This study examined the relationship between caffeine intake and depressive symptoms in women 50 years and older, and whether this relationship was mediated by smoking status or sleep disturbances.

Methodological Approach: Data obtained from the National Health and Nutrition Examination survey (NHANES) were used to analyze 7,656 women aged 50-80 years old. Caffeine intake was categorized as low (<121 mg/day), moderate (121-400 mg/day), or high (>400 mg/day) and depressive symptoms were assessed using the Patient Health Questionnaire-9 (PHQ-9). Generalized structural equation modeling (GSEM) was used to assess direct, indirect, and total effects of caffeine intake levels on PHQ-9 scores, mediated by sleep disturbances and smoking status variables.

Findings: No statistically significant direct association between caffeine intake level and depressive symptoms was observed. However, the indirect pathway through smoking status was significant for both moderate caffeine intake (aOR = 1.36, 95% CI: 1.14–1.62, p = 0.001) and high caffeine intake (aOR = 2.37, 95% CI: 1.60–3.50, p < 0.001). Sleep trouble did not show a significant indirect pathway linking caffeine intake to depressive symptoms, but sleep trouble was associated with higher odds of smoking (aOR = 1.75, 95% CI: 1.32–2.32, p < 0.001).

These findings indicate that the caffeine-depression relationship in women over 50 years old has a complex behavioral pathway

Research Talk 4 Presenters:

Maia Sethi, M2

Maia Sethi is a second-year MD student at the Boonshoft School of Medicine. She is from Centerville, Ohio, and earned her B.A. from Case Western Reserve University in 2023.
Prior to medical school, she worked as a research assistant in the Department of Biomedical Engineering, at Case Western Reserve University. Here, she conducted research on wearable sensor technology to monitor athletic health and performance in collegiate teams. This experience sparked her interest in the application of research to improve patient outcomes. She completed the BSOM Summer Research Program through the Department of Medical Education in 2025. She looks forward to continuing to explore opportunities that integrate clinical medicine and innovative research to enhance patient care.
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Nowshin Islam, M2

Nowshin Islam is a second-year MD student at the Boonshoft School of Medicine. She is from Mason, Ohio, and earned her B.S. in Neuroscience from The Ohio State University in 2022. Prior to matriculating into medical school, she worked as a Clinical Research Assistant in the Division of Hematology and Oncology, where she collaborated closely with the Geriatrics program at the Ohio State University and James Cancer Center. This experience shaped her commitment to advancing care for older adults. She completed the BSOM Summer Research Program through the Department of Medical Education in 2025. She looks forward to continuing her work at the intersection of geriatrics and oncology, with a focus on improving care for older adults.

Poster Session and Reception

Student Union Apollo Room

5:30 to 7:00 p.m.

On the following pages you will find information regarding the poster presentations for this evening's symposium. The poster number corresponds to the location of the poster.

Abudulwahed S, Awad H, Tili E, Dalton B

Poster 1

Roadmap for Developing an Ovine Endovascular Model of TEVAR-Associated Spinal Cord Injury

Mentor: Hamdy Awad, MD

The Ohio State University

Introductory Statement: Thoracic Endovascular Aortic Repair (TEVAR) can result in perioperative spinal cord injury (SCI) and paralysis in 3-13% of patients. Unlike open repair, TEVAR is associated with predominantly white matter injury patterns, suggesting distinct pathophysiologic mechanisms and underscoring the need for a TEVAR-specific translational model. Progress in therapeutic development remains limited by incomplete understanding of spinal collateral circulation and technical imaging challenges in large-animal systems.

Purpose: To establish a structures roadmap for developing a reproducible ovine TEVAR model of SCI, emphasizing preoperative vascular mapping, collateral identification, and procedural factors influencing spinal perfusion assessment.

Methodological Approach: Mature sheep underwent preoperative computed tomography angiography with three-dimensional reconstruction to identify spinal cord feeding vessels and collateral pathways, including vertebral, subclavian, mammary, pelvic, and inferior epigastric branches. Non-perforated Gore cTAG endografts were deployed from the thoracic arch to the iliac bifurcation with staged embolization of residual lumbar and sacral contributors. Imaging protocols were optimized to mitigate automatic exposure control artifacts and ensure isocenter positioning. Iliac conduit placement was considered to facilitate repeat vascular access while minimizing anatomic disruption.

Findings: Extensive aortic coverage demonstrated robust retrograde collateral backfilling of spinal arteries, limiting consistent ischemic injury or permanent neurologic deficits. Hounsfield unit-based vessel density assessment proved unreliable in backfilled vessels. These findings highlight the importance of comprehensive collateral mapping and optimized imaging for successful development of a large-animal TEVAR SCI model and provide a foundation for future mechanistic and therapeutic investigations.

Annamraju R, Owens M, Thyagarajan A, Corbin D, Sherwin C, Bryant J, Fisher G, Owens W, Ketter A, Umerani A, Rohan C, Kemp M, Crow R, Travers J

Poster 2

Ultraviolet B–Induced Keratinocyte Microvesicle Particle Release as a Potential Target for Therapeutic Intervention in Photosensitivity Disorders

Mentor: Jeffrey Bryant Travers, MD, PhD

BSOM, Departments of Pharmacology & Toxicology, Dermatology

Introductory Statement: Multiple disorders can result in the abnormal reaction to UV light known as photosensitivity. Previous preclinical murine studies have shown that excess levels of subcellular microvesicle particles (MVP) released via enzyme acid sphingomyelinase (aSMase) are associated with the photosensitivity seen in multiple skin pathologies.

Purpose: The purpose of these double-blinded, placebo-controlled studies was to determine whether individuals with clinical photosensitivity generate more MVPs following ultraviolet B (UVB) skin exposure compared to controls, and whether topical treatment with the aSMase inhibitor imipramine can block UVB-induced MVP release and alter erythema responses.

Methodological Approach: A cohort of 10 adult photosensitive subjects and 12 controls underwent UVB irradiation at multiple fluences to designated skin sites. Immediately post-irradiation sites were treated with either 4% aSMase inhibitor imipramine or vehicle control. Erythema was measured at multiple time points and minimal erythema dose was assessed. Punch biopsies of UVB irradiated and non irradiated skin were taken at 4 hours analyzed for isolation of MVPs.

Findings: These pilot studies demonstrated elevated levels of skin MVP in UVB-treated photosensitive subjects compared to controls, which correlated with MED values. Additionally, post-UVB application of imipramine attenuated UVB-induced MVP responses and showed a trend toward reduced erythema at 4 hours, though this effect was not observed at 24 or 72 hours in photosensitive patients. While limited by the small number of self-identified subjects, these findings offer preliminary support for the hypothesis that MVP may play a role in various human photosensitivity responses and highlight aSMase inhibition as a potential therapeutic strategy.

Conrad RC, Travers JB, Thyagarajan A, Rapp CM, Henkels KM, Pugh K, Orrill K, Rodriques PM, Nolan K, Wirth B, Reis D, Miller K, Jeffreys S, Sahu RP

Poster 3

Chemotherapy-induced microvesicle particle (MVP) release and platelet-activating factor receptor (PAFR) agonist activity in cancer patients

Mentor: Ravi Sahu, PhD and Jeffrey Travers, MD, PhD

BSOM, Departments of Pharmacology & Toxicology, Dermatology

Introductory Statement: Chemotherapy patients experience systemic inflammation, bacteremia, and gut dysfunction due to their treatment. Recent studies indicate one mechanistic explanation could be through the release of microvesicle particles (MVP) which carry the potent mediator Platelet-activating Factor (PAF). PAF agonists trigger potent pro-inflammatory, pro-proliferative, pro-thrombotic, and delayed immune suppressive responses, contributing to metastasis and toxicity in chemotherapy patients.

Purpose: Evaluating whether chemotherapy induces MVP release and PAF agonist activity could provide novel pharmacological attenuation of chemotherapy toxicity.

Methodological Approach: We hypothesize chemotherapy will induce MVP release and downstream PAF agonistic activity. We measured MVP levels in cancer patients pre- and post-chemotherapy treatment by centrifugation of plasma samples, MVP extraction, and nano sight tracking analysis. We then extracted and added lipids from these MVP samples to Human KBP (PAFR+) and Human KBM (PAFR-) cell lines. Vehicle control cells were treated with EtOH (0.1%) and positive controls were treated with 1nM carbamyl-PAF (PAFR agonist). Supernatants were incubated and collected, using IL-8 ELISA assay to measure PAFR-agonistic activity. These experiments offer quantification of chemotherapy-induced MVP release and PAFR agonistic activity.

Findings: In response to chemotherapy treatment, plasma samples of cancer patients demonstrated increased MVP release. Human KBP (PAFR+) cell lines treated with lipid extracts isolated from MVPs of pre-and post-chemotherapy patients demonstrated an increase in IL-8 (PAFR agonist) activity compared to Human KBM (PAFR-) cell lines. Overall, these pilot studies suggest chemotherapy induces MVP release and PAFR agonist activity, presenting a novel pharmacologic target for inflammation and toxicity in chemotherapy patients.

Gillespie B, Almazan A, Haider I, Santhanakrishnan R, Almazan R, Yadav S, Biswas K, Ju S, Zhong Q

Poster 4

Lewy body-associated 14-3-3 proteins protect cells from alpha-synuclein cytotoxicity

Mentor: Quan Zhong, PhD

WSU, Department of Biological Sciences

Introductory Statement: Parkinson's disease (PD) is a progressive neurodegenerative disorder characterized by the formation of Lewy bodies, insoluble protein aggregates primarily composed of alpha-synuclein protein.

Purpose: The accumulation of alpha-synuclein is known to induce cytotoxicity, with mitochondrial dysfunction both contributing to and potentially amplifying this toxicity; however, the underlying mechanism remains unclear.

Methodological Approach: Our lab developed a novel respiratory growth model that forces cells to undergo cellular respiration. Using this model, we have found alpha-synuclein is much more prone to accumulate, form cytoplasmic inclusions, and induce mitochondrial damage and apoptotic-induced cell death. We identified a strong genetic interaction between alpha-synuclein and a family of 14-3-3 proteins, which have previously been shown to colocalize in the Lewy bodies and offer a neuroprotective effect against alpha-synuclein toxicity.

The purpose of this study is to systematically investigate how alpha-synuclein induces organelle-specific cellular damage, particularly within the endomembrane system, and how 14 3-3 proteins counteract these effects. To do this, we will use cells co-expressing alpha-synuclein and fluorescently tagged organelle markers, with or without 14-3-3 proteins. Fluorescence microscopy will be used to assess the morphology, localization, and distribution of organelles. Quantitative image analysis and statistical analysis will be used to assess organelle disruptions.

Findings: Our findings will provide mechanistic insight into how alpha-synuclein disrupts organelle pathways and how 14-3-3 proteins offer protection. This study will provide insights into the cellular context of alpha-synuclein toxicity and highlight potential cellular pathways that can be targeted for therapeutic development in Parkinson's disease.

Gora R, Bailey R, Miller J, Bennett E

Poster 5

Assessing the effect of altered complex/hybrid N-glycosylation on arrhythmogenic susceptibility

Mentor: Eric Bennett, PhD

BSOM, Department of Neuroscience, Cell Biology, Physiology

Introductory Statement: Heart failure affects around 6 million people in the United States and is estimated to have a five-year mortality rate around 50%. A hallmark of heart failure is electromechanical remodeling, leading to ion channel dysfunction and fibrosis, typically secondary to chronic cardiovascular disease. Studies suggest a genetic contribution, noting downregulation of genes including Mgat1, encoding N-acetylglucosaminyltransferase I (GlcNAcT1). GlcNAcT1 initiates complex/hybrid N-linked glycosylation, a post-translational modification that alters ion channel function. Our previous research examining altered glycosylation of cardiac ion channels via Mgat1 downregulation has demonstrated tissue-level abnormalities, supporting the link between heart failure and altered N-glycosylation.

Purpose: This study aims to further investigate the role of altered complex/hybrid N-glycosylation in heart failure by assessing the impact on whole-heart electrical function.

Methodological Approach: Male mice with a cardiomyocyte-specific Mgat1 knockout (cMgat1KO) were compared with littermate heterozygotes (Het) and littermate controls (CT) not expressing the cre recombinase. Hearts were removed and retrograde perfused with Tyrode's solution supplemented with a voltage sensitive dye. Optical mapping operated with BV Workbench software and employing CMOS cameras for high resolution video capture examined the spread of electrical excitation across the epicardium. Cardiac activity was recorded during normal and arrhythmogenic pacing protocols. The videos were analyzed using BV Workbench.

Findings: CT hearts showed no evidence of arrhythmic activity when exposed to any of the pacing protocols. In contrast, both cMgat1KO and Het hearts exhibited disrupted activation patterns and showed signs of reentrant arrhythmias. The cMgat1KO group also demonstrated a statistically significant prolonged action potential duration compared to the CT group.

Nina L, Makenzie F, Chang S, Gilda P, Yuan Q, Xiaoping S, Michael P. K, Jeannelyn S. E, Guillermina L, Amanda R. W

Poster 6

Delineating Men1 Tumor Suppressive Mechanisms in the Exocrine Pancreas

Mentor: Amanda Wasylishen, PhD

Department of Cancer and Cell Biology Graduate Program, University of Cincinnati

Introductory Statement: Pancreatic ductal adenocarcinoma (PDAC) remains one of the most lethal malignancies, with a five-year survival rate of approximately 12%. Pancreatitis-induced acinar-to-ductal metaplasia (ADM) is a critical early event in pancreatic tumorigenesis. Multiple Endocrine Neoplasia type 1 (MEN1), a well-established tumor suppressor in pancreatic neuroendocrine tumors, has emerging roles in maintaining exocrine pancreas homeostasis, though its function in PDAC development remains poorly understood.

Purpose: This study investigates the role of MEN1 in exocrine pancreas homeostasis and explores molecular mechanisms by which Men1 loss may contribute to ADM and pancreatic cancer initiation.

Methodological Approach: MEN1 expression in human PDAC was evaluated using datasets from the Human Protein Atlas and TCGA. Pancreas-specific Men1-deficient mice underwent caerulein-induced pancreatitis to assess regenerative responses, followed by histologic and immunohistochemical analyses of metaplasia and inflammation. JUN pathway activation was evaluated using qRT-PCR and protein interaction studies. An in vitro ADM model was established using TGF-β–treated 266-6 mouse acinar cells, with quantification of acinar and ductal cell-state marker expression to optimize ADM induction conditions.

Findings: Preliminary analyses suggest that MEN1 may contribute to exocrine pancreas homeostasis during inflammatory stress. Men1-deficient models demonstrate impaired pancreatic regeneration following injury, and human PDAC datasets show frequent loss of detectable MEN1 expression, consistent with a potential tumor-suppressive role. Early optimization experiments indicate that TGF-β treatment induces transcriptional changes consistent with ADM in vitro. These exploratory findings establish experimental systems for future studies examining how Men1 loss and Jund-associated transcriptional regulation influence ADM and pancreatic tumorigenesis.

LeHoty B, Gamal M, Deutsch A, Eldawlatly S, and Elbasiouny S

Poster 7

Genotype-Specific ALS Pathophysiology Uncovered Through Electrophysiological Signatures Using Machine Learning

Mentor: Sherif Elbasiouny, PhD, PE

BSOM, Department of Neuroscience, Cell Biology, & Physiology

Introductory Statement: Amyotrophic lateral sclerosis (ALS) is a genetically heterogeneous neurodegenerative disorder characterized by progressive motor neuron degeneration and paralysis. More than 40 ALS-associated genes have been identified, highlighting substantial molecular diversity across patients. However, mutationspecific mechanisms remain poorly defined, severely limiting the development of targeted therapeutics and treatment strategies across the ALS spectrum.

Purpose: We sought to systematically outline convergent and divergent mechanisms of ALS pathogenesis across three distinct mouse models- SOD1-G93A, rNLS8-TDP43, and C9orf72- using feature-based machine learning on intracellular motoneuron recordings. Our goal was to identify mutation-specific signatures and shared pathological processes to guide mechanistic understanding of different genotypes.

Methodological Approach: Intracellular stimulus-signal ventral root recordings (n = 183 animals) were obtained at symptom onset, and compound action potentials were analyzed for 19 temporal and morphological features. Linear support vector machine (SVM) classifiers with leave-one-out cross-validation (LOOCV) were trained with these features to distinguish unique genotypic properties in these compound action potentials and identify shared mechanisms.

Findings: Each genotype exhibited distinct electrophysiological signatures identified by our SVM classifier, enabling accurate differentiation of ALS variants. Notably, these feature differences demonstrate variation in the timeline of symptom onset and motor dysfunction, suggesting that genotype-specific excitability patterns contribute to divergent disease progression. The initial pulse latency feature emerged as a robust discriminator of intrinsic motoneuron excitability, with some genotypes exhibiting reduced excitability, others showing increased excitability, all with shared temporal delays indicating convergent axonal conduction deficits across models. Collectively, these results establish a scalable framework for stratification, longitudinal biomarker development, and translational application to human studies.

Lowe A, Chavan M, Sulentic C

Poster 8

The Effects of Xenobiotics and Hormonal Stressors on Human Antibody Production

Mentor: Courtney Sulentic, PhD

BSOM, Department of Pharmacology & Toxicology

Introductory Statement: The aryl hydrocarbon receptor (AhR) is known for mediating immunosuppressive effects of TCDD, an environmental toxicant and high affinity AhR ligand, in B lymphocytes. Cortisol and terbutaline are both chemical messengers previously shown to modulate transcription factors that regulate IGH gene transcription. The IGH gene has various constant regions - Cμ, Cγ1-4, Cα1-2, and Cε - that encode for IgM, IgG1-4, IgA1-2, and IgE, respectively. Although individuals can be simultaneously exposed to these modulators, the effect of combined exposure on human antibody production has not been evaluated.

Purpose: This study evaluated the impact of hydrocortisone and terbutaline on human antibody production and potential crosstalk with the AhR pathway.

Methodological Approach: The human B cell line SKW 6.4, which lacks endogenous AhR expression, and a virally transduced AhR+ variant (SKW AhR+) were utilized to study any differences with the presence of the AhR. The cells were stimulated to induce antibody production and treated with therapeutic and physiologically relevant concentrations of terbutaline (0.01-100 μM) and hydrocortisone (0.01-1.0 μM). At the end of the treatment course, the supernatants and cell pellets were collected to measure antibody secretion (ELISA) or quantify transcript expression (RT-qPCR)

Findings: Treatments with hydrocortisone (1 μM) or terbutaline (100 μM) significantly inhibited IgM secretion, but only in the AhR+ cells. Preliminary data evaluating Cε suggests a trend for increased transcripts with terbutaline treatment. Studies are ongoing to further evaluate the constant region transcripts in both cortisol and terbutaline treatments. Future studies will include combining TCDD with these chemicals to assess how co-exposure impacts immunity.

Bhandari S, Savin A, Rapp CM, Henkels KM, Umerani A, Zhang W, Elbasiouny S, Travers JB

Poster 9

Burn-induced microvesicle particles drive PAFR-dependent bacterial translocation and multi-organ injury, which is amplified in aging

Mentor: Jeffrey Bryant Travers, MD, PhD

BSOM, Department of Pharmacology & Toxicology

Introductory Statement: Thermal skin burn injury causes systemic inflammation, which can induce increased bacterial translocation (BT) from the gut into the systemic circulation, and multi-organ dysfunction (MOD). However, the upstream signals that link skin to distant organ injury are not well understood. Recent evidence from our group has demonstrated that burn injuries cause microvesicle particle (MVP) release via the Platelet-activating factor receptor (PAFR)–acid sphingomyelinase (ASM) axis.

Purpose: The purpose of this study was to see whether burn-induced MVPs mediate the PAFR/ASM-dependent BT and MOD, and to determine how aging modifies these effects.

Methodological Approach: We pursued a murine thermal burn model with graded burn size was used to quantify circulating MVPs at early time points after burn, and assessment of gut permeability (BT) and organ injury. We compared wild-type mice with PAFR−/− and ASM−/−mice and tested post-burn topical imipramine, which is a functional inhibitor of ASM (FIASM). We evaluated Young (~2 months) and Aged (>18 months) cohorts.

Findings: MVPs were found to increase within 2 hours post burn and correlated with burn surface area, with parallel increases in BT and MOD. The PAFR−/− and ASM−/− mice had decreased burn-induced MVPs and were protected from BT and MOD. Topical Impramine in wild-type mice attenuated MVP release and protected against BT and MOD. Aging amplified the gut leak and MOD despite having comparable MVP levels, suggesting a downstream susceptibility. Overall, the data identified FIASM-targetable PAFR–ASM–MVP pathway to link skin burn to systemic injury with increased vulnerability in aged hosts.

Kaur G, Xu YJ

Poster 10

Establishment of a ribonucleotide reductase conditional loss-of-function mutant to facilitate the study of the DNA replication stress and the replication checkpoint in fission yeast

Mentor: Yong-jie Xu, MD, PhD

BSOM, Department of Pharmacology & Toxicology

Introductory Statement: DNA replication is constantly perturbed by endogenous (e.g., oxidative stress) or exogenous (e.g., UV damage) factors that slow or pause the replication, causing replication stress (RS). The RS is primarily handled by the DNA replication checkpoint (DRC), which suppresses mitosis and allows the cell to complete DNA replication before dividing. To study DRC regulation in cells, hydroxyurea (HU) is used to inhibit ribonucleotide reductase (RNR) to deplete cellular dNTPs. This generates RS and activates DRC in all model organisms. Unfortunately, HU also produces oxidative stress, which complicates the studies.

Purpose: The purpose of this study is to develop conditional loss-of-function mutants of RNR to generate RS more specifically in fission yeast.

Methodological Approach: Fission yeast RNR consists of a large subunit, Cdc22, and a small subunit, Suc22. To generate the mutant, Suc22 and Cdc22 were tagged with Auxin-Inducible Degron (AID) at the genomic locus. The tagged strains were confirmed by colony PCR, Western blotting, and Indole-3-acetic acid (IAA) induced degradation of Cdc22 or Suc22. Spot assays were done to assess growth defects in the strains in the presence of IAA.

Findings: Suc22-AID and Cdc22-AID strains grew like wild-type cells, suggesting that AID tagging does not affect cell growth. IAA was tested in various concentrations and times, with 10nM IAA eliminating 95% of Cdc22-AID in 2 h. Increasing IAA concentration or incubation time did not increase protein degradation. A combination of Suc22-AID and Cdc22-AID is being tested to optimize the conditions for generating RS.

Savin A, Bhandari S, Reese R, Rapp CM, Henkels KM, Zhang W, Umerani A, Travers JB

Poster 11

Ultraviolet B radiation generates systemic toxicity in a photosensitive mouse

Mentor: Jeffrey Bryant Travers, MD, PhD

BSOM, Department of Pharmacology & Toxicology

Introductory Statement: Photosensitive patients, including those with xeroderma pigmentosum (XP) and lupus, have heightened sensitivity to ultraviolet B (UVB). Photosensitivity reactions commonly include sunburns, but severe cases cause fever and even multiple organ dysfunction (MOD), signaling systemic toxicity. Recent studies indicate that UVB leads to keratinocyte generation of the lipid mediator Platelet-activating Factor (PAF), which then through the enzyme acid sphingomyelinase (ASM) results in the release of microvesicle particles (MVPs) carrying PAF. We hypothesize that PAF-laden UVB-MVP release triggers bacterial translocation from the gut (BT) leading to “mini-sepsis”, ultimately causing MOD.

Purpose: Understanding the mechanisms involved in photosensitivity-induced systemic toxicity could facilitate the development of novel therapeutics.

Methodological Approach: We observed MVP release and systemic effects in our photosensitive murine model, XPA-/-, compared to wild-type C57BL/6, PAFR-/-, ASM-/-, and XPA-/-x PAFR-/- mice. MVP release from these mice was measured post-UVB exposure. To evaluate the downstream effects of MVP release, BT and MOD following UVB exposure were examined. Methods such as qPCR, histology, and bacterial plating were used. Utilizing genetic and pharmacologic inhibition of PAFR and ASM, we characterized the downstream effects of UVB-induced MVPs. These experiments offer insights into how UVB-induced MVPs contribute to systemic effects.

Findings: In response to UVB, XPA-/- mice had increased MVPs in their skin, BT, and MOD compared to wild-type mice. BT/MOD responses were attenuated in PAFR-/- and ASM-/- mice. These studies indicate a novel mechanism by which UVB irradiation to skin can signal systemically and suggest new pharmacologic targets for severe photosensitivity.

PU D, Thyagarajan A, Sahu R

Poster 12

Platelet-Activating Factor-Receptor Pathways Modify the Cellular Responses to Repurposed Loratadine, Rupatadine and Diphenhydramine in Non-Small Cell Lung Cancer

Mentor: Ravi Sahu, PhD

BSOM, Department of Pharmacology & Toxicology

Introductory Statement: Non-small cell lung cancer (NSCLC) is the leading cause of lung cancer-related mortality worldwide. Frequent mutations in target receptors and Chronic inflammation within the tumor microenvironment contribute to resistance against most standard therapies, making treatment challenging and further promoting cancer progression. Emerging evidence suggests that repurposing antiinflammatory and antihistaminergic drugs may offer therapeutic benefit.

Purpose: This study investigated the 1) role of platelet-activating factor receptor (PAFR) signaling in modulating the efficacy of antihistaminergic drugs (Loratadine, Rupatadine, and Diphenhydramine) and 2) the response with EGFR tyrosine kinase inhibitors (TKIs) like Gefitinib, Erlotinib on A549 and H1299 lung adenocarcinoma cell lines.

Methodological Approach: Cell culture and treatment, Cell viability (SRB ASSAY) and cytotoxicity assays, migration assay (Wound scratch assay), and qRT-PCR. Data were analyzed using the software Graph pad prism and ImageJ to compare control and treatment groups (Rupatadine, Loratadine, Diphenhydramine, Gefitinib, Erlotinib and their combination).

Results: All three antihistaminergic drugs reduced cell growth in a dose-dependent manner, with IC-25 and IC-50 dose calculated for further assays. Migration study revealed inhibition of wound closure; however, this effect was revered by PAFR agonist (CPAF). Combining these drugs with a PAFR antagonist enhanced cytotoxicity compared to monotherapy. Similarly, co-treatment with EGRF TKI’s showed greater response than individual treatment.

Findings: Thus, repurposing antihistaminergic drugs offers a promising adjunct strategy for NSCLC therapy. Their combination with EGFR TKIs and PAFR antagonists significantly enhances cytotoxicity compared to single-agent treatments. These findings support further investigation into multi-targeted approaches to overcoming drug resistance in lung cancer.

Addalaa A, Thyagarajan A, Sahu R

Poster 13

Delineating Cellular Mechanisms Influencing Antiangiogenic-based Therapy for Lung Cancer

Mentor: Ravi Sahu, PhD

BSOM, Department of Pharmacology & Toxicology

Introductory Statement: Angiogenesis supports tumor growth, and therapeutic agents targeting this process have demonstrated improved response rates across multiple malignancies, including lung cancer. Apatinib, a clinically used antiangiogenic agent, inhibits vascular endothelial growth factor receptor 2 (VEGFR2), resulting in the suppression of tumor cell proliferation. However, despite initial therapeutic benefit, tumor cells frequently develop escape mechanisms through compensatory bypass pathways.

Purpose: The G-protein coupled, platelet-activating factor-receptor (PAFR) pathway has been implicated as one such bypass mechanism that promotes tumor cell survival. In this study, we tested the hypothesis that inhibition of PAFR signaling can enhance the cytotoxic response to apatinib and apatinib-based combination approaches using NSCLC models.

Methodological Approach: Our studies employ PAFR-expressing NSCLC cell lines treated with or without apatinib, PAFR agonist and antagonist, and epidermal growth factor receptor-tyrosine kinase inhibitors (EGFR-TKIs) such as erlotinib and gefitinib. The cell viability, cell proliferation, cell migration, cytotoxicity assays, and real-time PCR were used to analyse the effects of various combinations in apatinib-based therapeutic efficacy.

Findings: The studies demonstrate that apatinib inhibits NSCLC cell viability in a dose- and time-dependent manner, with significantly enhanced cytotoxicity observed when combined with gefitinib and erlotinib. Notably, triple combination therapy targeting EGFR, VEGFR, and PAFR produced significantly greater suppression of cell proliferation than double-agent combinations, which were mediated via inhibiting of oncogenes and anti-apoptotic genes. Furthermore, PAFR agonist-induced cell migration was reversed by apatinib. These findings suggest that PAFR represents a potential therapeutic target to enhance the cytotoxic response of apatinib-based approaches in NSCLC.

Arora H K, Gautam S, Sulentic C E W

Poster 14

Hormonal and Environmental Signals Alter Antibody Production in Human B cells

Mentor: Courtney Sulentic, PhD

BSOM, Department of Pharmacology & Toxicology

Introductory Statement: The human immunoglobulin heavy chain (IGH) locus is regulated by the 3'IGH regulatory region (3'IGHRR), which contains enhancer elements that control antibody isotype expression. The polymorphic hs1.2 enhancer has a ~53 bp invariant sequence (IS) varying naturally in humans. This enhancer consists of transcription factor binding sites. Enhancer activity may be altered by hormonal stressors and xenobiotics which may influence immunoglobulin expression and susceptibility to immune-related disorders.

Purpose: This study investigated whether the hormonal stressor cortisol and the xenobiotic β_2-adrenergic receptor agonist terbutaline alter antibody production and if hs1.2 enhancer variants modify these responses in human B cells.

Methodological Approach: Human CL-01 B cells and CRISPR-Cas9–engineered hs1.2 enhancer variant clones were treated with hydrocortisone or terbutaline under stimulated and unstimulated conditions. Immunoglobulin isotype production (IgM, IgG, IgA) was measured to assess genotype-dependent responses to hormonal and xenobiotic exposure.

Findings: Hydrocortisone significantly increased IgG and IgA production in unstimulated control cells, indicating enhanced antibody secretion under basal conditions. Terbutaline did not significantly alter antibody production in control cells. In contrast, hs1.2 enhancer variant clones did not exhibit increased IgG or IgA following hydrocortisone treatment but instead showed increased IgM production, demonstrating a genotype-dependent shift in isotype expression. These findings provide direct evidence that variation in the hs1.2 enhancer alters human B-cell responsiveness to hormonal stressors and xenobiotics. Ongoing studies are examining combined exposures and immunoglobulin gene transcription. This work identifies a novel gene–environment interaction that may contribute to individual differences in immune responses and susceptibility to immune-related diseases.

Chauhan M, Thyagarajan A, Sahu R

Poster 15

Arsenic Compound-Mediated Inhibition of Lung Cancer Growth: Mediators and Mechanistic Pathways Affecting Targeted Therapy

Mentor: Ravi Sahu, PhD

BSOM, Department of Pharmacology & Toxicology

Introductory Statement: Drug repurposing offers a novel approach to treat human malignancies, due to its ability to target multiple signaling pathways, and is increasingly studied in combination with standard targeted therapies. However, the impact of arsenic compounds on the efficacy of epidermal growth factor receptor (EGFR)-based tyrosine kinase inhibitors (TKIs) in lung cancer remain unclear, despite the clinical use of arsenic trioxide and the known role of platelet activating factor-receptor (PAFR)-mediated microvesicle particles (MVP) in tumor growth and therapeutic response.

Purpose: This study was designed to elucidate the roles and mechanisms of PAFR and MVP pathways in mediating the effects of arsenic trioxide and sodium arsenite on the growth and the efficacy of EGFR-TKIs such as gefitinib and erlotinib in non-small cell lung cancer (NSCLC) models.

Methodological Approach: PAFR-expressing A549 and H1299 NSCLC cell lines were treated with or without arsenic compounds and EGFR-TKIs, and the outcomes including cell viability, cytotoxicity, migration, proliferation, and MVP release were evaluated using the MTT assay, CV assay, wound scratch assay, colony formation assay, and MVP analysis.

Findings: Arsenic compounds decreased NSCLC cell viability and migration in a dose- and time-dependent manner, whereas PAFR activation attenuated their effect on migration. In addition, arsenic compounds also enhanced the cytotoxic responses to EGFR-TKIs. Moreover, they induced a dose-dependent increase in MVP release, which was blocked by a PAFR antagonist and an acid sphingomyelinase inhibitor. These findings demonstrate that arsenic suppresses tumorigenic properties while promoting MVP secretion, underscoring the involvement of PAFR and MVP signaling in NSCLC.

Chavan M, Bhakta-Yadav M, Sulentic C

Poster 16

Genetic Variation in the 3′ IgH Regulatory Region of B cell Influences TCDD-Induced Antibody Dysregulation

Mentor: Courtney Sulentic, PhD

BSOM, Department of Pharmacology & Toxicology

Introductory Statement: 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) is a high-affinity ligand of the aryl hydrocarbon receptor (AhR) and a well-characterized immunotoxicant that alters antibody production in B cells. Prior studies using the CL-01 human Burkitt lymphoma B-cell line demonstrated that TCDD inhibits stimulation-induced IgG secretion, largely spares IgM, and exerts stimulation-dependent inhibition of IgA. The role of genetic variation within the immunoglobulin heavy chain (IgH) locus in mediating these effects remains unknown. The hs1.2 enhancer, located within the 3′ IgH regulatory region (3′IgHRR), exhibits allelic polymorphisms associated with altered antibody expression and immune-related disorders.

Purpose: This study aims to determine whether allelic variation in the hs1.2 enhancer modulates TCDD-induced alterations in human antibody isotype production.

Methodological Approach: Human B-cell lines and CRISPR/Cas9-edited clones representing distinct hs1.2 alleles will be exposed to TCDD under stimulation conditions. IgM, IgG, and IgA secretion will be quantified by ELISA, and corresponding IgH constant region transcripts will be measured by RT-qPCR to assess transcriptional effects.

Findings:
We anticipate that hs1.2 enhancer variants will differentially influence antibody isotype sensitivity to TCDD. These findings may clarify how IgH genetic variation contributes to variability in immune responses to environmental AhR ligands and susceptibility to immunotoxic exposure.

Jogi V, Kemp M

Poster 17

Development of a high-throughput assay for analyzing damaged cell-free DNA

Mentor: Michael G. Kemp, PhD

BSOM, Department of Pharmacology & Toxicology

Introductory Statement: Cell-free DNA (cfDNA) in blood and other biological fluids is widely used for noninvasive diagnosis and treatment of various disease conditions, including cancer and prenatal screening. Though DNA is known to be susceptible to damage by a wide variety of environmental, occupational, and therapeutic agents, whether cfDNA contains DNA adducts associated with these exposures has not been well studied due to limited, low-throughput detection methods.

Purpose: The purpose of my research is to develop a robust and high-throughput assay to detect bulky DNA adducts in cfDNA and to understand how cells release damaged cfDNA.

Methodological Approach: Cultured human cells were treated in 96-well plates with UVB radiation (a skin carcinogen), benzo(a)pyrene (a lung carcinogen), and the anticancer drug cisplatin. cfDNA was isolated and purified from culture media by differential centrifugation, immobilized on a nitrocellulose membrane and probed by DNA immunoblotting using adduct-specific antibodies, while cell viability was measured in parallel. To study the regulation of adduct release, we used both pharmacological and targeted genetic approaches targeting DNA repair and cell-death pathways.

Findings: All three genotoxin-induced adduct types were readily detected in cfDNA across a range of exposures, and adduct signal was inversely correlated with cell viability. Loss of DNA repair increased damaged cfDNA release, while apoptosis inhibition significantly reduced cfDNA release, supporting an apoptosis-dependent release mechanism amplified by impaired DNA repair. This assay could be used to detect many different types of DNA adducts in cfDNA from both research and clinical samples and to determine how therapeutic treatments modulate cfDNA release.

Yashoda Omkaresha, Ashot Kozak.

Poster 18

Optimization of Growth Media for Proliferating Human Leukemic Jurkat T Lymphocytes

Mentor: Ashot Kozak, PhD

BSOM, Department of Neuroscience, Cell Biology, & Physiology

Introductory Statement: Jurkat cells, derived from peripheral blood T lymphocytes of a patient with acute lymphoblastic leukemia, are widely used to study T-cell receptor signaling, NFAT activation, IL-2 secretion, ion flux, and cancer biology. In majority of the published work on Jurkat T cells, standard culture conditions rely on RPMI medium supplemented with 10% fetal bovine serum (FBS). However, FBS is not a defined supplement and its performance and cytotoxicity can vary between batches, potentially affecting experimental reproducibility.

Purpose: This study aimed to evaluate defined and alternative serum supplements to determine their effectiveness in supporting Jurkat T-cell growth and proliferation.

Methodological Approach: Jurkat T cells were cultured under multiple conditions: RPMI with 10% FBS, Advanced RPMI with 5% FBS, RPMI with 10% calf serum, and RPMI supplemented with 2% SimPL SHOT serum-free supplement derived from porcine platelet lysate. Cell density and proliferation rates were measured at multiple time points over 72 hours to assess growth performance across formulations.

Findings: The highest proliferation rates were observed in Advanced RPMI with 5% FBS and RPMI with 10% FBS. Cells cultured in 2% SimPL supplement demonstrated sustained growth, though at a moderately slower rate. Media containing 10% calf serum failed to support Jurkat cell proliferation and resulted in significant cell death. These findings suggest that while FBS remains the most effective supplement, porcine platelet lysate (SimPL) at low concentrations (2%) can support Jurkat T-cell growth and represents a more defined alternative. Future studies will evaluate higher SimPL concentrations and extended culture durations to further optimize serum-free conditions.

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

Poster 19

Severe Early-Onset Preeclampsia is Associated with Compromised Placental Oxygen Signaling via HIF-1a and Metabolic Dysregulation

Mentor: Thomas Brown, PhD

BSOM, Departments of Neuroscience, Cell Biology, & Physiology, and Obsetrics and Gynecology

Introduction: Hypoxia-inducible factor 1 (HIF-1a) is an oxygen-sensitive transcription factor which has previously been found to be upregulated in placentas of preeclampsia (PE) patients, suggesting placental HIF-1a plays a significant role in the pathogenesis of the condition when elevated beyond the first trimester. In this study, we sought to determine why HIF-1a remains elevated in severe, early-onset PE (sEOPE), and how its elevation leads to metabolic dysfunction in the placenta.

Methodological approach: Placentas from healthy pregnant control and severe, early-onset preeclampsia (sEOPE) were taken at the time of delivery and processed for Western blot analysis and glutathione content.

Results: HIF-1a was significantly elevated in sEOPE placentas. VHL, which degrades HIF-1a, was significantly decreased. AKT, which stabilizes HIF-1a, was significantly elevated. A decrease in VHL coupled with increased AKT provides a possible mechanism for the sustained elevation of placental HIF-1a. We then assessed downstream targets to determine the impact of elevated HIF-1a. Target proteins in glycolysis were significantly elevated. An enzyme critical for b-oxidation was significantly decreased. The master regulator of cellular energy-sensing, pAMPK, was significantly elevated, suggesting low cellular energy. Low cellular energy and HIF-1a elevation have both been shown to decrease antioxidant capacity, and likewise, we found significantly reduced GPX4 protein and decreased total GSH. A marker of endothelial dysfunction and decreased angiogenesis was also significantly elevated, providing further evidence of increased cellular dysfunction.

Conclusion: Severe, early-onset preeclampsia (sEOPE) is known to result from abnormal placentation resulting in compromised placental oxygen signaling, leading to sustained elevation of placental HIF-1a. This elevation results in a shift from oxidative phosphorylation to glycolysis, decreased cellular energy, reduced b-oxidation, and diminished antioxidant capacity. Our results provide compelling evidence for the significance of elevated placental HIF-1a in sEOPE pathogenesis.

Altallaa N, Casini D, Nystrom P

Poster 20

Does Hyponatremia Influence Outcomes in Acute Pulmonary Embolism? The Dayton VA Medical Center experience 2013-2022

Mentor: Perry Nystrom, MD

Dayton VA, Internal Medicine

Introduction: Hyponatremia (Na ≤ 135) is common in patients admitted to hospital and may be an additional risk factor for poor outcomes in acute pulmonary embolism (PE). Approximately 20% of acute PE patients have hyponatremia1. Risk stratification by the European Society of Cardiology 2019 guidelines emphasizes right ventricular dysfunction (imaging, cardiac biomarkers) and hemodynamic status2.

Because acute PE care is evolving rapidly, a review of Dayton VA cases was undertaken to improve care.

Methods: 10-year retrospective study 2013-2022 using VA Informatics and Computing Infrastructure databank. An acute PE cohort was identified by ICD-9/ICD-10 diagnostic codes and records reviewed manually. 375 cases were identified: 195 Low-Risk, and 180 Intermediate Low/High + High-Risk acute PEs. Intermediate and High-Risk cases were combined due to the low number of High-Risk acute PEs (N = 6). Comparison of hyponatremia with normonatremia (Na > 135) was conducted within and between risk classes for age, chronic conditions (pulmonary, cardiac, cancer), length of stay, readmission and death ≤ 30 days.

Results: Hyponatremia was present in 19% of Low-Risk and 18% of Intermediate + High-Risk acute PE. The median age of Low-Risk Hyponatremia was 63 years (IQR 54-73), and the median age of Intermediate + High-Risk Hyponatremia was 69 years (IQR 58-75). There was more chronic disease (pulmonary, cardiac, cancer) in the Intermediate + High-Risk Hyponatremia group. Length of stay was 3-5 days with Intermediate + High-Risk Normonatremia at 5 days. Hospital readmission within 30 days was significantly higher in the hyponatremia groups (Low-Risk Hyponatremia 21.6% readmission; Intermediate + High-Risk Hyponatremia 21.8% readmission). There were no deaths within 30 days in Low-Risk Hyponatremia, and 6 deaths in Low-Risk Normonatremia (3.8%). Death within 30 days was higher in the Intermediate + High-Risk groups: Hyponatremia 15.6% (5/32), and Normonatremia 14.2% (21/148). In this single center 10-year retrospective analysis of acute PE at the Dayton VA, acute PE with hyponatremia was associated with higher readmission within 30 days. Acute PE with hyponatremia warrants close follow-up after discharge. When patients present with nonspecific symptoms and hyponatremia without significant comorbidities, acute PE should be in the differential diagnosis.

Roeth C, Ballengee S, Korkmaz A, Dilley-Maltenfort B, Breyer L, Soldes O, Wynne E

Poster 21

Open versus laparoscopic indirect inguinal hernia repair in children: a ten-year retrospective review of laparoscopic percutaneous internal ring suturing

Mentor: Elisabeth Wynne, MD

BSOM, Department of Surgery and Dayton Children's Hospital

Introductory Statement: Congenital inguinal hernia is a common condition treated by Pediatric Surgeons. Despite laparoscopy being the preferred method for many, there is still debate on its efficacy compared to the open technique.

Purpose: The focus of this study is the laparoscopic PIRS with hydrodissection and PTI method versus open repair for CIH. This study provides further evidence on the safety and efficacy of the technique as compared to the open technique

Methodological Approach: This was a retrospective, cohort study from 2014-2023 at Dayton Children's Hospital, composed of children aged 17 years or less who had an inguinal hernia repair by a Pediatric Surgeon via either of the two techniques. Demographics, operative technique, intraoperative and postoperative complications, the development of a hernia recurrence or metachronous contralateral hernia, and length of follow-up were collected. 1,141 children were included in analysis, of which 61.5% (n = 702) had an open repair and 38.5% (n = 439) had a laparoscopic repair. Demographics were similar between the cohorts, except infants comprised a greater proportion of the laparoscopic group (45.1% vs. 36.2%, p = 0.002). There were more bilateral repairs in the laparoscopic group (p < 0.001). Post-operative complications were similar. The recurrence rate was 2.5% with laparoscopic repairs and 1.1% with open repairs (p = 0.079). Metachronous contralateral hernias occurred in 0.7% of laparoscopic repairs and 2.0% of open repairs (p = 0.075).

Findings: The rate of hernia recurrence and other post-operative outcomes were similar for the two techniques, providing further evidence for the continued use of the laparoscopic technique.

Shaheen N, Corbett FS, Singer ME, Salyers WJ, Srinivasan S, MD, Kaul V, Trindade AJ, Aravapalli A, Herman RD, Smith MS, Redd WD, Wilson NJ, Lister D, McKinley MJ, Cadmus MB, Odze RD

Poster 22

The Utility of MUC2 and CDX2 Expression in the Diagnosis of Barrett's Esophagus: A Community-based Study of Wide-Area Transepithelial Sampling and Forceps Biopsies

Mentor: Karen Hoffman, MD

CDx Diagnostics, Inc.

Introductory Statement: US standard of care guidelines currently require endoscopic identification of ≥1cm of columnar-lined epithelium accompanied by subsequent histological identification of goblet cells on a biopsy obtained via the Seattle Biopsy Protocol (SBP) to fulfill the diagnostic criteria for Barrett's esophagus. Improved early detection of Barrett's esophagus (BE) is essential to mitigate the life-threatening health outcomes that can occur secondary to stepwise progression to esophageal adenocarcinoma (EAC) in these patients. Adjunctive immunohistochemistry (IHC) in BE diagnostics is significantly underutilized in the community setting.

Purpose: CDX2 and MUC2 have been previously linked to improved diagnostic accuracy for Barrett's esophagus, but their efficacy remains vastly unexplored in routine practice.

Methodological Approach: A cross-sectional, multicenter analysis of 35,265 patients enrolled in a WATS3D US Registry was performed to evaluate the concordance between CDX2 and MUC2 immunohistochemistry with goblet cells identified on both WATS3D and FB specimens to evaluate its efficacy as a diagnostic aid for BE.

Findings: When defining histologic confirmation of goblet cells as the gold standard on WATS3D, MUC2 was highly sensitive and specific, 100% and 100%, respectively, while CDX2 was only highly sensitive and less specific at detecting goblet cells (100% and 45%, respectively). Of note, the SBP missed more than 50% of goblet cell cases when using WATS3D as the gold standard. MUC2 IHC staining is more sensitive and specific in diagnosing Barrett's esophagus than the traditional SBP and adjunctive use of this staining in commercial practice may prove to be a robust tool in a clinician's armamentarium for early BE detection and management.

Carmody E, Carmody I, Lowell J, Groll J

Poster 23

Impact of Human Growth Hormone on IVF Outcomes in Patients with Low Ovarian Reserve

Mentor: Jeremy Groll, MD

SpringCreek Fertility

Introductory Statement: Patients with diminished ovarian reserve (DOR) have lower success rates from in vitro fertilization (IVF) cycles. Human growth hormone (hGH) therapy has been used empirically to enhance ovarian response and improve outcomes, though evidence is inconclusive.

Purpose: The study aims to compare IVF outcomes in patients with low ovarian reserve who received hGH therapy versus those who did not.

Methodological Approach: A retrospective chart review was conducted of IVF cycles using a GnRH antagonist protocol at a SpringCreek Fertility between 2015 and 2024. Patients with low ovarian reserve, defined by AMH, FSH, and AFC criteria, were included (n = 816) and categorized into hGH (n = 614) and no-hGH (n = 202) groups. Primary outcomes were live birth rate and blastocysts per cycle. Continuous variables were compared with independent or Welch's t-tests, and categorical variables with chi-square tests; multivariable models adjusted for age, AMH, FSH, and BMI.

Findings: Patients receiving hGH were slightly older and had lower AMH compared with those not receiving hGH. Live birth rates per retrieval were similar between groups (27.7% no hGH vs. 27.9% hGH).. Mean blastocysts per cycle did not differ significantly (2.0 ± 1.9 no-hGH vs. 1.9 ± 1.9 hGH; p = 0.598). Exploratory POSEIDON analyses revealed age-dependent effects: younger patients (Group 3, <35 years) showed a clinically meaningful 10-point improvement in live birth rates with hGH (28.6% vs 38.2%), while older patients (Group 4, ≥35 years) showed no benefit (27.3% vs 24.5%).

DeRespiris H, Lowell J, Maxwell R, Dhanraj D

Poster 24

Examination of rates of hypertensive diagnoses during pregnancy in a post-COVID pandemic cohort

Mentor: Rose Maxwell, PhD

BSOM, Department of Obstetrics and Gynecology

Introduction: Rates of hypertensive disorders of pregnancy (HDP) have increased over the past three decades. COVID-19 has been associated with HDP, and prior studies demonstrated increased rates during the pandemic regardless of infection status. Our previous work showed that during the pandemic, rates of preeclampsia and gestational hypertension increased among Caucasian women but remained unchanged among African American women, suggesting that heightened population-level stress may have disproportionately affected groups with lower baseline stress exposure.

Purpose: To evaluate post-COVID rates of hypertensive disorders of pregnancy compared with pre-COVID and COVID cohorts, with stratification by race.

Methodological approach: This retrospective study included 12,607 patients who delivered within a large Midwestern hospital system during a 2-year, 8-month post-COVID period. Primary outcomes were rates of chronic hypertension, gestational hypertension, and preeclampsia. Outcomes were analyzed overall and stratified by African American, Caucasian, and Other race groups.

Findings: The post-COVID cohort (N=12,515) was demographically and clinically similar to prior cohorts. Rates of chronic hypertension increased significantly post-COVID, driven by a significant increase among Caucasian women, while rates among African American women slightly decreased. Gestational hypertension decreased slightly overall, with a significant reduction among African American women and a nonsignificant increase among Caucasian women. Preeclampsia rates remained unchanged overall. Post-COVID trends in HDP vary by race, with racial differences driven by divergent patterns instead of a uniform one. These findings highlight the need to further examine structural and psychosocial contributors, including baseline stress and allostatic load, to disparities in maternal health.

Fink S, Collins A

Poster 25

Effect of neonatal and maternal factors on neonatal absolute neutrophil count in the first week of life

Mentor: Amelie Collins, MD, PhD

Cincinnati Children's Hospital Medical Center

Introductory Statement: Neonatal sepsis is a leading cause of neonatal morbidity and mortality. However, neonatal sepsis is difficult to diagnose and frequently overtreated. A neonate's absolute neutrophil count (ANC) is a foundational tool in the evaluation of suspected neonatal sepsis, making appropriate reference ranges essential. Yet, studies considering gestational age, birth weight, and maternal hypertension suggest significant variability in what constitutes a normal ANC for a given neonate. Knowledge gaps remain regarding how other factors, such as chorioamnionitis, impact this range.

Purpose: The purpose of this study is to gather neonatal neutrophil values from the Maternal Infant Data Hub accessed through Cincinnati Children's Hospital Medical Center in order to (1) create trajectories of neutrophil values over the first week of a given neonate's life and (2) identify maternal and neonatal conditions significantly impacting these values.

Methodological Approach: Our study will utilize a retrospective chart review of maternal-infant dyads in the Cincinnati area from 2013 – present. We will categorize each patient based on demographic and clinical factors (such as gestational age and weight). Neutrophil trajectories will be constructed to display mean, 5th, and 95th percentiles of ANC by postnatal age during the first week of life. Trajectories will be generated for cohorts defined by individual variables and combinations of variables.

Findings: Our study will identify ANC trajectories that estimate the reference range for a neonate with multiple risk factors, aiding in the diagnosis and management of neonatal sepsis. These findings will support future research into the causes and mechanisms of neonatal neutropenia by refining its clinical definition.

Khatri R, Koch GE, Sood A, Stephens A, Abdollah F, Patel H

Poster 26

Prostate cancer survivorship in modern times – insights in the management of erectile dysfunction and urinary incontinence for clinically localized prostate cancer in the United States

Mentor: Hiren Patel, MD, PhD

The Ohio State Wexner Medical Center

Introductory Statement: Erectile dysfunction (ED) and urinary incontinence (UI) are common quality-of-life complications after treatment for localized prostate cancer, yet disparities persist in access to treatment for these outcomes.

Purpose: To identify factors associated with receiving ED and UI treatment following therapy for clinically localized prostate cancer.

Methodological Approach: Patients with clinically localized prostate cancer (cT1–3N0M0) treated with radical prostatectomy (RP) and/or radiation therapy (RT) from 2010–2023 were identified in EPIC Cosmos. Patients receiving hormone monotherapy, with <1 year follow-up, or incomplete data were excluded. ED and UI diagnoses and treatments were identified using CPT and ICD-10 codes. Cox multivariable regression models adjusted for socioeconomic and clinical factors evaluated predictors of treatment utilization. Sensitivity analyses assessed patients with baseline ED or UI.

Findings: Among 90,161 patients, 39.3% developed ED; 33.4% received medical therapy and 0.99% underwent prosthesis placement. UI occurred in 20.7%, with 1.4% undergoing surgery. Black race and prior ED were associated with higher likelihood of ED treatment, while older age, higher social vulnerability, and RT-based therapy were associated with lower utilization. Prosthesis placement was more likely among Black and socially vulnerable patients and those with prior ED, but less likely with older age and RT-based therapy. Prior UI and social vulnerability increased UI surgery, whereas RT-based therapy decreased utilization. Findings persisted in sensitivity analyses.

Conclusions: Despite high rates of ED and UI after treatment, surgical management remains uncommon (~1%). Socioeconomic and clinical disparities influence treatment utilization, highlighting opportunities to improve pretreatment counseling and survivorship care.

Johnson H, Abboud A, Maxwell R, Dhanraj D

Poster 27

When Birth Becomes Trauma: A Retrospective Review of Obstetric Emergencies

Mentor: Rose Maxwell, PhD

BSOM, Department of Obstetrics and Gynecology

Background: Birth trauma is increasingly recognized as a major contributor to adverse postpartum mental health outcomes. Obstetrical emergencies occur in 1-2% of pregnancies and may heighten a patient's risk for psychological distress. Trauma-informed care is increasingly recommended, but little is known about how it, and birth trauma, are documented in the electronic medical record following these events.

Purpose: The purpose of this study aims to evaluate the presence, quality, and consistency of birth trauma documentation and trauma-informed care practices among patient who experienced an obstetric emergency in order to guide institutional improvements in documentation standards, trauma screening, and continuity of care.

Methodological Approach: Retrospective chart review of patients who experienced a Code Green obstetric emergency between 2021 and 2025 within a multi-site health system.

Electronic medical records are reviewed across three time periods: acute postpartum (0-6 weeks), extended postpartum (6 weeks – 1 year), and subsequent pregnancies. Data collected included documentation of trauma or psychological distress, use of trauma-informed language or standardized tools, mental health diagnoses, and referrals to behavioral health or social work. Data are abstracted into REDCap and analyzed descriptively.

Findings: Data collection is ongoing. Preliminary review suggests variability in documentation of birth trauma and trauma-informed care across providers and time periods. Final analyses will characterize documentation patterns, referral practices, and continuity of trauma-informed care in subsequent pregnancies. Findings are expected to inform quality improvement initiatives aimed at improving trauma-informed obstetric care and documentation practices.

Lindsay J, Costa M, Leon T, Kwok W, Cadmus M, Komatineni S, Miller M, Hassan F, Cardosi A, Semon G, Staarmann B

Poster 28

Diagnostic Failure of CT Craniometrics in Atlanto-Occipital Dissociation: A Proposal for a Mechanism-Driven Clinical-Radiologic Framework

Mentor: Brittany Staarmann MD

Premier Health

Introduction: Atlanto-occipital dissociation (AOD), which is frequently non-survivable, requires timely diagnosis.. Traditional diagnosis relies on CT-based craniometric measurements, including the basion-dens interval (BDI), basion-axial interval (BAI), Powers ratio, and condyle-C1 interval (CCI), but their reliability as exclusionary tools in borderline or clinically ambiguous cases remains poorly characterized.

Methods: A retrospective cohort study was conducted at a level 1 trauma center (2012–2023). Patients with radiologically confirmed AOD were identified via institutional trauma registry. Ten patients were analyzed for demographics, Injury Severity Score (ISS), Glasgow Coma Scale (GCS), and CT craniometrics independently measured by four blinded raters. Cohen's D effect sizes were conducted comparing survivors and non-survivors following the initial injury, operative status, and patients for whom adjunct MRI was obtained.

Results: Among 10 patients with AOD, survival was not associated with CT craniometric thresholds; instead, survival clustered among patients with higher GCS scores and lower ISS values. CT craniometric values overlapped across survival groups. MRI was obtained selectively in patients with prolonged survival, and greater CT-based craniocervical displacement. Cohen's D effect sizes for BDI, BAI, Powers Ratio, and Condyle sum were 1.22, 0.45, 1.17, and 1.11, respectively, demonstrating moderate to large effect sizes..

Conclusion: CT craniometrics alone are insufficient to exclude clinically significant AOD. AOD should be approached as a clinical-radiologic syndrome in which normal or borderline CT measurements must not provide false reassurance. We propose a high-sensitivity framework integrating injury mechanism, neurologic status, imaging patterns, and selective MRI use to reduce diagnostic failure in AOD.

Lowell J, Carmody E, Maxwell R, Dhanraj D

Poster 29

Differences in Postpartum Visit Rates between Nulliparous and Multiparous Patients

Mentor: Rose Maxwell, PhD

BSOM, Department of Obstetrics and Gynecology

Introductory Statement: More than half of pregnancy-related mortality in the United States occurs during the postpartum period. Factors such as race, income level, lack of insurance, unstable housing, and transportation barriers are known to contribute to low rates of postpartum healthcare access. However, the impact of parity on postpartum visit (PPV) rates remains insufficiently explored.

Purpose: The purpose of this study is to compare the rates of postpartum visits among multiparous and nulliparous patients who have experienced uncomplicated pregnancies and deliveries.

Methodological Approach: A retrospective chart review was conducted on patients under the age of 45 with an ICD-10 code of O80 (Encounter for full-term uncomplicated delivery) between November 1, 2024, and August 31, 2025 (n=163). Data were gathered from the delivery records at Miami Valley Hospital. Patients were categorized into multiparous (n=136) and nulliparous (n=27), and the number of attended PPVs was recorded. Statistical analyses included Fisher's exact test, chi-square test, and logistic regression.

Findings: Among nulliparous patients, 50% attended a PPV, while the remaining 50% did not. For multiparous patients, 29.6% attended a PPV, with 70.4% not attending (p=0.060). Although these results were not statistically significant, they suggest that multiparous patients may have a lower attendance rate at PPVs compared to nulliparous patients. Future steps include increasing the study population and incorporating data from other local clinics to further examine the relationship between parity and PPV rates.

McGreal K, Stolfi A, Vish N

Poster 30

The Impact of Parental and Neighborhood Support in Promoting Childhood Flourishing in Children with Adverse Childhood Experiences

Mentor: Nora Vish, MD, MPH

BSOM, Dayton Children's, Department of Pediatrics

Introductory Statement: Flourishing is a common outcome used to quantify positive childhood development and well-being. Adverse childhood experiences (ACEs) decrease a child's flourishing and have lasting health impacts. Protective factors, such as parental emotional support (PES) and neighborhood support (NS), have been shown to buffer against these negative effects.

Purpose: To examine the role of PES and NS on childhood flourishing in children aged 6 months-17 years.

Methodological Approach: Data from the 2022 NSCH was analyzed for children aged 6 months-17 years. Flourishing was defined as positive responses to 3 of 3 questions about a child's emotional regulation and task completion. ACEs were grouped into 0, 1, 2-3, and 4-7. PES was defined based on whether a parent had someone to turn to for support with parenting. NS was defined as on living in a neighborhood where they felt supported and connected. Weighted multivariable logistic regression models were used to estimate adjusted odds ratios (aORs) and 95% confidence intervals (CIs) for not flourishing.

Findings: A total of 18,004 children aged 6 months-5 years and 34,362 aged 6-17 years, were included. The prevalence of not flourishing was 20.7% and 40.0% in the younger and older groups. Only in older children, as the number of ACEs increased the aORs of not flourishing increased. Lack of NS was associated with increased aORs of not flourishing in both groups. Among younger children, lacking PES and NS increased the odds of not flourishing. Strategies should focus on increasing opportunities to support parents and on strengthening neighborhood and community support.

Nguyen LF, Perkowski C, Ritter A, Boldman E, Hamilton J, Williams K, Bartoletti D, Short RF

Poster 31

The MINT Clinic: An Interventional Radiology–Based Quality Improvement Model to Reduce Lung Cancer Treatment Delays

Mentor: Robert Short, MD, PhD

Dayton Veterans Affairs Medical Center

Purpose: This quality improvement (QI) initiative aimed to reduce diagnostic and pre-treatment delays by implementing the Minimally Invasive Nodule Therapy (MINT) Clinic, a multidisciplinary model designed to consolidate lung cancer work-up and accelerate transition to definitive therapy.

Methodological Approach: The MINT Clinic was established in September 2023 within the interventional radiology (IR) department, leveraging procedural infrastructure and scheduling flexibility to create a centralized diagnostic hub. The clinic coordinated same-day PFTs, PET imaging, and image-guided lung biopsy. Interventional radiology nurses were trained and credentialed to administer PFTs using a cabinless pulmonary function testing system. Following diagnostic completion, cases were reviewed at a multidisciplinary tumor board, and treatment decisions were finalized through shared decision-making. Primary process measures included time to PFT completion and feasibility of same-day diagnostic coordination. Secondary outcome measures included time from diagnosis to initiation of definitive therapy, stratified by treatment modality. Analyzed retrospective data from 2014–2025, with prospective monitoring following clinic implementation.

Findings: Prior to MINT Clinic implementation, wait-times for PFTs were as long as 127 days. Following implementation of the MINT Clinic, time to PFT completion decreased to fewer than 17 days across the institution. Since September 2023, more than 140 patients underwent same-day PFTs and biopsy, with approximately 50 patients completing PET imaging, PFTs, and biopsy during a single visit.

Owens M, Savin A, Umerani A, Annamraju R, Bryant J, Rohan C, Travers J

Poster 32

Repurposing Topical Tricyclic Antidepressants to Reduce UVB-Induced Erythema in Rosacea via Acid Sphingomyelinase Inhibition

Mentor: Jeffrey Travers, MD, PhD

BSOM, Department of Dermatology and Pharmacology Transitional Unit

Introductory Statement: Rosacea is a common and heterogeneous skin disorder that often exhibits an exaggerated inflammatory response to many environmental triggers like ultraviolet light B (UVB). It has been shown that UVB radiation leads to activation of the enzyme acid sphingomyelinase (ASM) in keratinocytes, triggering release of microvesicle particles (MVPs) containing inflammatory mediators amplifying vascular dilation and erythema. Functional inhibitors of acid sphingomyelinase (FIASMs) such as tricyclic antidepressants imipramine and amitriptyline reduce ASM activity and thus may attenuate UVB-induced inflammation.

Purpose: Evaluate the efficacy of topical imipramine and amitriptyline to reduce UVB-induced erythema in patients with rosacea.

Methodological Approach: In this double-blinded, placebo-controlled clinical trial, self-identified rosacea patients and controls underwent low-fluence (300J/M2) UVB exposure to defined facial skin areas. Prior to irradiation, subjects received topical 4% amitriptyline, impramine, or vehicle. Reflectance spectrophotometry measured patient erythema at baseline and following irradiation at predefined post-exposure intervals. Standardized clinical photography and thermography were performed, and patients recorded pain/pruritus using visual analog scales. Following enrollment of 26 participants, the protocol was amended to increase topical concentration from 4%-10%.

Findings: Treatment with topical FIASMs did not significantly reduce UVB-induced erythema compared to vehicle in the overall cohort; however, in exploratory analysis restricted to participants with dermatologist-confirmed photosensitive rosacea, treatment was associated with significant reduction in erythema measured at 24 hours post irradiation ($p<0.001$ for all formulations). FIASMs were well tolerated without significant adverse events. Findings are based on interim analysis of 55 participants; enrollment is ongoing. These studies suggest a novel therapeutic for photosensitivity.

Parekh A, Hull A, Reid G, Santra S, Kim R, Cheng-Ching E, Terry J

Poster 33

Sphenopalatine Ganglion Block for Aneurysmal Subarachnoid Hemorrhage Related Headache

Mentor: John Terry, MD

BSOM, Clinical Neuroscience Institute

Background: Aneurysmal subarachnoid hemorrhage (aSAH) affects 30,000 people/year in the US. A characteristic feature is severe headache that may persist for weeks to years. Opioids are first line treatment but provide poor pain control. Related sedation may mask neurologic deterioration or cause respiratory depression, atelectasis, or hypotension. The sphenopalatine ganglion (SPG) has connections to the trigeminal nerve, a major pain mediating structure in the head. SPG blocks may interrupt afferent signals, decreasing pain. The TX360 is a minimally invasive device that causes SPG blockade by directing local anesthetic to the nasopharyngeal mucosa overlying the SPG. It has been used to treat headaches in the outpatient setting.

Purpose: Evaluate the safety and efficacy of TX360 SPG block for aSAH related headache.

Methodology: Between April 2025 and February 2026, we screened aSAH patients admitted with a Hunt and Hess score of 0-3, secured aneurysms, and ability to report symptoms. After consent was obtained, patients received bilateral lidocaine TX360 SPG block and another 3 days later. Pain scores (0-10) and opioid use in morphine equivalents (me) were collected.

Results: Six patients (12 bilateral SPG blocks) were enrolled. Post-SPG block 4-hour-average pain scores were lower than the pre-procedural pain scores and are approaching significance (median 7 vs 5, $p = 0.074$). Twenty-four-hour opioid use post procedure was significantly lower than 24-hour opioid use pre procedure. (67.5 vs 36.75 me, $p = 0.022$).

Conclusion: Bilateral lidocaine TX360 SPG block decreased pain and significantly decreased opioid use in aSAH related headache. This may be a more effective strategy for aSAH related headache.

Park YJ, Umerani A, Fox R, Johnson RM, Zhang W, Xu Z, Smith AA, Rohan CA, and Travers JB

Poster 34

Microvesicle Particles in Acute Thermal Burn Injury Patients: A Pilot Observational Study

Mentor: Jeffrey B. Travers MD, PhD

BSOM, Department of Pharmacology and Toxicology

Introductory Statement: Burn injuries represent the 4th leading cause of trauma death and thermal burn injuries account for majority of those. Severe thermal burns often lead to lethal multiple organ dysfunction (MOD) and immune deficits, but the mechanism is unclear. Our group's murine studies have implicated the skin keratinocyte generation of microvesicle particles (MVP) after a thermal burn as playing a crucial role in the systemic effects.

Purpose: The purpose of this study is to measure MVP in human subjects within hours following a thermal burn injury compared to later convalescent values to test if these subcellular particles are pathogenic.

Methodological Approach: Patients with thermal burn injuries who were admitted to the Premier Miami Valley Burn Unit were voluntarily enrolled and 10 mL of whole blood was obtained from the patient upon admission. At convalescence (24-116 days later), another 10 mL sample was obtained. Samples were centrifuged to obtain MVP for analysis.

Findings: Results from a total of 12 patients enrolled in the study thus far demonstrate that MVP levels in the initial samples were statistically significantly elevated as compared to the convalescent samples. Levels of smaller exosome particles remained unchanged suggesting the MVP findings were not due to changes in fluid status. Future plans for these ongoing studies will be to assess potential correlations between clinical parameters (age, size of burn, presence/absence of alcohol exposure) with MVP levels. These studies validate our ongoing murine studies and provide premise for new therapeutic targets to treat burn victims.

Maxwell R, Baker T, Scott S, Ekeh B, Johnson H, Herr M, Rodriguez S, Dhanraj D

Poster 35

Remote Blood Pressure Monitoring Among Postpartum Women in Montgomery County, Ohio

Mentor: Rose Maxwell, PhD

BSOM, Department of Obstetrics and Gynecology

Introductory Statement: Remote blood pressure monitoring has been proposed as a strategy to improve postpartum hypertension management and reduce adverse maternal outcomes. Montgomery County, Ohio, continues to experience high maternal morbidity and mortality, with hypertensive disorders contributing significantly to complications. Community-based initiatives distributing home blood pressure cuffs may improve follow-up and early detection of persistent or new-onset hypertension.

Purpose: To describe clinical outcomes among postpartum women who received a home blood pressure cuff at hospital discharge and to provide baseline data for future quality improvement initiatives.

Methodological Approach: This community-based program distributed 150 automated blood pressure cuffs to postpartum patients at Miami Valley Hospital between April and October 2024. Participants received education on home monitoring and instructions to log readings for six weeks postpartum. Medical record review was conducted under IRB determination of Not Human Subjects Research. Descriptive statistics were used to summarize readmissions, emergency department (ED) visits, postpartum visit (PPV) attendance, and new hypertension diagnoses.

Findings: Among 150 participants, 18% returned for an ED visit or obstetric readmission related to hypertension, occurring a mean of 9.4 days after discharge. New diagnoses of gestational hypertension or preeclampsia occurred at ED visits, readmissions, and PPVs. Seventy-nine percent attended at least one PPV within 12 weeks, exceeding reported national averages. Few participants initiated documented telephone or portal communication regarding blood pressure concerns.

Conclusions: Home blood pressure cuff distribution among postpartum women provides important data for evaluating readmissions, follow-up attendance, and new hypertension diagnoses. High PPV attendance suggests potential benefit, supporting continued evaluation of remote monitoring as a maternal health quality improvement strategy.

Shenouda M, Travers JB, Sun S

Poster 36

Comparing Clinical vs Histopathological Features in Diagnosing Erythemato-Squamous Diseases

Mentor: Jeffrey B. Travers, MD, PhD

BSOM, Department of Pharmacology & Toxicology

Introductory Statement: Erythemato-squamous diseases (ESDs) exhibit overlapping clinical manifestations and diverse histopathological profiles, thus presenting diagnostic challenges. Low concordance between clinical and histopathological assessments can compromise diagnostic accuracy and harm patient care, particularly when differentiating between premalignant and malignant lesions. Improved integrated approaches combining clinical and histopathological features are needed.

Purpose: Investigating the relative contributions of clinical versus histopathological features in distinguishing six ESD classes can improve diagnostic approaches targeting these dermatological conditions.

Methodological Approach: We analyzed the University of California, Irvine (UCI) Dermatology dataset comprising 366 patients diagnosed with one of six ESDs: psoriasis, seborrheic dermatitis, lichen planus, pityriasis rosea, chronic dermatitis, and pityriasis rubra pilaris. Clinical and histopathological features were assessed using paired t-tests. Multiple logistic regression (MLR) models were constructed for each ESD class to evaluate predictive performance.

Findings: Paired t-tests revealed a statistically significant difference between clinical and histopathological averages across the dataset ($p < 2.2e\text{-}16$), with clinical features generally more pronounced. This trend was consistent across all disease classes except chronic dermatitis ($p = 0.8102$). MLR models demonstrated high predictive performance across all six ESDs, with pityriasis rubra pilaris achieving the highest predictive accuracy of 94.5%. Clinical features exhibited higher average severity across the dataset; however, this does not necessarily translate into diagnostic dominance, which varies by disease class. For conditions like lichen planus, histopathological features provided stronger predictive power. Our results underscore the complementary roles of clinical and histopathological data and support integrated, data-driven models for improving diagnostic accuracy in dermatology.

Speers J, Spatafore J, Markovicz J, Schultz A, Alwani M

Poster 37

Transoral Robotic Surgery (TORS) vs Nonsurgical Management of Early Oropharyngeal Squamous Cell Carcinoma- A Systematic Review and Meta Analysis

Mentor: Mohamedkazim Mohamed Alwani, MD

BSOM, Department of Head an Neck Surgical Oncology

Introductory Statement: Oropharyngeal squamous cell carcinoma (OPSCC) is a malignancy of the oropharynx involving the tonsils, base of tongue, soft palate, and uvula and is primarily associated with human papillomavirus (HPV). The treatment paradigm for OPSCC has shifted over the years from invasive surgery to primary radiation or chemoradiation, and more recently to Transoral Robotic Surgery (TORS).

Purpose: To compare treatment of early OPSCC with TORS to chemoradiation or radiation alone with respect to oncologic control, functional outcomes, and quality of life.

Methodological Approach: A systematic review was conducted in adherence with PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) guidelines. R statistical software was used to calculate odds ratios (ORs) and hazard ratios (HRs), and descriptive analyses were performed. Inclusion criteria included peer-reviewed, full-text studies of adults, written in English, published after 2009, comparing primary TORS ± adjuvant therapy with primary radiation or chemoradiation for early-stage (stage I–II) OPSCC. Exclusion criteria included pediatric studies, studies without distinction between early- and advanced-stage disease, case reports, case series with fewer than 10 patients per treatment group, animal studies, reviews, editorials, letters, and conference abstracts lacking full data.

Findings: Thirteen studies were included in the final analysis. Primary TORS demonstrated a statistically significant lower hazard ratio for overall survival. No statistically significant difference was found in odds ratios for gastrostomy tube dependence at 1 year post-treatment. Data heterogeneity highlights the need for more standardized comparative studies of surgical and non-surgical management of early OPSCC.

Vinczi S, Carmody I, Ekeh P

Poster 38

Observations from the Adoption of Robotic Cholecystectomy by an Acute Care Surgery Service

Mentor: Peter Ekeh, MD

BSOM, Department of Surgery

Introduction: Robotic cholecystectomy (RC) is increasingly utilized for benign gallbladder disease; however, its role within Acute Care Surgery (ACS) remains incompletely defined. We assessed RC adoption and compared outcomes with laparoscopic cholecystectomy (LC).

Purpose: To evaluate perioperative outcomes of RC versus LC in ACS.

Methods: All patients undergoing cholecystectomy by ACS surgeons at a Level I trauma center (Jan 2024–Dec 2025) were retrospectively reviewed. Demographics, indication, approach (RC vs. LC), conversion to open, operative time, length of stay (LOS), complications, and 30-day readmission were collected. Continuous variables were compared using the Mann–Whitney U test and categorical variables using Fisher's exact test.

Results: A total of 778 cholecystectomies were performed: 271 RC (34.8%) and 507 LC (65.2%). There were no differences in age or sex between groups. RC patients had a higher median BMI (31.7 vs. 30.7 kg/m^2, p=0.003). LC was performed more frequently for acute cholecystitis (37.9% vs. 29.5%, p=0.022), whereas RC was more commonly used for symptomatic cholelithiasis (39.1% vs. 26.6%, p<0.001). RC was associated with a lower rate of conversion to open (0.7% vs. 3.6%, p=0.017) and shorter LOS (median 2 vs. 3 days, p<0.001). There were no significant differences in operative time (75 vs. 79 minutes, p=0.257), complication rate (6.3% vs. 9.7%, p=0.137), or 30-day readmission (5.9% vs. 8.5%, p=0.255).
Conclusion: Early adoption of RC by an ACS practice demonstrated safe perioperative outcomes, lower open conversion, and shorter LOS without increases in operative time, complications, or readmissions. RC presents a viable option for ACS management of benign gallbladder pathology.

Williams K, Bartoletti D, Nguyen L, Perkowski C, Yao S, Short R

Poster 39

Intraprocedural Margin Confirmation in Lung Microwave Ablation: A Workflow for Quantitative Oncologic Adequacy

Mentor: Robert Short, MD, PhD

BSOM, Dayton VA Medical Center

Introductory Statement: Image-guided thermal ablation (IGTA) is a definitive therapy increasingly applied to both primary and metastatic tumors of the lung. Local tumor control following IGTA is primarily determined by the adequacy of ablative margins. In lung ablation, intraprocedural margin assessment is challenged by respiratory motion, aerated parenchyma, hemorrhage, atelectasis, and proximity to critical thoracic structures. Visual estimation of the ablation zone is subjective, contributing to variability in technique and outcomes. In other solid organs, margin confirmation software has demonstrated feasibility and reproducibility, supporting ablation as definitive oncologic treatment analogous to surgical resection.

Purpose: To demonstrate a reproducible workflow for quantitative three-dimensional ablative margin assessment during lung microwave ablation providing objective evaluation of oncologic adequacy and real-time procedural decision-making.

Methodological Approach: Image-guided lung microwave ablations were performed using a standardized confirmation workflow. Pre-procedural CT imaging was used for lesion characterization and margin planning. Microwave probe placement was performed using CT guidance, followed by intraprocedural imaging.

Planning and intraprocedural datasets were coregistered using ablation confirmation software to assess probe-to-target relationships prior to energy delivery. Post-ablation CT imaging was obtained, and volumetric minimal ablative margin analysis was performed. Identified margin deficiencies prompted targeted antenna repositioning and repeat ablation.

Findings: Intraprocedural ablation confirmation was feasible and reproducible in the lung despite thoracic-specific challenges. Quantitative margin analysis identified cases in which visual assessment alone would have overestimated adequacy, directly influencing intraprocedural management. This workflow enabled objective margin assessment, improved margin awareness, and reproducibility. Margin-driven confirmation shifts lung ablation from a visually inferred intervention to a standardized, quantitatively guided oncologic therapy.

Nystrom P, Curry B, Casini D

Poster 40

Preemptive Anticoagulation in Acute Pulmonary Embolism: A Single Center VA System Analysis

Dayton VA, Department of Internal Medicine

Background: Acute pulmonary embolism (PE) can be fatal, and clinical guidelines recommend early anticoagulation. Clinician gestalt, pretest probability scoring, and risk/benefit analysis may prompt preemptive AC prior to diagnosis.

Purpose: Evaluate preemptive anticoagulation in acute PE cases over a 10-year period at Dayton VA to elucidate knowledge gaps in acute PE evaluation and care.

Methodological approach: Between 2013-2022, 375 cases of acute PE were identified in the VA Informatics and Computing Infrastructure, manually reviewed, and risk stratified according to the 2019 European Society of Cardiology guidelines. For Intermediate and High-Risk acute PE, the revised Geneva Score (RGS) for PE risk probability was used to compare preemptive AC cases to AC after diagnosis by CT pulmonary angiography or V/Q scan.

Findings: 180 cases (48%) were intermediate Low/High and High-Risk acute PE. Preemptive AC occurred in 24 cases (13.3%). For comparison to AC after diagnosis (n = 144), cases with RGS < 4 (low clinical risk), clinician concern for bleeding, and High-Risk/arrest were excluded. RGS for preemptive AC was mean (SD) 6.08 (1.7), and RGS for AC after diagnosis mean 7.06 (1.8). Time to AC after diagnosis was median 150 minutes (IQR 90-275). Revised Geneva Scores were similar in this cohort although only a low percentage of veterans received preemptive anticoagulation. Decision for AC is likely related to gestalt, confirmatory testing, and AC risk-benefit assessment. Rarely, an acute PE probability score is documented in the medical record. Acute PE education efforts are ongoing to improve early anticoagulation and quality of acute PE care.

Lekkala K, Oroszi TL

Poster 41

Clinical evidence of association between type-2 diabetes mellitus and hypothyroidism with therapeutic relevance - An observational study

Mentor: Terry L. Oroszi, MS, EdD

BSOM, Department of Pharmacology & Toxicology

Introductory Statement: Diabetes Mellitus and Thyroid Disorders are the most common endocrine disorders. Patients with either one of the disorders are at higher risk of developing the other disorder. The co-existence of type-2 diabetes mellitus(T2DM) and hypothyroidism with clinical evidence of effect on one another has not been reported until today.

Purpose: The purpose of this study is to determine prevalence of thyroid dysfunction in patients with type 1 and type 2 diabetes mellitus and vice-versa. The study also aimed to show the interrelationships between thyroid hormone levels and glycemic status to understand the clinical implications which can support the screening of either of the two disorders.

Methodological Approach: The observational study was conducted in southern part of India, and the study involved 702 patients. Each participant's blood sugar levels and thyroid profiles were statistically analyzed using unpaired t-test.

Findings: The incidence of hypothyroidism and hyperthyroidism in diabetic patients was 20.2% and 1.71% respectively, while the incidence of type-1 DM and T2DM in thyroid dysfunction patients was 0.56% and 19.03%. The clinical evidence of association between hypothyroidism and diabetes mellitus with the highest incidence of hypothyroidism in T2DM with four major findings suggesting regular thyroid and glycemic level evaluations. Adjustment of dosage of levothyroxine is necessary with prompt monitoring and reduction of the dose of insulin or oral hypoglycemic drugs to avoid hypoglycemia and its complications.

Bayyoud M, Harcha J, Pucheril D, Hellan M

Poster 42

A Prostatic Anomaly: Primary Extragastrointestinal Stromal Tumor of the Prostate

Mentor: Daniel Pucheril, MD

Kettering Health, Department of Urology

Introductory Statement: Extragastrointestinal Stromal Tumors (EGIST) are mesenchymal tumors arising from the intestinal cells of Cajal outside of the gastrointestinal system. They are exceedingly rare, especially when originating from the prostate. This case aims to further our understanding of this condition.

Case Description: A 60-year-old man presented with urinary hesitancy and dyschezia worsening over 4 months. Abdominal/pelvic computer tomography with contrast identified a 13x11cm prostate. A positive CD34/CD117 biopsy and a normal PSA suggested an EGIST of the prostate; molecular testing confirmed a c-Kit Exon 9 mutation. Pelvis magnetic resonance imaging revealed a mass originating from the prostate with central necrosis that anteriorly and superiorly displaced the bladder. The patient was started on 800mg daily imatinib, leading to a complete regression of the mass within 7 months. Dosage was decreased to 400mg due to intolerability, which led to a progression in the size of the prostate to 9.7x8.6cm. He was reinitiated on 800mg without improvement. A positron emission tomography scan indicated no metastasis. The patient underwent pelvic exenteration and was started on sunitinib 50mg daily with continued monitoring.

Discussion: Imatinib and surgical resection are first-line treatments for EGIST of the prostate. Tumors with c-Kit 9 mutation require a higher dosage of imatinib (800mg) compared to those with c-Kit 11 mutation (400mg). Sunitinib is a second-line treatment in cases of tumor progression or intolerance to imatinib.

Significance/Conclusion: In patients with a pelvic mass, prostatic EGIST should remain in the differential diagnosis. Immunohistochemical confirmation is essential for providing adequate treatment and improving prognosis.

Blades G, Annamraju R, McGreal K, Bahl S

Poster 43

Pigmented Epithelioid Melanocytoma in a 13-Year-Old Boy: Navigating Diagnostic Complexity and Management of a Rare Pediatric Melanocytic Tumor

Mentor: Shalini Bahl, MD, FAAD

ACE Dermatology, Laser and Cosmetics

Introductory Statement: Pigmented epithelioid melanocytoma (PEM) is a rare intermediate-grade melanocytic tumor with 41 cases reported in the literature. PEM is most common in young adults and carries a paradoxical prognosis: despite lymph node metastasis in one third of cases, distant metastases are rare. However, PEM is histologically indistinguishable from epithelioid blue nevus associated with Carney complex, an autosomal dominant neoplasia syndrome associated with PRKAR1A gene mutation which presents with cardiac myxomas, endocrine tumors, and heterogenous skin pigmentation; mandating genetic screening in all patients.

Case Description: A 13-year-old boy with family history of melanoma and no significant past medical history presented with a heavily pigmented lesion involving the right malar cheek which had grown over three months. Punch biopsy was performed and histopathology revealed normal membranous beta-catenin, positive BRAF V600E, and negative NRAS Q61R which confirmed pigmented epithelioid melanocytoma. The patient was sent for genetic testing; negative PRKAR1A excluded Carney complex. Re-excision was performed given margin proximity.

Discussion: This case highlights critical lessons for PEM. First, heavily pigmented melanocytic tumors require careful immunohistochemical workup. Second, all PEM patients require Carney complex screening; cardiac myxomas occur in 43% of affected individuals and represent the leading cause of mortality. Third, recognizing PEM's prognosis prevents overtreatment; conservative excision with clinical surveillance every 6-12 months is appropriate, avoiding unnecessary procedures.

Significance/Conclusion: PEM represents a rare but important diagnostic consideration in pediatric patients with heavily pigmented melanocytic lesions. Accurate diagnosis ensures appropriate conservative management, mandatory Carney complex screening, and reassuring prognostic counseling for families.

Dalton R, Fresch R, Bombrys A

Poster 44

Enterovirus Meningitis in the Second trimester of pregnancy: A Case Report

Mentor: Robert Fresch DO, Annette Bombrys DO

Kettering Health

Introduction: Enteroviruses are the leading identified cause of viral meningitis in the general population, yet cases in pregnancy are rarely reported. Clinical presentation in pregnant patients may be atypical, and symptoms can overlap with both benign pregnancy-related conditions and obstetric or neurologic emergencies, complicating the diagnosis.

Case Description: A 33-year-old G2P1001 at 19 weeks 5 days gestation presented to the emergency department with a sudden-onset occipital headache described as the worst of her life. Physical exam was significant for discomfort with passive neck flexion, negative meningeal signs, and no focal neurologic deficits. Initial lab and imaging evaluations were nonsignificant. Lumbar puncture revealed an elevated opening pressure, and PCR analysis of the CSF was positive for enterovirus, confirming the diagnosis of viral meningitis. She received supportive care with IV fluids and analgesics with complete resolution of her symptoms and underwent an otherwise uncomplicated pregnancy course with term delivery of a female neonate.

Discussion: Enteroviral meningitis in pregnancy presents diagnostic challenges due to overlapping symptoms with both benign and emergent conditions. While maternal enterovirus infection is associated with favorable maternal and fetal outcomes, it is difficult to differentiate clinically from bacterial meningitis, which is associated with high maternal and fetal morbidity and mortality.

Clinical presentation of viral meningitis in pregnancy may also be atypical, thus necessitating a high index of suspicion for diagnosis.

Significance/Conclusion: Prompt evaluation of severe headaches in pregnancy is essential to exclude life-threatening etiologies. Early recognition of viral meningitis allows appropriate supportive care and is associated with favorable maternal and neonatal outcomes.

Fisher A, Dole M, Boyd JT, Nguyen D

Poster 45

Treatment and 18-year follow up of a high-grade transitional cell carcinoma of the bladder in a 3-year-old boy

Mentor: Donald Nguyen, MD

Dayton Children's Hospital, Department of Pediatric Urology

Introductory Statement: Transitional cell carcinoma (TCC) of the bladder is exceedingly rare in pediatric patients and is typically low-grade and non–muscle invasive. High-grade disease in early childhood is exceptionally uncommon, and management strategies are not well established.

Case Description: A 3-year-old Caucasian boy with no family history of malignancy or known carcinogenic exposures presented with several weeks of painless gross hematuria. Urinalysis and culture were negative. Renal and bladder ultrasonography revealed a papillary mass along the posterior bladder wall. He underwent cystoscopy with complete transurethral resection of bladder tumor (TURBT) and random bladder biopsies, which were negative for carcinoma in situ (CIS). Pathology, confirmed at two institutions, demonstrated high-grade transitional cell carcinoma. MRI of the abdomen and pelvis and chest radiography showed no metastatic disease. Given absence of CIS concern for morbidity with intravesical therapy, a surveillance-based approach was selected. Serial cystoscopy, urine cytology, and renal/bladder ultrasonography showed no recurrence for six years before loss to follow-up. Eighteen years after diagnosis, at age 21, imaging remained negative and he was asymptomatic with normal bladder function.

Discussion: High-grade pediatric TCC is extremely rare, and evidence guiding intravesical therapy in this population is limited. This case demonstrates successful management with complete resection and structured surveillance in the absence of CIS.

Significance/Conclusion: Long-term remission over eighteen years suggests that selected pediatric patients with high-grade TCC may be managed with morbidity-sparing strategies and close surveillance, highlighting the importance of individualized treatment planning in rare malignancies.

Kamoua R, ReddyR, Gutierrez Y, Mosallaei D, Yen K, Hughes M

Poster 46

Loss of INI1 Expression in the Absence of Malignancy: A rare Cutaneous Finding in a Child with Rhabdoid Tumor Predisposition Syndrome (RTPS)

Mentor: Rasika Reddy, MD

University of Southern California

Introductory Statement: Rhabdoid Tumor Predisposition Syndrome (RTPS) is an autosomal dominant condition caused by germline mutations in SMARCB1 or SMARCA4, which encode subunits of the SWI/SNF chromatin remodeling complex. Patients with RTPS are at high risk for aggressive malignancies, including atypical teratoid/rhabdoid tumor (ATRT) and malignant rhabdoid tumor (MRT). Loss of INI1 (SMARCB1) expression, detected by immunohistochemistry (IHC), typically indicates malignancy. While INI1-deficient skin lesions have occasionally been reported as early manifestations of systemic MRT, benign lesions with complete INI1 loss are extremely rare and poorly characterized.

Case Description: We report a months-old boy with genetically confirmed RTPS and metastatic ATRT who presented with a papillomatous, verrucous plaque on the posterior neck present since birth. Serial biopsies six months apart demonstrated benign histology without cytologic atypia yet revealed complete loss of INI1 in the dermis. Despite concerning IHC findings and a history of malignancy, the lesion remained clinically stable without progression.

Discussion: This case represents the first report of a clinically and histologically benign congenital skin lesion with total INI1 loss in a pediatric RTPS patient. It underscores that complete INI1 loss in the skin does not necessarily indicate malignancy, even in the context of systemic ATRT. Careful interpretation of INI1-deficient lesions requires correlation with clinical behavior and histology rather than relying solely on IHC results.

Significance/Conclusion: This case expands the phenotypic spectrum of RTPS to include non-malignant, INI1-deficient congenital skin lesions. Recognition of this entity may help avoid overtreatment and guide appropriate monitoring strategies in pediatric patients with RTPS.

Khouzam JP, Reddy A, Kumar A, Fischer K, Cancilla L, Harkins K, SeethaRammohan H, Valencia D

Poster 47

When Arrhythmia Isn't Ischemia: Primary Cardiac Lymphoma Masquerading as Coronary Disease

Mentor: Damian Valencia, MD

Kettering Health,
Department of Interventional Cardiology

Introductory Statement: Primary cardiac lymphoma (PCL) is a rare, aggressive malignancy, comprising less than 2% of primary cardiac tumors and <0.5% of extranodal lymphomas. Clinical presentation is often nonspecific and can mimic ischemic or inflammatory cardiac disease.

Case Description: A 77-year-old woman with sarcoidosis presented with new-onset atrial flutter and exertional chest discomfort without prior coronary disease. Initial evaluation focused on ischemia and inflammatory myocardial involvement. Computed tomography angiography revealed a 7.5 × 5.2 cm pericardial mass invading the right ventricular myocardium with circumferential encasement of the right coronary artery. Differential diagnosis included cardiac sarcoidosis, metastatic disease, cardiac sarcoma, and primary cardiac malignancy. Given its infiltrative appearance and coronary encasement, video-assisted thoracoscopic biopsy confirmed high-grade B-cell lymphoma, establishing PCL. Repeat imaging one month later demonstrated rapid progression to 10 × 5.2 cm with worsening right atrial compression.

Discussion: Primary cardiac lymphoma remains a diagnostic challenge due to rarity, variable presentation, and symptoms that mimic inflammatory or ischemic heart disease.

Our patient presented with atrial flutter and anginal symptoms, broadening the differential. Arrhythmias likely result from myocardial infiltration or conduction system involvement creating reentrant circuits. Coronary encasement adds complexity, as ischemia may result from extrinsic compression despite preserved luminal patency. Coexisting sarcoidosis further obscured diagnosis given overlapping imaging features. However, rapid interval growth and coronary involvement favored malignancy, underscoring the need for early tissue confirmation.

Significance/Conclusion: PCL should be considered in unexplained arrhythmia with cardiac mass and coronary encasement. Early tissue diagnosis is essential given rapid progression and poor prognosis.

Mitchell V, Petit K, Bakos M

Poster 48

Mycobacterium abscessus infection following compounded GLP-1 agonist injection

Mentor: Kristen Petit MD

BSOM, Department of Dermatology

Introductory Statement: Rapidly growing nontuberculous mycobacteria (NTM) are increasingly recognized causes of cutaneous infection following injections and aesthetic procedures. With the increasing use of injectable metabolic therapies such as compounded glucagon-like peptide-1 (GLP-1) agonists, clinicians may encounter atypical injection-site reactions that mimic inflammatory conditions and delay diagnosis.

Case Description: A 38-year-old man presented with a four-month history of persistent, painful subcutaneous nodules on the bilateral lower abdomen and right buttock at sites of self-administered compounded semaglutide (GLP-1 agonist) injection. Initial examination showed firm, mildly erythematous nodules without fluctuance or drainage. Lesions were treated empirically as panniculitis with intralesional triamcinolone, resulting in transient improvement followed by recurrence. Punch biopsy demonstrated suppurative granulomatous dermatitis and panniculitis. The lesions progressed to fluctuant, draining nodules prompting incision and drainage with bacterial and atypical mycobacterial cultures obtained. Acid-fast bacilli staining was positive, and culture confirmed Mycobacterium abscessus. The patient was treated with clarithromycin and minocycline with marked clinical improvement. Infectious disease evaluation confirmed multiple abscesses at prior injection sites, and prolonged treatment with clarithromycin and minocycline was recommended.

Discussion: Cutaneous M. abscessus infection typically presents as persistent nodules or abscesses at sites of inoculation and may initially resemble panniculitis or granulomatous reactions. Empiric corticosteroid therapy may transiently reduce inflammatory response and possibly permit the progression of infection. Recognition requires biopsy and mycobacterial culture in refractory injection-site lesions.

Significance/Conclusion: Persistent or recurrent nodules following injectable therapies, including compounded GLP-1 agonists, should prompt evaluation for atypical mycobacterial infection. Early diagnosis is essential to initiate appropriate prolonged antimicrobial therapy and prevent progression.

Reddy A, Khouzam J, Fischer K, Valencia D, Reddy N

Poster 49

When Anatomy Shapes Intervention: Left-Sided Inferior Vena Cava in Massive Pulmonary Embolism

Mentor: Damian Valencia, MD

Kettering Health, Department of Interventional Cardiology

Introductory Statement: Left-sided inferior vena cava (IVC) is a rare embryologic variant that can predispose to deep vein thrombosis (DVT), thereby increasing the risk of pulmonary embolism (PE). Massive PE is a high-mortality cardiovascular emergency that requires prompt diagnosis and intervention to improve survival. Recognition of IVC anomalies on imaging is essential for procedural planning.

Case Description: A 53-year-old male with hypertension and recent COVID-19 infection presented with bilateral leg pain and swelling. Imaging revealed extensive bilateral DVT and filling defects in bilateral main pulmonary arteries with multilobe extension, along with an incidental left-sided IVC. He was tachycardic, tachypneic and hypoxic on admission.

Heparin was initiated and interventional cardiology was consulted for mechanical thrombectomy. Initial percutaneous aspiration revealed complete femoral vein occlusion extending into the IVC; the procedure was aborted due to significant clot burden with plans for repeat thrombectomy. Following intensive care unit transfer, he rapidly deteriorated and died from massive thromboembolism despite advanced cardiovascular life support.

Discussion: This case highlights the procedural challenges of managing massive PE in the setting of a left-sided IVC. Extensive thrombus extending from the femoral veins into the anomalous IVC limited percutaneous femoral access and delayed planned pulmonary thrombectomy via the internal jugular approach. The combination of high thrombus burden and variant venous anatomy contributed to acute clinical decompensation.

Significance/Conclusion: Left-sided IVC, though rare, may significantly alter endovascular strategy in high-risk PE. Early recognition of venous anomalies on imaging is critical for procedural planning, as anatomic variation can worsen the extent of thrombosis and influence patient outcomes.

Schlessel B, Sheldon S

Poster 50

Overlap of Myasthenia Gravis and Neuromyelitis Optica Spectrum Disorder: Navigating Dual Complement-Mediated Disease and Treatment Challenges

Mentor: Jon P Williams, DO

BSOM, Department of Clinical Neuroscience

Introductory Statement: The coexistence of myasthenia gravis (MG) and aquaporin-4 antibody–positive neuromyelitis optica spectrum disorder (NMOSD) is rare but has been reported to occur more frequently than expected by chance. Both disorders share complement-mediated autoimmune mechanisms, supporting the use of targeted therapy.

Case Description: A 36-year-old woman with acetylcholine receptor antibody–positive MG diagnosed at age 24, treated with pyridostigmine and prophylactic thymectomy, developed severe monocular vision loss and longitudinally extensive transverse myelitis approximately seven years later. Testing confirmed AQP4-IgG–positive NMOSD. Initial corticosteroids and plasmapheresis yielded partial recovery. She was subsequently treated with eculizumab for approximately five and a half years, then transitioned to ravulizumab, achieving long-term clinical stability without relapse.

Discussion: This case highlights the recognized but uncommon overlap of myasthenia gravis and AQP4 positive neuromyelitis optica spectrum disorder, which often presents with MG preceding central nervous system involvement by several years. The temporal association and frequent history of thymectomy reported in dual-disease cases suggest a shared immunologic susceptibility rather than coincidence alone. Recognition of this overlap is important, as therapies targeting complement mediated injury may be effective across both conditions.

Significance/Conclusion: This case illustrates the typical presentation for MG preceding NMOSD and highlights the efficacy of C5 complement inhibition, supporting early recognition and treatment in patients with coexisting autoimmune neuromuscular and CNS demyelinating disease.

Rajaee D, Lamb J, Alslaiti Y, Thai Q

Poster 51

Late-Onset Posttransplant Lymphoproliferative Disorder (PTLD) in an EBV (+) Individual Diagnosed with Burkitt Lymphoma

Mentor: James Lamb, MD

BSOM, Department of Internal Medicine

Introductory Statement: Posttransplant lymphoproliferative disorder (PTLD) is a potentially life-threatening complication of solid organ transplantation resulting from prolonged immunosuppression. Because kidney transplantation is the most frequently performed solid organ transplant, kidney transplant recipients account for a disproportionate share of PTLD cases. Most cases of PTLD occur within the first year after transplantation and are often associated with Epstein–Barr virus (EBV) infection, leading surveillance strategies to focus predominantly on the early post-transplant period, consistent with Kidney Disease Improving Global Outcomes (KDIGO) recommendations. However, late-onset PTLD remains underrecognized and may occur outside the period of routine surveillance, including in the absence of detectable EBV viremia. Burkitt lymphoma is a rare subtype of PTLD accounting for 1.4-1.6% of PTLD cases.

Case Description: We report a case of a 33-year-old male diagnosed with Burkitt lymphoma–associated PTLD approximately nine years after kidney transplantation. The patient, who was EBV-seropositive prior to transplantation, presented with progressive nausea, vomiting, weight loss, and acute kidney injury initially attributed to benign gastritis. Subsequent endoscopic evaluation revealed extensive gastric and duodenal involvement by monomorphic Burkitt lymphoma. Notably, EBV DNA was undetectable at the time of PTLD diagnosis.

Discussion: This case highlights the limitations of EBV-based surveillance in late-onset PTLD and underscores that the absence of detectable viremia does not exclude disease as up to 40% of PTLD cases in contemporary series are EBV-negative.

Significance/Conclusion: PTLD remains a feared consequence of prolonged immunosuppression after solid organ transplantation and warrants sustained clinical vigilance beyond the early post-transplant period, regardless of EBV viremia status.

Kyle H, Fisher A, McCoy L

Poster 52

AML and Immunomodulators, A Perfect Storm for Fungus

Mentor: Luke McCoy, MD

BSOM, Department of Internal Medicine

Introductory Statement: Simultaneous opportunistic infections in immunocompromised patients present significant diagnostic and therapeutic challenges, particularly when laboratory data are inconclusive. In many cases, an underlying immunosuppressive state creates the ideal environment for complex dual infections to form.

Case Description: A 76-year-old male presented with syncope, hemoptysis, fatigue, hypoxemia, and pancytopenia. Chest imaging demonstrated multifocal pulmonary infiltrates and ground-glass opacities concerning for opportunistic infection.

Bronchoscopy with bronchoalveolar lavage was positive for PJP by PCR and showed a low-positive Histoplasmosis antigen (0.21 ng/mL). Fungal stains and cultures remained negative throughout the treatment course. Empiric therapy with intravenous trimethoprim-sulfamethoxazole (TMP-SMX), itraconazole and adjunctive corticosteroids was initiated. Bone marrow biopsy revealed 50–60% myeloblasts and induction therapy with azacitidine and venetoclax was initiated. During hospitalization, he developed a suspected TMP-SMX–associated drug rash and was persistently neutropenic, prompting transition of secondary PJP prophylaxis to atovaquone. Serial fungal biomarkers remained negative following therapy, and the patient experienced marked clinical improvement with resolution of oxygen requirements.

Discussion: This case illustrates the complexity of treating overlapping opportunistic infections in the setting of occult leukemia. Equivocal fungal markers require integration of clinical, radiographic, and immunologic context to guide empiric therapy in conjunction with multiple subspecialists.

Significance/Conclusion: Multiple opportunistic co-infections although rare, may present in patients in severe immunocompromised states. Early bronchoscopy and multidisciplinary coordination are essential in accurately diagnosing and guiding appropriate treatment.

Chen TA, Young K

Poster 53

Improving Osteoporosis Exercise Knowledge in Women Through an Educational Intervention in a Family Medicine Clinic

Mentor: Kristin Young, MD

Kettering Health, Department of Family Medicine

Introductory Statement: Osteoporosis and low bone density are common in postmenopausal women and significantly increase fracture risk, yet many patients lack practical knowledge about safe, bone-strengthening exercise in primary care settings. Primary care visits offer an important opportunity for low-cost, scalable education on osteoporosis-appropriate activity.

Purpose: To evaluate whether a brief, clinic-based educational intervention improves knowledge and self-reported confidence regarding osteoporosis-safe exercise among women aged 50 years and older.

Methodological Approach: In a 4-week quality improvement project at a family medicine clinic, female patients ≥50 years completed a pre-intervention survey assessing demographics, bone health status (none vs osteopenia/osteoporosis), baseline exercise behavior, and knowledge of osteoporosis-appropriate exercise and safety. Patients then received a standardized handout on weight-bearing, resistance, balance, and flexibility exercises, including precautions such as avoiding sharp forward spinal flexion, adapted from established osteoporosis exercise guidance. A post-intervention survey assessed the same knowledge items plus confidence and satisfaction. Descriptive statistics and subgroup comparisons by bone health status and baseline exercise behavior were performed.

Findings: Twenty-five patients participated. Mean knowledge scores increased from 85.6% pre-intervention to 100% post-intervention, eliminating baseline gaps in identifying optimal bone-strengthening exercises and safe movement patterns. Patients with osteopenia/osteoporosis demonstrated slightly higher baseline knowledge than those without a diagnosis, but both groups achieved 100% post-intervention scores. Participants not exercising at baseline showed the largest knowledge gains and the greatest increase in confidence to begin bone-healthy activity. All participants rated the materials as good or excellent.

Crudele M, Gresham S, Madisetty S, Repas S, Springer B

Poster 54

The Effects of Mass Casualty Incident Training on Medical Students

Mentor: Brian L. Springer, MD and Steven J. Repas, MD

BSOM, Department of Emergency Medicine

Introductory Statement: Due to a rise in mass casualty incidents (MCIs), pre-hospital and hospital-based systems have implemented MCI training to streamline response and improve patient outcomes. This training is not a national requirement for medical students. However, it is beneficial for them to participate in MCI training. Those who do show increased knowledge and confidence assisting in MCI's. However, confidence in patient triage and assessment, as well as comfort participating in future MCI training, remains unexplored.

Purpose: Identify the effects MCI training has on medical student's confidence and comfort in future MCI participation. A secondary aim is to assess the effect on interest in pursuing emergency medicine.

Methodological Approach: MD Students participated in MCI training and completed pre/post-surveys (n=22) in REDCap using a Likert Scale. Using IBM SPSS software, Δmean between pre/post-surveys was analyzed for statistical significance using paired t-tests and an $\alpha = 0.05$. Results: 52.9% increase in confidence assessing + triaging patients ($p = <0.001$), 35.3% increase in confidence responding to + treating patients ($p = <0.001$), 28.9% increase in comfort participating ($p = <0.001$), and a 14.4% increase in interest pursuing emergency medicine as as specialty choice (students w/ no prior MCI experience) ($p = 0.041$).

Findings: Students demonstrated increased confidence responding to, assessing, treating, and triaging MCI patients, an increased comfort participating in MCI training, and more interest pursuing emergency medicine as a specialty among students with no prior experience. This highlights the importance of MCI training in medical school curricula.

Dai J, Chen TA, Crowder K

Poster 55

Improving Diabetic Eye Screening Compliance in Primary Care: A PDSA Quality Improvement Initiative

Mentor: Katie Crowder, MD

Kettering Health, Department of Family Medicine

Introductory Statement: Diabetic retinopathy is a leading cause of vision loss in working-age adults. Early detection through annual dilated eye exams reduces vision loss by 95%. Our primary care practice had significant gaps: only 51.6% of diabetic patients had documented eye exam status, and only 36.4% of overdue patients received intervention (referral or reminder). These gaps represented a missed prevention opportunity.

Purpose: This QI project aimed to increase documented eye exam status and appropriate intervention through a standardized screening checklist.

Methodological Approach: We conducted a PDSA cycle over four weeks. Pre-intervention chart review of 31 diabetic patients identified 22/31 (71%) overdue for exams. Only 51.6% had documented status and 36.4% received intervention. We designed a point-of-care checklist with patient education and implemented it across 31 patient encounters during a 2-week pilot with provider feedback (n=8).

Findings: Combined intervention rate increased from 36.4% to 86.7% (+50.3 percentage points; 138% relative increase). Documentation improved from 51.6% to 83.9%. Results were highly significant ($\chi^2 = 7.26$, $p = 0.0071$). Patients were 2.38× more likely to receive intervention (NNT ≈ 2). Provider satisfaction was high: 100% found the checklist easy to use and time-acceptable; 75% supported permanent implementation. A simple point-of-care checklist significantly improves diabetic eye screening compliance in primary care. The intervention is feasible and sustainable. Future implementation should include EHR integration and staff training.

Gadun A, Doehring S, Ji K, Froehle A, Lader J

Poster 56

Orthopedic Externship for Underrepresented High School Students: A Pre- and Post-Event Survey Comparison

Mentor: Andrew Froehle, PhD

BSOM, Department of Orthopedic Surgery

Introductory Statement: Orthopedic surgery remains one of the least diverse specialties in medicine, with persistent gender and racial disparities. While prior pipeline initiatives have targeted college and medical students, limited research evaluates structured early exposure programs at the high school level.

Purpose: To evaluate the impact of an Orthopedic Surgery Summer Externship for underrepresented high school students on interest in medicine, perceived attainability of a medical career and access to mentorship.

Methodological Approach: Eighteen high school students participated in a five-day externship featuring operating room and clinic shadowing, hands-on skills laboratories (saw bones, arthroscopy, casting/splinting, suturing), subspecialty panels, and structured one-on-one medical student mentorship. Pre- and post-externship surveys assessed interest in medicine, belief in the feasibility of pursuing a medical career, and perceived access to mentorship. Participants (median age 17 years) were predominantly female (77.8%) and racially diverse. Paired post-surveys comparisons demonstrated significant increases in interest in pursuing a medical career ($p<0.001$), perceived attainability of a career in medicine ($p<0.001$) and access to mentorship (mean increase 3.57 to 4.79; $p=0.004$). Females reported higher interest and perceived attainability ($p<0.001$). Racial subgroup analyses revealed significant differences in both interest and perceived feasibility ($p<0.05$).

Qualitative responses emphasized increased confidence, improved understanding of surgical careers, and meaningful mentorship.

Findings: A structured, mentorship-focused orthopedic externship significantly improved high school students' interest in medicine, confidence in career attainability, and access to mentorship. Early, intentional pipeline interventions may help address longstanding diversity gaps in orthopedic surgery and medicine broadly. Longitudinal follow-up is warranted to evaluate sustained impact on educational and career trajectories.

Crudele M, Gresham S, Madisetty S, Repas S, Springer B

Poster 57

The Effect of Self-Efficacy and Stress Levels on Medical Students Accuracy of Patient Triage in a Simulated Mass Casualty Incident

Mentor: Brian Springer, MD

BSOM, Department of Emergency Medicine

Introductory Statement: Self-efficacy and stress-levels play crucial roles in our cognitive performance. Among emergency and healthcare workers, studies have suggested that increased self-efficacy can mitigate negative effects of stress in high-intensity situations resulting in improved performance. Mass casualty incidents (MCIs) are stressful events where high self-efficacy among responders could be beneficial for positive patient outcomes. Previous studies have shown that self-efficacy among first responders increases following MCI simulation training. However, the effect of these qualities on the accuracy of patient triage by medical students in an MCI simulation has not been studied.

Purpose: This study aimed to analyze the effects of self-efficacy and stress levels on medical students' accuracy of patient triage in a simulated MCI simulation.

Methodological Approach: MD Students participating in MCI training completed pre-surveys (n=22) in REDCap using standardized generalized self-efficacy (GSE) and perceived stress (PSS) measures. Students were assigned to teams of similar baseline scores and graded on their triage accuracy in a MCI simulation based on pre-defined criteria and standardized simulated patients. Using IBM SPSS software, data was analyzed using Spearman correlational studies which showed coefficients indicating a positive relationship between GSE and triage accuracy ($\rho = 0.298$) and a negative relationship between PSS and triage accuracy ($\rho = -0.233$), although not statistically significant.

Findings: There was a positive relationship between GSE and triage accuracy and a negative relationship between PSS and triage accuracy. Neither large enough to be statistically significant, likely due to small sample sizes. Future studies with higher statistical power must be done to determine significance.

Miller A, Johnson, S, O'Malley C

Poster 58

Cognitive Load Theory: Utility in Pathology Education for Preclinical Students

Mentor: Chasity O'Malley, PhD

BSOM, Department of Medical Education

Introductory Statement: Cognitive load theory (CLT) is an educational theory that is based on the premise that humans have limited cognitive capacity. There are two types of cognitive load: extraneous load (EL) and intrinsic load (IL). EL includes noisy environments, redundancy in information sources, and other environmental factors that negatively impact learning. IL is the inherent complexity of the topic. Humans learn best when EL and IL are low. Therefore, minimizing EL and optimizing IL leads to learning.

Purpose: The purpose of this study is to assess the effects of CLT when applied to the subject of pathology in undergraduate medical education.

Methodological Approach: CLT principles were utilized to create optional pre-class practice problems with explanations for first year medical students at the Boonshoft School of Medicine. These materials were provided for three classes that covered neoplasia: 2 Peer Instruction (PI) classes and 1 Team-Based Learning (TBL) class. Scores were taken from the PIs, TBL, and MCQ exam. The control group consisted of students who did not complete the optional materials. Quantitative data was analyzed with unpaired two-tail T tests. Statistical analysis was performed on Microsoft Excel. P values less than 0.05 were considered statistically significant.

Findings: Results of the study were mixed: some data suggests that CLT helped students, but most of the data was inconclusive, and further studies are needed to fully elucidate the utility of CLT.

Vallabhaneni V, O'Malley C, Manger J

Poster 59

Understanding Facilitator Expectations in Problem-based Learning

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Introductory Statement: Despite the increased usage of constructivist pedagogies such as Problem Based Learning (PBL) in medical education, many faculty struggle with roles and expectations for learner and facilitator behavior. PBL sessions create a unique challenge, since it involves recruiting and training a large group of facilitators in a pedagogy that is generally unfamiliar to the population.

Purpose: The purpose of this study was to understand PBL facilitators' expectations for student participants and how those expectations align with constructivism.

Methodological Approach: We used a qualitative narrative case study design examining a group of nine faculty PBL facilitators at a single medical school. We conducted semi-structured interviews asking facilitators to describe PBL in their own words, their thoughts on the goals of PBL, the two most important expectations they had for students in their PBL groups, and how they facilitated those expectations. We transcribed the interviews verbatim and used constant comparative analysis to explore emergent themes in the data. We achieved interrater reliability of >85%.

Findings: Four themes emerged from the data regarding faculty expectations: Collaborative (n=4), prepared (n=5), critical thinking (n=4), and serious approach (n=3). While many of these themes reflect constructivism (collaboration, critical thinking), some aspects reflect traditional learning expectations (prepared). These emergent themes suggest that facilitators may need more training on PBL and constructivist methods to more fully engage students.

Murray B, Lee D, Agoro K, Queenland N

Poster 60

The Dilemma of Choice: Investigating Medical Students' Final and Alternative Specialty Selections for Categorical Residency Positions

Mentor: Brian Murray, DO

BSOM, Department of Emergency Medicine

Introductory Statement: Shockingly little data exists regarding what specialties US medical school seniors who have decided on a specialty also considered pursuing before applying to residency.

Purpose: Knowing what specialties medical school seniors also considered when deciding on their specialty could help residency programs within specialties struggling to attract applicants understand which specialties they are primarily recruiting against.

Methodological Approach: 4th year medical students at WSU-BSOM who submitted residency rank-order lists in the spring of 2024 and 2025 were surveyed via RedCap, a HIPAA-compliant secure online survey application. Specifically, survey respondents were asked to indicate which medical specialty represented their top choice, and what specialties constituted their second and third preferences. Factors influencing specialty preference such as compensation, residency length, prior experience, etc. were also surveyed. Survey data was analyzed for patterns of preference among students applying for residency within a specific specialty.

Results: Generally, students preferred alternative specialties with similar patient populations/scopes of practice as their first-choice specialty. Likewise, students applying for residency spots in procedural specialties generally also favored alternative specialties that offered opportunities for procedures. Factors such as lifestyle, expected pay, did not demonstrate a clear influence with regards to alternative specialty choice.

Findings: Addressing current and anticipated physician shortages in certain specialties will require an understanding of medical student preferences. This study re-affirms that patterns of preference exist among students entering certain fields. Future studies may further examine such patterns to determine how residency programs can attract applicants in a changing US healthcare landscape.

Kareena A, Kishan P

Poster 61

Mapping Health Inequity: Socioeconomic Predictors of Life Expectancy Across Five Midwestern States

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Introductory Statement: Despite interventions, health disparities persist across Midwestern states, and it is unclear why neighboring states with similar resources have different life expectancies. While individual risk factors like diabetes and uninsured status are known contributors to poor health outcomes, we still do not understand how these factors predict life expectancy at the state level.

Purpose: The purpose of this study is to examine 2025 data from five Midwestern states to identify socioeconomic factors associated with variation in life expectancy.

Methodological Approach: Using County Health Rankings data, we conducted ANOVA with Tukey post-hoc testing, correlation analysis, multiple linear regression, and independent-samples t-tests ($p < .05$ considered significant). Significant differences emerged across states in life expectancy, uninsured rates, diabetes prevalence, and severe housing cost burden. Indiana had the highest life expectancy (77.77 years), while Illinois had the lowest (74.79 years).

Diabetes prevalence was weakly but significantly associated with severe housing cost burden ($r = .179$, $p < .001$). In the analysis, uninsured status was the strongest predictor of differences in life expectancy. Ohio had a relatively low uninsured rate but significantly higher diabetes prevalence than neighboring states.

Findings: This data suggests that reducing health disparities requires that policy interventions target fundamental social determinants of health, income security, housing stability, and nutrition rather than relying solely on improvements in healthcare access. To policymakers and clinicians, this work underscores the urgency of moving beyond healthcare to address the Upstream social and economic inequities that are driving premature mortality across the Midwest.

Bacon I, Jackson A

Poster 62

Infant Mortality in Ohio

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Introductory Statement: Infant mortality continues to occur at alarming rates that differ among various groups and states. Despite this, there has been a lack of intersectional examination of risk- and protective-factors.

Purpose: We examine how smoking status, education level, primary care to population ratio, teen birth rates, and urban vs rural status impact infant mortality rates in Ohio, Kentucky, Michigan, and Indiana using County Health Rankings data.

Methodological Approach: Ohio was shown to have no significant difference between urban and rural infant mortality rates; however, risk-and-protective factors did differ. In urban counties, high school completion, teen birth rates, and primary care ratios accounted for 44% of the variance in infant mortality. In rural Ohio counties, only the teen birth rate was statistically predictive and accounted for 8.5% of the variance. Infant mortality rates also did not differ between the four states ($F=1.30$, $p=.28$), despite our predicted risk factors differing, specifically in Kentucky, which has a higher teen birth rate, lower education rate, and more smoking ($p<0.001$), but the same infant mortality rate.

Findings: Infant mortality is a nuanced topic and the product of multiple intersecting social determinants of health. The variation of predictive factors followed by an insignificant change in overall infant mortality rate indicates a need for targeted public health interventions focused on predictive factors specific to a community.

Bartoletti D, Williams K, Nguyen L, Perkowski C, Short R

Poster 63

Interventional Radiology Representation on NCCN Guideline Committees: A Cross-Sectional Analysis

Mentor: Robert Short, MD, PhD

Dayton VA Medical Center

Purpose: The National Comprehensive Cancer Network (NCCN) develops evidence- and consensus-based guidelines that shape standards of care in oncology. Multidisciplinary representation on guideline committees is essential to ensure recommendations reflect the full range of effective, evidence-based therapies.

Interventional Radiology (IR) is a rapidly expanding specialty that provides minimally invasive, image-guided treatments, often offering safer, faster, and cost-effective alternatives to surgery or systemic therapy with comparable outcomes in selected patients. Growing evidence supports interventional oncology across hepatocellular carcinoma, colorectal liver metastases, lung tumors, bone metastases, and other malignancies. As the role of IR in cancer care expands, it is important to assess whether this expertise is reflected in national guideline development. This study evaluated specialty and leadership representation on NCCN guideline committees, with a focus on interventional radiologists.

Methods: A cross-sectional review of all active NCCN guideline committees as of January 2025. Members were categorized by specialty and gender. IR representation was quantified by committee membership and leadership roles. Descriptive statistics summarized IR presence overall and across disease sites where interventional oncology has established or emerging roles.

Results: Among 1,449 physicians identified, 11 were interventional radiologists (0.76%). IRs were represented on 14 of 66 guidelines (21.2%), with 52 panels lacking IR participation. Most panels included 0–3 IR members. Women comprised 40.3% of all panelists but only 18.2% of IR members.

Conclusion: Interventional radiologists remain underrepresented in NCCN guideline development despite growing evidence supporting interventional oncology. Greater inclusion of IR expertise may improve multidisciplinary balance and ensure comprehensive, evidence-based cancer care.

Bhujel K, Nahhas R

Poster 64

ADHD Severity and Recreational Screen Time in U.S. Children and Adolescents: The Moderating Role of Socioeconomic Status

Mentor: Ramzi Nahhas, PhD

BSOM, Department of Population and Public Health Sciences

Introductory Statement: Recreational screen time has emerged as a significant public health concern among children, particularly those with Attention-Deficit/Hyperactivity Disorder (ADHD). While ADHD has been associated with increased screen engagement, less is known about whether a dose-response relationship exists across ADHD severity levels and how family financial status shapes this association.

Purpose: The purpose of the study is to examine whether ADHD severity predicts daily recreational screen time, while examining whether financial status moderates this relationship.

Methodological Approach: The 2023 and 2024 National Survey of Children's Health were used for this study, consisting of 100,736 participants age less than 18 years with complete data. Ordinal logistic regression was used to determine the association between ADHD severity and recreational screen time, adjusting for relevant confounders. An interaction term was included to assess moderation by family financial status.

Findings: A dose-response relationship was observed between ADHD severity and recreational screen time. Compared to children without ADHD, those with mild, moderate, and severe ADHD had 34%, 40%, and 44% greater odds of more recreational screen time, respectively. Family financial status significantly moderated this relationship. Among those at the 75th and 25th percentiles of FPL, those with severe ADHD had 57% and 38% greater odds of more screentime, respectively, and those at the Federal poverty level only 26% greater. Thus, greater income does not mitigate the link between ADHD severity and screen use, rather the opposite, underscoring the need for targeted interventions and clinical guidance across all socioeconomic groups.

Boyd J, MacDonald S, Chambal M, Virani E, Silverstein S

Poster 65

"My kids more than anything": Intergenerational Substance Use Among Overdose Survivors

Mentor: Sydney Silverstein, PhD

BSOM, Department of Public Health Sciences

Introductory Statement: Substance use disorders are a leading cause of preventable morbidity and mortality which disproportionately affect vulnerable populations. Nearly two decades of high rates of drug overdose and overdose deaths have also produced generational consequences in communities such as Dayton, Ohio. However, the role of intergenerational substance use in shaping risk and drug use trajectories remains poorly understood, particularly within the context of the ongoing opioid epidemic.

Purpose: This study aims to qualitatively understand the impact of intergenerational substance use disorder on the lived experiences of overdose survivors.

Methodological Approach: Researchers conducted interviews with 35 individuals who met the following criteria: (1) age 18 years or older, (2) residence in the Dayton, Ohio metropolitan area, and (3) self-reported drug overdose or overdose-like experience within the past year. De-identified interview transcripts were analyzed using Taguette software for coding and thematic qualitative analysis.

Findings: Early familial exposure to substance use contributes to persistent intergenerational patterns that are difficult to break. These findings underscore the importance of developing interventions that address both family dynamics and broader structural barriers to support individuals seeking to interrupt cycles of addiction.

Chambal M, Virani E, Boyd J, MacDonald S, Barrett E, Silverstein S

Poster 66

Sick, Watched, or Free: Incarceration Experiences Among Overdose Survivors

Mentor: Sydney Silverstein, PhD

BSOM, Department of Public Health Sciences

Introductory Statement: Approaching incarceration and supervised release with concomitant substance use disorder (SUD) is a fluctuating, often politically charged, issue. Sentencing protocol and treatment option changes have reduced annual drug sentences and jail burden; however, this has been without considering affected individuals' experiences or understanding how incarceration affects safety of people with SUD.

Purpose: This paper aims to qualitatively evaluate people who use drugs' perceptions of being incarcerated or on supervised release with concurrent SUD.

Methods: Interviews were conducted with 35 individuals who met the following criteria: 1) 18 years of age or older; 2) reside in the Dayton, Ohio metro area; 3) self-reported a drug overdose or overdose-like experience within the past year. De-identified transcripts were then uploaded to Taguette software for qualitative analysis.

Results: Participants described incarceration or supervised release while experiencing SUD being dependent on protocol. Many were detoxed from drugs in jail, but often after precipitated or non-precipitated withdrawal. Probation often was a mandated burden, limiting recovery even when the individual was intending to attend treatment. Incarceration served as a pathway to treatment for some while others saw it as a barrier that hindered their progress, occasionally to the point of keeping outstanding warrants to avoid it.

Findings: Access to SUD medication, treatment options in jail, and support for diverse pathways to recovery during supervised release can improve safety and recovery outcomes. However, not understanding personal incarceration experiences makes addressing structural causes of harm ingrained into the interactions of SUD and our legal system more difficult.

Garcia C, Waters K, James M, Paton S, Silverstein S, Maxwell R, Dhanraj D

Poster 67

Compounded Stressors and Overwhelming Barriers: A Community-Based Exploration of Postpartum Care Engagement in Dayton, OH

Mentor: Rose Maxwell, PhD

BSOM, Department of Obstetrics and Gynecology

Introductory Statement: Consistent with national trends, Black mothers in Dayton, Ohio, experience significantly higher rates of maternal morbidity and mortality than their white counterparts.1,2 Postpartum care (PPC) visits offer potential to improve maternal health outcomes.3 However, utilization remains racially disproportionate, and contributing factors are poorly understood.4,5 Understanding stress and self-reported barriers may play a critical role in postpartum health engagement.5–8

Purpose: This study aims to explore patient-identified stressors that negatively influence PPC attendance.

Methodological Approach: Semi-structured interviews (n=10) and focus groups (n=2) were conducted with 31 female members of the community in Dayton, OH. Sessions were recorded, transcribed verbatim, and coded using Taguette software for thematic analysis. A follow-up survey (n=7) assessed specific stressors identified during the initial phase of the study. Findings were shared with community groups and leaders for feedback and content refinement.

Findings: Participants identified stressors that made PPC attendance feel burdensome, including long travel times, unreliable transportation, and perceptions that appointments were low value. Social isolation, lack of social support, and relationship stress further compounded these challenges. A follow-up survey examining primary sources of stress revealed that financial strain was a universal barrier among participants. Community leaders corroborated these findings. These findings are consistent with recent work demonstrating that postpartum individuals experiencing high levels of stress are more likely to encounter multiple barriers to accessing care. Our results highlight the need for an individualized approach to PPC that incorporates support to address structural barriers at both the community and individual levels.

Gresham S, Bohne W, Hefner D, Froehle A

Poster 68

Trends in E-scooter Musculoskeletal Injuries Presenting to United States Emergency Departments, 2014-2024

Mentor: Andrew Froehle, PhD

BSOM, Department of Orthopaedic Surgery

Introduction: In 2018, roughly 38 million e-scooter rides were reported in the United States, coinciding with a notable rise in related injuries. In response, various jurisdictions implemented harm-reduction policies such as age limits, helmet mandates, and alcohol restrictions. However, the lasting impact of these measures on injury rates remains uncertain.

Objective: This study examines e-scooter injury trends in the U.S. from 2014 to 2024, focusing on whether changes in incidence, demographics, or severity correspond with the timing of harm-reduction policy implementation.

Methods: National Electronic Injury Surveillance System (NEISS) data from 2014–2024 were analyzed for orthopedic injuries—fractures, dislocations, and sprains/strains—associated with powered scooters. Temporal trends and associations with policy implementation were assessed using piecewise linear regression. Secondary analyses included Rao-Scott chi-squared tests and logistic regression for alcohol involvement and age distribution. Analyses used SAS 9.4 (α=0.05).

Results: Among 4,197 total emergency department visits in the sample period, national injury estimates increased from ~1,500 in 2014 to ~46,000 in 2024, with a sharp rise post-2018. Fractures made up 78% of injuries, sprains/strains 18%, and dislocations 4%. Alcohol was involved in 8.4% of cases, with no reduction following policy changes. Hospitalizations increased post-2018, indicating greater injury severity. Injury rates fell among those under 18 but rose in the 18–44 age group, reflecting demographic shifts after policy adoption. Despite these interventions, injury rates remain high, underscoring the need for ongoing policy revision and enforcement to improve e-scooter safety.

Griffin A, Byoun S, Manger J

Poster 69

Investigating the relationship between drug overdose deaths, excessive alcohol drinking, and adult smoking in urban and rural Ohio counties in 2025

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Introductory Statement: High drug overdose mortality continues to plague Ohio and there is limited research on how cigarette smoking and excessive alcohol drinking may predict drug overdose death rates at the county level. Our research examines community-level risks and their relationship to overdose mortality.

Purpose: This study examines differences in adult smoking, excessive drinking, and drug overdose deaths between rural and urban Ohio counties and assesses whether smoking and excessive drinking predict overdose mortality within these two contexts.

Methodological Approach: Using Ohio county-level data from the 2025 County Health Rankings & Roadmaps online database, we classified counties as urban and rural and analyzed differences in substance use using two sample t tests, Spearman correlations and multiple linear regression tests. Results: Rural and urban counties showed no difference in drug overdose mortality or excessive drinking rates, but rural counties had significantly higher adult smoking rates. Smoking positively correlated with overdose mortality in both county types, while excessive drinking negatively correlated. In urban counties, smoking and excessive drinking explained 29.2% of drug overdose mortality variance, with smoking emerging as a significant positive predictor and excessive drinking as a significant negative predictor. Smoking and excessive drinking explained 50.8% of drug overdose mortality variance in rural counties, though smoking was a marginally nonsignificant positive predictor, and excessive drinking was a nonsignificant negative predictor.

Findings: Substance use behaviors may help identify communities at higher rusks for drug overdose deaths. Continued research is needed to understand local substance use dynamics and inform prevention strategies.

Hermoso AC, Huff C, Manger J

Poster 70

Educational Investment in Infant Health: An Examination of School Funding Adequacy Effect on Low Birth Weight (LBW) Percentages in Ohio Counties

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Introductory Statement: Infant mortality and low birth weight (LBW) in the United States have increased, and are attributed to maternal behaviors. However, this explanation overlooks the role of upstream determinants, particularly access to comprehensive health and preconception education during adolescence, which is heavily influenced by school funding. Limited health education, especially in rural and low-income regions, may contribute to poor maternal health knowledge and higher infant mortality rates, which highlights the need for early, preventive educational interventions.

Purpose: The purpose of this study is to examine the relationship between school funding adequacy and LBW outcomes in Ohio counties by assessing (1) rural-urban differences, and (2) temporal changes from 2019 to 2024.

Methodological Approach: All 88 Ohio counties were classified as rural, partially rural, or urban. Data on school funding adequacy and LBW from 2019 and 2024 were analyzed using unpaired and paired t-tests, correlation analysis, and one-way ANOVA. Differences by county type, changes over time, and associations between school funding adequacy and LBW were evaluated.

Findings: Urban counties (8.50%) have a significantly higher LBW percentages than rural counties (7.50%) in 2019. LBW percentages increased significantly from 2019 (7.67%) to 2024 (7.77%). A strong inverse correlation was also observed between school funding adequacy and county-level LBW rates over time. These findings suggest that LBW extends beyond individual maternal behaviors and is closely associated with educational investment at the county level. Targeted reallocation and increased funding toward comprehensive education in high-LBW districts may improve maternal and infant health, reducing disparities across Ohio counties.

Hubert E, Silverstein S

Poster 71

Exploring the Impact of Transportation Barriers on Prescription Access and Medication Adherence

Mentor: Sydney Silverstein, PhD

BSOM, Department of Population and Public Health

Introductory Statement: Transportation remains a significant barrier in prescription medication access, contributing to an estimated 3.6 million Americans delaying care and improperly using medications each year. Despite further research into the effects of transportation on medical appointment attendance, the relationships between public transportation, care settings, and pharmacies remains understudied, particularly among individuals who access safety net services.

Purpose: This study aimed to explore transportation-related barriers to pharmacy access in Dayton, Ohio, to inform targeted quality improvement projects.

Methodological Approach: This study utilized Tableau Software to analyze the spatial relationship between pharmacies, hospitals, drop-in centers, shelters, and public bus routes in Dayton, Ohio. Data sources included the RTA bus route shapefiles, pharmacy location datasets, and the Montgomery County Resource Guide. Overlay mapping techniques were used to examine the geographic relationship between transportation routes and locations where vulnerable populations may receive medical care, support with basic needs, and prescription dispersal.

Results: Of the 50 pharmacies mapped in Tableau, 12 have been permanently closed due to financial constraints. Notable gaps in pharmacy access are evident in East Dayton, accounting for 7 of the total pharmacy closures. East Dayton also contains 6 of the city's 8 shelters but has only 3 drop-in centers. Additionally, bus routes in this area are less densely concentrated, further limiting access to existing pharmacies and drop-in centers.

Findings: Geographic disparities in pharmacy availability, compounded by transportation barriers, contribute to decreased medication access and adherence. Future work should focus on developing community-based interventions to reduce transportation barriers and improve equitable pharmacy access in Dayton, Ohio.

Herr K, Khan A, Manger J

Poster 72

Relationship between mental health-related quality of life and substance abuse in rural vs. urban U.S. counties

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Introductory Statement: Substance use disorder and mental health are well-studied contributors to morbidity and mortality in the U.S. However, little is understood about how the relationship between mental health-related quality of life and substance use outcomes varies based on rurality.

Purpose: This study quantifies differences in substance abuse between rural and urban U.S. counties and investigates varying influences of mental health-related factors on substance abuse rates.

Methodological Approach: The 2024 County Health Rankings dataset was analyzed, classifying counties as rural (≥50% rurality) or urban (<50%). Mental health-related quality of life measures and substance use outcomes were extracted. Mental health metrics between counties in the highest and lowest quartiles for substance abuse were compared. Associations between rurality and substance use outcomes were investigated. Predictors of excessive drinking and drug overdose deaths were studied separately in rural and urban counties.

Findings: Counties in the top quartile for excessive drinking had better mental health markers than those in the bottom quartile, suggesting additional contributing factors. Counties in the top quartile for drug overdose mortality had poorer mental health markers including more mentally unhealthy days per month (5.59 vs 5.09), higher prevalence of frequent mental distress (18.29% vs 16.52%), and higher suicide rates (18.59 vs 16.8). Degree of rurality negatively correlated with excessive drinking rates (r=-0.252), while degree of rurality positively correlated with drug overdose mortality (r=0.105). Mental health metrics explained more variance in excessive drinking in rural than urban counties (47.8% vs 26.2%), and less variance in drug overdose mortality overall (17.8% rural; 13.8% urban).

Quick M, Kiser J, Hooper N

Poster 73

Battling Burnout: Provider Wellbeing Journal Club

Mentor: Melissa Quick, MD

Premier Health, Department of Family Medicine

Introductory Statement: With burnout rates among medical providers consistently elevated since the pandemic, there is an urgent need to identify effective mitigative measures.
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Organizational structures and loneliness are significant drivers, with individual factors also contributing.
A structured journal club focusing on personal wellbeing strategies could concomitantly provide mitigation tools and foster connections among providers, overall curbing burnout.

Purpose: To assess if a once monthly journal club, focused on published literature around strategies to mitigate burnout in medical providers, improves provider wellbeing.

Methodological Approach: Deemed IRB exempt. Recruitment emails sent to primary care providers in Premier Health Southern Market, approximately 68. Word of mouth and invitation during Grand Rounds talk on wellbeing.

Assessment of burnout was done with surveys at meetings 1,3,6,and 8 with the Mini Z and additional journal club focused questions.

Findings: Overall low attendance. Maximum attendance was 5 providers. Only 3 providers attended multiple meetings. No improvement and slight downtrend in Mini Z scores over time, with lower scores indicating higher risk of burnout. Scores consistently noted lack of support, unreasonable office pace, and EMR stress. Providers did note they made positive social connections and utilized wellbeing strategies from the journal club in their practice. Future work could focus on graduate medical education with residency journal clubs selecting a wellbeing article monthly. Additionally assessing practice stressors further by gathering data on time of year (seasonal stressors with holidays/respiratory season) may show further trends

Labhishetty V, Wilson C, DeVos T, Sieck C

Poster 74

Addressing the Screening-to-Service Gap: A Scoping Review of Social Need Implementation Models in the U.S.

Mentor: Cynthia Sieck, PhD, MPH

Dayton Children's Hospital

Introductory Statement: Social drivers of health are what lead community health outcomes, however, clinical screening remains highly inconsistent. It is essential to understand how health systems identify different social domains and how screening is integrated into clinical workflows for patients.

Purpose: This scoping review aimed to: (1) characterize social health domains screened in clinical practice and (2) examine how screening implementation and follow-up processes differ in various settings.

Methodological Approach: We performed a scoping literature review using the search terms: social determinants of health, health-related social needs, food insecurity, housing instability, physical environment, healthcare access, and internet access.

We restricted our search to U.S.-based studies published between 2016 and 2025. Data extraction categorized studies based on population (adult/pediatrics/mixed), setting (inpatient/outpatient), and ten specific social domains (housing, transportation, financial/utilities, education, food, emotional safety, physical safety, physical environment, healthcare access, and digital access).

Results: Our initial literature search yielded 75 articles, from which 6 were excluded. Quantitative mapping showed a prioritization of traditional domains like food (n=26) and housing (n=24), while emerging needs such as digital access (n=2) and physical environment/safety (n=7) were underrepresented. Analysis also revealed a widespread "screening-to-service" gap: while 100% of the clinical models utilized standardized tools to identify needs, only 20% integrated the "closed-loop" referral processes and EHR synchronization necessary for sustainable follow-up. This gap represents a structural breakdown in the continuum of care; specifically, while social needs are documented in the EHR, the absence of automated feedback mechanisms prevents clinicians from verifying if patients successfully connected with community resources.

MacDonald S, Boyd J, Chambal M, Virani E, Silverstein S

Poster 75

"I've never felt nothin' so horrible in my life." Exploring Lived Experiences to Establish a Purposeful Approach to Care After an Overdose.

Mentor: Sydney Silverstein, PhD

BSOM, Department of Population and Public Health Sciences

Introductory Statement: While the number of overdose deaths in Montgomery County has decreased over the last 5 years due to an increase of naloxone and harm reduction efforts, there remains a disconnect in understanding the factors that impede or facilitate linkage to treatment following a nonfatal overdose. It is critical to identify practices after an overdose that can effectively improve access to resources and treatment.

Purpose: The purpose of this study is to qualitatively understand overdose experiences and identify factors that (1) deter or inhibit people from seeking treatment or (2) encourage people to seek treatment or supportive care.

Methodological Approach: 35 individuals who met the following criteria participated in interviews: 1) 18 years of age or older; 2) reside in the Dayton, Ohio metro area; 3) self-reported a drug overdose or overdose-like experience within the past year. De-identified transcripts of interviews were uploaded to Taguette software for coding and qualitative thematic analysis.
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Results: In overdose experiences, numerous participants described naloxone administration as feeling like dying, as it induces extreme pain, sickness, and fear. Following these encounters, some participants reported never receiving treatment options, and had negative experiences causing them to leave the hospital. Others discussed how peer support and receiving resources had a positive impact on them.

Findings: This qualitative study reveals themes in participants' experiences that contribute to underutilization of treatment options and highlight a need for more effective approaches to offering resources following an overdose. Further studies should focus on participants who had beneficial interactions and how this framework can be broadly implemented.

Mittel N, Sherman A, Shenkar R, DeVos T, Sieck C

Poster 76

Growing up and moving on, a critical period for healthcare transitions

Mentor: Cynthia J. Sieck, PhD, MPH

Dayton Children's Hospital

Introductory Statement: As pediatric patients transition to adulthood, their healthcare needs evolve as well, requiring them to transition from a pediatrician to a provider of adult care. Understanding what opportunities healthcare providers can offer to make this transition as seamless as possible helps to ensure that these patients' quality of care does not dimmish because of this change, especially in the case of chronic conditions.

Purpose: The purpose of this study is to review existing literature on transition interventions to understand common approaches, the barriers and facilitators of pediatric transition to adult care, and to examine the gaps in current approaches to these transition programs.

Methodological Approach: Literature search was performed on PubMed and Google Scholar databases with keywords: pediatric, transition to adult care, GOT transitions, chronic condition, adult, child, adolescent, and United States. We examined study design, population, methods, tools, facilitators, and barriers.

Findings: Most interventions were centered around the physician and care team with Got Transitions Framework. Common barriers included lack of time and reimbursement for engaging in transition-focused discussion, and inability to be integrated into electronic medical record system (EMR). Facilitators included ease and low cost of the transition intervention. Many barriers stemmed from lack of incorporation of the program into the hospital system itself. Although the short terms projects allowed an inexpensive solution, a greater integration is needed for success. Looking at how systemic implementation could be achieved throughout the hospital system could be the key for future smooth transitions.

Neidert F, Kaveti L, Paton S, Nahhas RW

Poster 77

Maternal and Infant Characteristics in CMV-Positive Infant Mortality

Mentor: Ramzi Nahhas, PhD

BSOM, Department of Population and Public Health

Introductory Statement: Cytomegalovirus (CMV) is the most common congenital infection with lasting deficits for infected infants. Vertical transmission is associated with worse outcomes, yet universal antepartum screening is contraindicated due to high false positive rates. The development of better screening guidelines may lead to improved pregnancy outcomes.

Purpose: This study identifies potential risk factors for congenital CMV infection-related deaths to further inform screening guidelines.

Methodological Approach: The CDC National Vital Statistics System linked birth–infant death data (2018–2022) were used to classify infant deaths as CMV-positive based on cause of death (ICD-10 P35.1). All 66 CMV-positive deaths were compared with the remaining 18,524,833 births. These data were merged with national natality data to obtain the corresponding maternal characteristics.

Results: Compared to CMV-negative/unknown births, CMV-positive infants who died had much lower median birthweights (1,386 vs. 3,290g) and gestational ages (31 vs. 39 weeks). Mothers of CMV-positive infants had fewer prenatal visits (median 7 vs. 11) and were more likely to have received no prenatal care of (7.8% vs. 2.0%). The CMV-positive group also had greater socioeconomic disadvantage, with higher rates of Medicaid coverage (56% vs. 42%), WIC participation (40% vs. 32%), and unmarried status (61% vs. 40%), and lower educational attainment. A similar racial distribution was seen across both groups.

Findings: CMV-positive infant deaths may be associated with inadequate prenatal care and lower socioeconomic status. Addressing these barriers may reduce CMV-related infant mortality. Further research is needed to determine if prenatal CMV screening based on risk factors reduces infant mortality.

Parasania D, Manger J

Poster 78

Geographical differences in suicide rates

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Introductory Statement: With suicide rates on the rise, many studies have sought to find connections with poor physical activity, lack of quality sleep, substance use (alcoholism and drugs), social connections, and more. To date, few studies have examined the difference in suicide rates across geographic areas. Such knowledge could improve the availability of prevention resources.

Purpose: This study explores the differences in suicide rates between rural and urban areas.

Methodological Approach: Using data from County Health Rankings and Roadmaps, we compared mental distress, physical activity, sleep, and suicide rates among a mix of six urban and rural states. We used SPSS to run correlations, t tests, one way ANOVA, and regression tests.

Findings: Between 2020 and 2025, there was a significant rise in suicide rates in Texas ($t=-4.191$, $p<.001$). According to regression analysis, smoking ($B=1.276$, $p<.001$) and a lack of physical activity ($B=-0.553$, $p<.001$) were the most significant predictors of suicide rates. There was also a significant rise in excessive drinking ($p<.001$) in Texas. Also, New York showed a lower rate of physical inactivity ($p<.001$), while Montana showed significantly better sleep quality ($p<.001$), compared to Texas. The results imply that behavioral factors subject to change could play a role in geographic differences in suicide trends.

Perekhodko N, Patel N

Poster 79

The Social and Structural Determinants of Preventable Hospitalizations in Florida and the Southeastern Region

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Introductory statement: Preventable hospitalizations reflect gaps in non-emergency medical access, primary care, and social determinants of health. Florida and neighboring states face challenges from rurality, socioeconomic disadvantage, and unequal healthcare resources, yet factors driving preventable hospital use remain unclear.

Purpose: To evaluate how primary care access, geographic differences, health status, time, and socioeconomic factors relate to preventable hospitalizations in Florida and neighboring states.

Methodological Approach: Data was gathered using County Health Rankings & Roadmaps. Spearman correlations assessed associations between primary care physician ratios, fair/poor health, and preventable hospitalizations in 67 Florida counties. A one-way ANOVA compared state-level differences in preventable hospitalization rates across counties in Florida (67), Georgia (157), Alabama (67), and Mississippi (80). A paired t-test evaluated changes in preventable hospitalization rates from 2019 to 2025 in 67 Florida counties. Stepwise regression examined whether education, unemployment, income inequality, and housing problems predicted preventable hospitalization rates in 67 Florida counties.

Findings: Primary care physician ratio was positively associated with preventable hospitalizations in Florida ($r = .306$, $p < .013$). Preventable hospitalization rates did not differ among the four states ($F3,368 = 1.071$, $p < .361$). Florida counties experienced a significant decline in preventable hospitalizations from 2019 to 2025 ($t = 21.47$, $p < .001$). Florida counties with poorer reported health had higher preventable hospitalization rates ($\rho = .577$, $p < .001$), and high school completion was the only significant socioeconomic predictor of lower rates of preventable hospitalizations ($B = -60.55$, $t = -4.89$, $p < .001$).

Poeppelman C, Kaur G

Poster 80

Rethinking Access: Unexpected Links Between Primary Care Physician Availability and Premature Death in Rural and Urban Ohio Populations

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Introductory Statement: Health outcomes in rural populations are often worse than in urban populations, frequently due to preventable conditions progressing without consistent access to primary care physicians (PCPs). While rural physician shortages are well documented, it remains unclear how PCP availability correlates with premature mortality and preventable health outcomes in Ohio.

Purpose: We aimed to investigate the relationship between PCP availability and key health outcomes in rural Ohio populations, compare these findings to urban Ohio populations, and evaluate changes in PCP ratios from 2022 to 2025.

Methodological Approach: County-level data were obtained from the County Health Rankings and Roadmaps Annual Data Release. Counties with ≥ 50% rural population were classified as rural. Statistical analysis assessed relationships between 2025 PCP-to-patient ratios and length of life measures (life expectancy, premature death, premature age-adjusted mortality) and preventable health measures (diabetes, HIV, STIs, preventable hospitalizations).

Results: In rural and all Ohio populations, higher PCP ratios (fewer physicians per capita) were significantly associated with lower premature death rates. No significant correlations were found between PCP ratios and other length-of-life measures in rural counties. Preventable health measures were largely uncorrelated with PCP ratios in rural areas. Urban counties had significantly lower PCP ratios than rural counties in 2025. Rural PCP ratios increased from 2022 to 2025.

Findings: Contrary to expectations, worse PCP availability was associated with lower premature death rates. These findings suggest that structural and demographic factors, including child mortality and potential inter-county hospital transfers, may influence mortality patterns beyond physician availability alone.

Ponkshe K, Shah R, Manger J

Poster 81

Beyond Healthcare: How Civic Infrastructure Predicts Preventable Hospital Stays and Life Expectancy Across Ohio Counties

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Introductory Statement: Counties across the United States experience wide differences in preventable hospital stays and life expectancy. While social determinants of health are well studied, less is known about how elements of civic infrastructure, such as broadband access, voter participation, and access to exercise opportunities, relate to community health outcomes.

Purpose: To examine whether selected components of civic infrastructure predict preventable hospitalizations and life expectancy across Ohio counties and to compare across states with varying levels of these components.

Methodological Approach: This study used publicly available county-level data from the 2021 and 2025 County Health Rankings. Broadband access, voter turnout, and access to exercise opportunities were analyzed as indicators of civic infrastructure. Statistical analyses assessed changes in broadband access and associations with preventable hospitalizations and life expectancy.

Results: Broadband access in Ohio counties increased significantly from 78.71% in 2021 to 86.11% in 2025 ($t = -26.25$, $p <.001$). However, none of the civic infrastructure variables predicted preventable hospitalizations. Voter turnout was not associated with preventable hospital stays but was a significant positive predictor of life expectancy ($F1,86 = 42.3$, $p < .001$, $R2=.33$, $B = 0.199$). Ohio counties with above-average voter turnout had higher life expectancy than those with below-average voter turnout. States with the highest voter turnout also had higher life expectancies than those with the lowest turnout.

Findings: Health advantages associated with civic life stem more from active community engagement than from the mere presence of infrastructure.

Al-Rafati Z, Rini A

Poster 82

A Comparative Analysis of the Differences Between Teen Birth Rates in Texas and Ohio

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Introductory statement: In the United States, teen birth rates represent a significant public health concern, serving as a potential indicator of health and structural inequities. Rates vary state by state, with those that lack proper sex education, such as Texas, exhibiting higher teen pregnancies on average than those with mandated sex education, such as Ohio and California.

Purpose: This study gathered information regarding maternal and fetal outcome predictors to assess how state-level policies and social circumstances influence teen birth rates and inform potential improvement interventions.

Methodological Approach: Utilizing the 2025 County Health Rankings and Roadmaps Data, Texas (n = 233) and Ohio (n = 88) counties were analyzed with independent t-tests, Spearman correlations, one-way ANOVA, and a linear regression was used with the addition of California (n = 39) for comparative analysis.

Findings: Texas possesses significantly higher teen birth rates than Ohio and California. While teen birth rates were positively correlated with infant and child mortality in both Texas and Ohio states, there was a negative correlation to primary care access in Ohio. The prevalence of single-parent households was a strong predictor, explaining 45% of the variance. Overall, the findings suggest that teen birth rates are strongly influenced by social structure and healthcare access. States which exhibit more comprehensive sex education and greater access to healthcare services compared to Texas, demonstrated lower rates. Targeted interventions that emphasize proper sex education, improved primary care access, and strengthened social support are necessary to reduce such rates.

Ritson A, Schmid M, Pascoe J

Poster 83

Trends in Children's Mental Health During the Past Decade: A COSMOS Study

Mentor: John Pascoe, MD, MPH

Dayton Children's Hospital

Introduction: Rates of depression and anxiety among children and adolescents have increased over the past decade, with growing concern following the COVID-19 pandemic. Though prior studies have documented rising rates of youth mental health diagnoses, few have compared large-scale diagnostic patterns pre, during, and post-pandemic.

Purpose: To compare rates of depression and anxiety among Ohio children and adolescents aged 10–17 years across 2015–2019 and 2020–2024.

Methods: De-identified electronic health record data from U.S. health facilities using EPIC were analyzed via the COSMOS dataset. Ohio patients aged 10–17 years were examined within two cohorts: 2015–2019 (pre-COVID-19) and 2020–2024 (COVID-19 and post-COVID-19). Rates were calculated as the proportion of patients with a diagnosis of depression or anxiety among children and adolescents during each interval and stratified by gender. Chi-square analyses were used to compare rates within and between cohorts.

Results: All comparisons were statistically significant ($p < 0.0001$). Rates increased from 1.9% in Cohort 1 (N = 2,194,380) to 3.0% in Cohort 2 (N = 1,998,376). Rates for girls increased from 2.6% to 4.2%; and among boys, from 1.3% to 1.8%. Within both cohorts, girls had significantly higher rates than boys with a widening gap between genders from 1.5% in Cohort 1 to 2.4% in Cohort 2.

Conclusions: In this statewide sample (N = 4,192,756), the rate of depression and anxiety diagnoses during and after the COVID-19 pandemic were significantly increased from the pre-pandemic rates, with a larger increase in girls compared to boys.

Roesner A, Alshami O

Poster 84

Social Determinants of Health Predict Physical Inactivity Across Ohio Counties

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Introductory Statement: Physical inactivity is a major public health concern associated with higher rates of chronic disease and premature mortality. Midwestern states, including Ohio, experience disproportionately high levels of inactivity influenced by socioeconomic and infrastructural inequities. Social determinants of health such as education, food security, sleep, and access to exercise opportunities contribute significantly to countylevel variation, yet their combined effects within Ohio remain understudied.

Purpose: The purpose of this study is to evaluate how social determinants of health predict county-level physical inactivity in Ohio and to compare inactivity levels between Ohio and neighboring Midwestern states.

Methodological Approach: We analyzed County Health Rankings & Roadmaps 2025 data using Pearson and Spearman correlations to examine associations between social determinants and physical inactivity. Multiple linear regression assessed key predictors of inactivity among Ohio counties. Oneway ANOVA compared inactivity rates across Midwestern states including Ohio, West Virginia, Kentucky, Indiana, Michigan, and Illinois.

Findings: Rurality correlated positively with physical inactivity ($r = 0.450$, $p < 0.001$), while access to parks showed a strong negative association ($t = -24.46$, $p < 0.001$). Physical inactivity correlated inversely with life expectancy ($r = -0.660$, $p < 0.001$). The regression model explained 71.9% of variance ($R^2 = 0.719$), identifying food insecurity, insufficient sleep, and some college education as significant predictors. Inactivity differed by state ($F(5, 499) = 55.06$, $p < 0.001$), with West Virginia and Kentucky showing the highest burdens.

Sampson A, Zuzolo M

Poster 85

Social and Environmental Factors Impact on Premature Deaths in Ohio

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Introductory Statement: Premature death is a growing public health concern in the United States, with notable variations across states and counties. Social, behavioral, and environmental factors may contribute to these disparities.

Purpose: The purpose of this study is to (1) Determine the influence Poor or Fair Health, Percent Rural, Diabetes Prevalence, and number of Mentally Unhealthy Days have on premature deaths in Ohio counties, (2) Explore how these factors impacted premature death in Ohio during 2020 and 2025, and (3) Investigate how these factors impact premature death in Ohio counties compared to counties in Kentucky, Michigan, and Indiana.

Methodological Approach: We used County Health Rankings data to compare premature death to Poor or Fair Health, Percent Rural, Diabetes Prevalence, and number of Mentally Unhealthy Days. We also used correlation tests, paired t tests, regression, and ANOVA to explore temporal and geographical variations in premature death.

Findings: Premature death in Ohio counties significantly increased between 2019 to 2025 and was strongly correlated with ($p<0.001$) Poor or Fair Health, Number of Mentally Unhealthy Days, and Diabetes Prevalence. It was not correlated with Percent Rural. Premature deaths in Ohio were significantly higher than Michigan. These findings suggest the need for targeted public health interventions to mitigate these trends.

Schroeder B, Sethi M

Poster 86

Youth Wrestling Injuries: A Ten-Year National Analysis using NEISS Data

Mentor: Andrew Froehle, PhD

BSOM, Department of Kinesiology and Health

Introduction: Wrestling is recognized as one of the oldest sports in human history, with its history spanning thousands of years. Given its physical demand and growing interest, this study aims to explore trends in wrestling-related injuries over the past decade.

Methodology: Data on wrestling injuries were collected from the National Electronic Injury Surveillance System (NEISS) using a custom query for code 1270 (wrestling) over the last ten years. Annual injury data were aggregated into a single dataset and analyzed for trends over time, injury diagnoses, affected body areas, age distribution, and athlete gender. Data analysis and figures were created using Python 3.13.

Results: Wrestling-related injury trends were consistent from 2015 to 2019, followed by a sharp decline in 2020, likely due to COVID-19 restrictions. Injury rates gradually increased in 2021, with a significant spike in 2022, remaining above pre-pandemic levels in the following years. Shoulder sprains and strains were the most common injuries. Most injuries occurred in wrestlers aged 12 to 14 and 15 to 17 years, with 88.5% involving male athletes.

Conclusion: The analysis of NEISS wrestling injury data offers insights into trends and highlights areas for further investigation. The 25% increase in injury rates over the past decade raises questions about potential factors that could contribute to our findings, such as the growth in popularity of women's wrestling, reacclimation into wrestling after COVID-19 disruptions, or other factors. Future research could further examine injury types, locations, and severity by gender to improve injury prevention strategies.

Sethi M, Islam N, Journell L, Korkmaz A

Poster 87

Unpacking Depression Risk in Women Over 50: Caffeine Intake and Mediating Factors

Mentor: Lisa Journell, EdD

BSOM, Department of Kinesiology and Health

Introductory Statement: Previous research suggests a protective effect of caffeine on depression risk in the adult population. However, there is limited research on this interaction in women over 50. Perimenopausal and postmenopausal women may have distinct physiological and behavioral responses to caffeine.

Purpose: This study examined the relationship between caffeine intake and depressive symptoms in women 50 years and older, and whether this relationship was mediated by smoking status or sleep disturbances.

Methodological Approach: Data obtained from the National Health and Nutrition Examination survey (NHANES) were used to analyze 7,656 women aged 50-80 years old. Caffeine intake was categorized as low (<121 mg/day), moderate (121-400 mg/day), or high (>400 mg/day) and depressive symptoms were assessed using the Patient Health Questionnaire-9 (PHQ-9). Generalized structural equation modeling (GSEM) was used to assess direct, indirect, and total effects of caffeine intake levels on PHQ-9 scores, mediated by sleep disturbances and smoking status variables.

Findings: No statistically significant direct association between caffeine intake level and depressive symptoms was observed. However, the indirect pathway through smoking status was significant for both moderate caffeine intake (aOR = 1.36, 95% CI: 1.14–1.62, p = 0.001) and high caffeine intake (aOR = 2.37, 95% CI: 1.60–3.50, p < 0.001). Sleep trouble did not show a significant indirect pathway linking caffeine intake to depressive symptoms, but sleep trouble was associated with higher odds of smoking (aOR = 1.75, 95% CI: 1.32–2.32, p < 0.001). These findings indicate that the caffeine-depression relationship in women over 50 years old has a complex behavioral pathway

Shenouda M, Shashi S

Poster 88

Primary Care Access and Preventable Hospitalizations: A Multi-Variable Analysis of Medicare Populations in California (2022–2025)

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Introductory Statement: Based on prior literature, limited access to primary care has been linked to higher preventable hospitalization rate. Particularly, rural communities often face physician shortages, contributing to disparities in health outcomes.

Purpose: This study aims to understand the relationship between primary care access and preventable hospitalization rates among medicare populations in California.

Methodological Approach: The data was gathered from County Health Rankings & Roadmaps for 56 California counties. Using 2025 data, unpaired t-tests determined the difference in the PCP ratio and preventable hospitalization rate between rural and urban counties, a Spearman correlation measured the correlation between PCP ratio and preventable hospitalization rate, and a simple linear regression showed how the PCP ratio predicts the variance in preventable hospitalization rate. Additionally, a paired t-test was performed to assess the change in the PCP ratio from 2022 to 2025.

Findings: The people-to-primary care physician ratio was higher in California's rural counties (2461.53:1) than in urban ones (1594.86:1; t=-2.75, p=0.008), though preventable hospitalization rates were not significantly different (rural = 2110.47 vs. urban = 2299.62; t=1.11, p=0.272). From 2022 (1773.64:1) to 2025 (1888.91:1), the PCP ratio showed no significant change (t=-0.610, p=0.544). The PCP ratio correlated moderately with preventable hospitalizations (r=0.552, p<0.001), explaining 28% of their variance (F(1,54)=22.01, p<0.001).

Snyder S, Danchine S, Donepudi S, Waters K, Eberhart G, Pascoe J

Poster 89

Familie's Unmet Social Needs in Children's Primary Care

Mentor: John Pascoe, MD, MPH

Dayton Children's Hospital

Introductory Statement: Children of families facing unmet social needs (USNs) experience higher rates of adverse outcomes compared to those not experiencing USNs.

Purpose: To examine the demographic and socioeconomic factors associated with USNs reported by families at primary care venues.

Methodological Approach: This cross-sectional study recruited English-speaking primary caregivers (PCGs) of children <18 years from the Southwestern Ohio Ambulatory Research Network (SOAR-Net) who were surveyed between January 2023 and August 2024. The study survey included a number of validated scales, a 10-item social needs screener, and demographics. Data were analyzed in three subgroups, 0, 1, and ≥2 USNs, with Chi-square or Fisher's Exact tests, adjusted logistic regression, and ANOVA.

Findings: Black PCGs were more likely to report ≥2 USNs compared to White PCGs (AOR 2.02, 95% CI: 1.15–3.55). PCGs without a college degree (AOR = 1.72, CI: 1.02–2.90), with household income < $35,000 (AOR = 2.94, CI: 2.03–4.25), or who screened positive for depression (AOR = 2.45, CI: 1.75–3.43) were more likely to report ≥2 USNs. Children with special health care needs were more likely to be in the 1 USN group (AOR = 3.98, CI: 2.83–5.59) and ≥2 USN group (AOR = 3.10, CI: 2.06–4.67). PCG's race, education, relation to the index child, family income, positive depression screen, child health, and special health care needs were related to USNs. Future studies should examine utility of social needs screening and the relation of USNs to children's health.

Spann J, Crawford T

Poster 90

County-Level Food Insecurity and HIV Outcomes in Ohio: An Ecological Analysis

Mentor: Tim Crawford, PhD

BSOM, Department of Population and Public Health Sciences and Family Medicine

Introductory Statement: Food insecurity has been consistently associated with poor HIV treatment adherence and reduced viral suppression at the individual level. However, less is known about how these relationships manifest at the ecological level.

Purpose: This study examined the association between county-level food insecurity and two HIV outcomes in Ohio: HIV prevalence and viral suppression.

Methodological Approach: An ecological, cross-sectional analysis was conducted using 2022 data from all 88 counties in Ohio. Food insecurity estimates were obtained from Feeding America's Map the Meal Gap project, while HIV prevalence and viral suppression rates were derived from AIDSVu. Unadjusted linear regression models were used, with food insecurity as the sole predictor.

Results: Descriptive analyses revealed considerable variation in food insecurity, HIV prevalence, and viral suppression across counties. In regression models, food insecurity demonstrated minimal explanatory power for both outcomes. Each one-unit increase in food insecurity was associated with a 0.5% increase in HIV prevalence, 95% CI [-0.003, -0.014] and a 2.1% decrease in viral suppression, 95% CI [-0.966, 1.392].

Findings: Food insecurity alone was a weak predictor of HIV outcomes at the county level. These findings suggest that the relationship between food insecurity and HIV is embedded within broader structural and social determinants of health. Addressing food insecurity in isolation is unlikely to substantially improve HIV outcomes; rather, multi-level strategies that integrate poverty reduction, healthcare access, and equity-focused interventions are needed.

Svensson A, DeKryger L

Poster 91

The Effects of Air Pollution in Various States

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Introductory Statement: Air pollution is a key risk factor in adverse physical and mental health outcomes. Alongside well-documented research in this field, limited research has delved into comparing the differences in fine particulate matter (PM2.5) among various midwestern states and how this contributes to mental health.

Purpose: This study aims to compare air quality levels in Ohio, Kentucky, Indiana, and New York, examine changing levels over the past decade, and assess the correlation between air quality and frequent mental distress.

Methodological Approach: The data for this study were drawn from County Health Rankings, using PM2.5 values to conduct an ANOVA to compare Ohio, Kentucky, and Indiana, an unpaired t-test to compare Ohio and New York, and a paired t-test to evaluate changes in Ohio from 2015 to 2025. Pearson and Spearman correlations were also used to assess associations between PM2.5 and frequent mental distress in Ohio and Indiana, respectively.

Findings: The results highlighted significant air quality differences across states, with Indiana (8.604 μg/m3) exhibiting the highest PM2.5 levels and New York (7.087 μg/m3) demonstrating significantly better air quality than Ohio (7.985 μg/m3). Ohio's PM2.5 levels improved significantly from 2015 to 2025. Unexpectedly, both Ohio and Indiana showed significant inverse correlations between PM2.5 and frequent mental distress, suggesting the influence of confounding factors contributing to mental health outcomes. Overall, these findings underscore the complex environmental and social influences on air quality and mental health and the need for further research to better understand these influences.

Sze N, Chen E, Kwok W, Kurapati N, Crawford T, Grewal H

Poster 92

AANHPI Health Trends in Dayton, Ohio: Regional Analysis from a Midwestern Family Medicine Clinic

Mentor: Harminder Grewal, MBBS

BSOM, Department of Family Medicine

Introductory Statement: Asian American Native Hawaiian/Pacific Islanders (AANHPI) are the fastest-growing racial group in the United States, yet their health remains understudied. Comprehensive data is needed to understand AANHPI health, but literature originates from areas with large AANHPI populations. Ohio lacks this analysis with a single study examining hepatitis disparities.

Purpose: This project details health among AANHPI patients in Southwest Ohio, an unstudied area.

Methodological Approach: Metrics for colon/breast/HepC screening, smoking, body mass index (BMI), HbA1c, GAD-7, and PHQ-9 were extracted from the Wright State Physicians Family Medicine Clinic. The 11826 total reports included race and sex. Normality was determined via Kolmogorov-Smirnov before one-way ANOVA/Mann-Whitney U tests, with Cohen's D for effect size. Categorical variables were analyzed using the Chi-Square test. Results show $p < 0.001$ and Cohen's $D > 0.5$ where applicable.

Findings: More Asian patients were male (200, 33.7%) and younger (36.42±16.05) than other groups. Asian patients had lower BMI (25.39±5.07) and systolic blood pressure (115.54±11.75). Fewer Asians received colon (45, 8.5%) and breast cancer (53, 9.9%) screening, but more underwent HepC screening (133, 41.0%). Most Asians reported never smoking (424, 90.0%), and fewer identified as former smokers (34, 7.2%). Despite favorable metrics for BMI, blood pressure, and smoking rates, the lower participation in cancer screenings reflects gaps in preventive care. The results emphasize tailored approaches for AANHPI populations, especially in underrepresented communities. Future research should explore disparities' underlying causes to guide targeted interventions.

Tummalapalli S, Ritson A, Goeller C, Pascoe J MD, MPH

Poster 93

Factors Associated with Parenting Styles: A Primary Care Study

Mentor: John Pascoe, MD, MPH

Dayton Children's Hospital

Introductory Statement: Parenting practices have been associated with long-term child health and developmental outcomes. Poor caregiving has been associated with negative health and psychosocial outcomes. However, less is known about the psychosocial factors associated with parenting behaviors.

Purpose: To use a brief parenting behaviors screening tool to examine the association among parenting behaviors with index children's health, parental social support, depressive symptoms and loneliness.

Methods: Surveys were collected in primary care practices within the Southwestern Ohio Ambulatory Research Network. Index children were 15 months to 10.9 years old. The survey included the Quick Parenting Assessment (QPA), Maternal Social Support Index (MSSI), Rand Depression Screener, UCLA Loneliness Scale, Children with Special Health Care Needs (CSHCN), and demographic variables. QPA scores of 0-2 were classified as positive parenting (P-PCGs) and scores of 3 or greater as negative parenting (N-PCGs). Chi-square, Fisher's exact, and Mann-Whitney U tests were used for data analysis.

Results: Of 221 participants, 66.7% reported P-PCGs and 33.3% reported N-PCGs. N-PCGs had lower mean MSSI scores (19.0±7.0 vs 23.0±6.0, p=0.001), higher rates of positive depression screens (53.4% vs 26.5%, p<0.001), and higher rates of loneliness (17.4% vs 5.3%, p=0.008) compared to P-PCGs.

Conclusions: Negative parenting practices in this primary care setting were found to be significantly associated with lower levels of social support and higher rates of depressive symptoms and loneliness.

Wadi R, Carlson K, Bayyoud M, Mayer N, Sabik L, Mazul A

Poster 94

Access to Dermatologic Care in Ohio using Spatial Quantifying Access Ratios

Mentor: Angela L. Mazul, PhD, MPH

University of Pittsburgh School of Medicine, Departments of Otolaryngology-Head and Neck Surgery, and Cancer Epidemiology and Prevention Program

Introductory Statement: Access to dermatologic care in Ohio is critical given the state's rural-urban heterogeneity, aging population, and high incidence of melanoma.

Purpose: To quantify geospatial access to dermatology care across Ohio using Spatial Access Ratios (SPARs) and investigate the association between census tract-level sociodemographic characteristics and SPAR values.

Methodological Approach: Addresses for dermatology providers in Ohio were obtained through the Centers for Medicare and Medicaid Services database and geocoded to their corresponding census tracts. SPARs, which integrate provider supply, population demand, and patient travel time, were calculated for each census tract in Ohio relative to the statewide average. Multivariable linear regression assessed the association between census tract-level variables (race/ethnicity, age, education, Rural-Urban Commuting Area [RUCA] codes, and Social Vulnerability Index [SVI]) and SPARs.

Findings: 3168 census tracts were identified in Ohio. On multivariable linear regression, a higher percentage of Black residents (β: 0.04, 95% confidence interval [CI]: 0.039, 0.05) was associated with higher SPARs, representing greater access. Higher percentages of poverty (β: -0.03, 95% CI: -0.05, -0.02), residents aged 65 and older (β: -0.06, 95% CI: -0.08, -0.04), residents with a maximum high school diploma (β: -0.05, 95% CI: -0.06, -0.04), and rurality (β: -2.28, 95% CI: -3.06, -1.50) were associated with lower SPARs. In a model adjusting for the four SVI themes, greater vulnerability related to socioeconomic status (β: -0.03, 95% CI: -0.04, -0.029) and household characteristics (β: -0.005, 95% CI: -0.009, -0.0002) were associated with lower SPARs, while higher racial/ethnic minority status was associated with higher SPARs (β: 0.07, 95% CI: 0.069, 0.08).

Williams J, Attah Y, Rowser R

Poster 95

Are Depression and Anxiety Screenings Impactful at Annual Visits with Your Primary Care Provider?

Mentor: Rhea Rowser, MD

Kettering Health, Department of Family Medicine

Introductory Statement: The number of patients suffering from unscreened and ultimately untreated anxiety and depression should be quantified and addressed.

Purpose: This study's purpose was to investigate the impact of depression and anxiety screenings at annual visits with primary care providers and determine if anxiety and depression screenings should be administered to patients more frequently than solely at their annual wellness visits. In addition, compare mean GAD-7 and PHQ-9 scores between patients presenting for annual visits and those seen for non-annual visits (acute or follow up).

Methodological Approach: 122 patients completed GAD-7 and PHQ-9 screening questionnaires in their primary care office prior to evaluation by their physician. These standard screenings were administered via the medical assistants during intake, regardless of the reason for their visit. Medical Assistants verbally reported GAD-7 and PHQ-9 scores during patient care handoff. Results and treatment plans were discussed with patients who scored ≥10.

Findings: 18.8% of patients had a positive GAD-7 or PHQ-9 screening. 4% of those positive screenings were patients presenting for their annual physical. The remaining 14.8% of the positive screens were patients presenting for non-annual visits, including acute visits, chronic disease follow-up visits, and Medicare subsequent visits. Ideally, all patients should be screen at every visit to their primary care provider, as primary care physicians are the first line of defense for screening, awareness and treatment of abnormal anxiety and depression scores. PHQ-9 and GAD-7 screenings at primary care visits are impactful and should be administered completely and more frequently than solely at annual physical exam visits.

Zonfa C, Hayes D, Johnson T, Sarode-Paciorek A, Kerstetter-Fogle A

Poster 96

Health Disparities in Hospitalized Patients With Documented Social Determinants of Health

Mentor: Amber Kerstetter-Fogle, MS, PhD

Summa Health Hospital System

Introductory Statement: Social determinants of health (SDOH) significantly influence health outcomes, healthcare utilization, and disparities. Patients experiencing social vulnerability often have greater medical complexity and higher rates of mental health and substance use disorders, impacting inpatient outcomes. However, the relationship between documented SDOH, psychiatric comorbidity, and hospitalization outcomes remains incompletely characterized. Improved understanding of these associations may identify opportunities for targeted inpatient interventions to improve care delivery, reduce disparities, and optimize resource utilization.

Purpose: To evaluate differences in inpatient outcomes between hospitalized patients with and without documented SDOH and assess the association between SDOH and mental health and substance use comorbidities.

Methodological Approach: We conducted a retrospective cohort study of adult patients hospitalized at Summa Health Akron Campus, a tertiary care center in Akron, Ohio, in 2024. Patients were categorized based on the presence ≥1 documented SDOH. Primary outcomes included hospital length of stay (LOS), 30-day readmission, and in-hospital mortality. Mental health and substance use diagnoses were also evaluated. Group comparisons used appropriate statistical tests ($p<0.05$).

Findings: Among 33,850 inpatient admissions, 3,576 (10.5%) had documented SDOH. These patients were younger and differed in demographic and payer characteristics. Median hospital LOS was longer with SDOH (median 4 days vs. 3 days, $p<0.0001$). Readmission and observed mortality did not differ significantly despite higher predicted mortality risk by Elixhauser comorbidity index scores. Depression, anxiety, and substance-related diagnoses were more prevalent among patients SDOH. Housing instability and economic hardship were the most common domains. Social vulnerability was associated with longer hospitalization and greater psychiatric comorbidity.

Shukur M, Orlowski M, Silverstein S, Squibb A, Barnett E, Bankston L

Poster 97

Care on the streets: Building the Dayton Street Medicine program

Mentor: Marietta Orlowski, PhD, Sydney Silverstein, PhD, Anna Squibb, MD

BSOM, Departments of Population and Public Health Sciences and Family Medicine

Introductory Statement: Access to primary care and behavioral health services is a persistent challenge in Montgomery County, and particularly for individuals who use drugs and those without a permanent address. Untreated chronic and acute care conditions – such as diabetes and wounds – can create additional barriers to behavioral health treatment.

Purpose: This descriptive study summarizes outreach strategies and process engagement outcomes from a first-year street medicine program located in Dayton, Ohio, a region with high substance use and overdose rates.

Methodological Approach: Dayton Street Medicine is organized around four aims: outreach and education, primary care, behavioral health linkages, and student training. Services are provided one half-day per week via a mobile medical unit located outside the Dayton Dream Center, with additional outreach throughout the week.

Outreach strategies included meal services, a needs assessment, health screenings, and collaboration with local social service agencies. Engagement metrics were recorded weekly.

Results: As of December 31, 2025, the program delivered 257 primary care visits and 245 health screenings, with 25% of patients returning for additional services. Screenings for blood pressure, cholesterol, glucose, and hepatitis C were well-received and served as an entry point for engagement with the street medicine team. Undergraduate and graduate students, medical students, residents, and fellows played key roles in outreach and service delivery.

Fifteen community agencies engaged with and supported the project. Higher-than-anticipated utilization, return visits, and strong learner and agency participation suggest a community readiness for street medicine and an opportunity to expand care beyond the current neighborhood.

Cadmus M, Thota S, Manger J

Poster 98

Investigation of Educational and Social Factors Affecting Health Outcomes in the United States

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Introductory Statement: Although it is known that educational attainment can lead to a better quality of life, the mechanism behind educational attainment and health outcomes is still unclear.

Purpose: The objective of this study was to further investigate the link between education and health outcomes through a variety of social and environmental parameters as reported in the County Health Rankings (CHR) dataset.

Methodological Approach: We defined "healthy" counties as those who received a score of 1-5 and "unhealthy" counties as those who received a score of 6-10 and cross-referenced these groupings with various parameters. These parameters included high school graduation rates, college education attainment, access to public-school funding, performance on standardized reading and math exams, proportion of disconnected youth, broadband access, and the proportion of children enrolled in free/reduced lunch. All statistical analyses were performed using SPSS, Microsoft Excel and MedCalc software. P-values of <.05 were considered to be statistically significant.

Results: Healthier counties exemplified a higher proportion of adults with post-secondary education, higher high school graduation rates, improved school funding adequacy, stronger standardized exam performance, higher proportion of broadband access, lower proportion of disconnected youth, and lower proportion of children enrolled in free/reduced lunch plans.

Findings: Counties with stronger academic achievement and early education performance are positively correlated with stronger health outcomes with respect to life expectancy, years of life lost, and overall quality of life. These findings underscore the importance of targeting educational reform as a component of public health initiatives to improve the health of the general population in the United States.

Silverstein SM Barnett E, Boyd J, Chambal M, MacDonald S, Virani E

Poster 99

"It was a lot of sleepless nights": Housing precarity and risk among overdose survivors

BSOM, Department of Population and Public Health Sciences

Introductory Statement: While rates of fatal overdose have declined both nationally and locally in Montgomery County, where this study is set, problems of homelessness and housing precarity are growing. Overdose is a leading cause of death among individuals experiencing homelessness but less is known about the ways that experiences of housing precarity shape risk of overdose, both fatal and non.

Purpose: This study qualitatively explores the relationships between experiences of precarious housing and overdose risk among a sample of individuals who have recently experienced a drug overdose.

Methodological Approach: Semi-structured interviews were conducted with 35 individuals who met the following criteria: 1) 18 years of age or older; 2) reside in the Dayton, Ohio metro area; 3) self-reported a drug overdose or overdose-like experience within the past year. De-identified transcripts of interviews were uploaded to Taguette software for coding and thematic analysis.

Results: Participants described intertwined experiences of housing precarity and drug use, with loss of housing acting, for some, as a vector of increased drug use or riskier drug use and for others, drug use leading to a loss of housing. In other instances, SUD treatment seeking was motivated by a lack of housing, while for some, unstable housing challenges participants' abilities to comply with treatment protocols and requirements.

Findings: Efforts to reduce overdose by improving the dissemination of harm reduction technologies and access to treatment has been effective in reducing rates of overdose fatality. However, there remains an urgent need to address structural drivers of risk, particularly housing.

Chand K, Shah M, Nahhas RW

Poster 100

The Hidden Mental Health Burden of Informal Caregiving: Evidence from the Behavioral Risk Factor Surveillance System

Mentor: Ramzi Nahhas, PhD

BSOM, Department of Population and Public Health Sciences

Introductory Statement: Caregivers represent a substantial and growing segment of adults across the Midwestern U.S., providing unpaid care for family, relatives, or friends with chronic illness, disability, or aging needs. Prior research suggests caregiving is associated with psychological and behavioral health burdens, but associations between caregiver status, intensity and duration, and number of poor mental health days remain unclear.

Purpose: This study examined the association between caregiver status and days of poor mental health in the past 30 days, and whether caregiving duration and intensity exacerbate this effect.

Methodological Approach: The sample were 26,568 participants (5,448 caregivers) in the 2024 Behavioral Risk Factor Surveillance System (BRFSS) aged ≥18 years residing in Illinois, South Dakota, Wisconsin, or Kentucky (Ohio did not have caregiver data), with complete data for poor mental health days (past 30 days; 0, 1-4, 5-9, 10-14, 15-30), caregiver status, duration, and intensity, and confounders. Ordinal logistic regression estimated adjusted associations between mental health and caregiver status, intensity, and duration.

Findings: Caregivers had 52% greater odds of more poor mental health days (AOR = 1.52, 95% CI = 1.44 1.62, p-value <0.001). Among caregivers, those providing more than 20 hours/week of care had about 30% greater odds of more poor mental health days than those providing <20 hours per week (20-<40: AOR = 1.29, p = 0.001; 40+: AOR = 1.32, p < 0.001). Caregiving status and intensity are associated with poorer mental health among adults in Midwestern states, highlighting the need for regionally tailored interventions to mitigate caregiver burden.

Jalgaonkar SR, Nahhas RW

Poster 101

The Association Between Socioeconomic Risk Factors and Asthma Prevalence Among Adults in Ohio

Mentor: Ramzi Nahhas, PhD

BSOM, Department of Population and Public Health Sciences

Introductory Statement: Asthma is a significant public health challenge in Ohio. Understanding how social determinants relate to respiratory health is essential for targeted interventions.

Purpose: This study evaluated the association between income and education and current asthma status among adults in Ohio.

Methodological Approach: Data from 7,231 Ohio adults participating in the 2024 Behavioral Risk Factor Surveillance System were analyzed using multiple logistic regression to estimate the association between asthma status and income and education, adjusted for race, sex, and age. Body mass index and smoking status were not adjusted for as they may be mediators, in the causal pathway between income and education and asthma.

Findings: 11.7% reported current asthma. There was a significant negative association between asthma and annual household income ($p < 0.001$) but not with education ($p = 0.251$). After adjusting for confounding, individuals making ≥ $200,000 per year had 64% lower odds of asthma than those making <$15,000 (AOR: 0.36; 95% CI: 0.23, 0.56; $p < 0.001$) and females had 67% greater odds than males (95% CI: 1.44, 1.94; $p < 0.001$). Those age 35-64 years had 30-40% greater odds than those age 65+ ($p < 0.05$), however this may be, in part, a survivor effect. Addressing asthma requires focusing on socioeconomic risk factors, as lower income is a predictor of the disease. These findings highlight the need for public health interventions among Ohio adults to address social determinants and provide targeted support for low-income populations, females, and those in middle age.

Munk K, Correll M

Poster 102

The Effects of Social Determinants of Health on Mental Health in Ohio

Mentor: Jeannette Manger, PhD

BSOM, Department of Medical Education

Background: Mental health is worsening in the United States, with clear implications for physical health and mortality. Understanding predictors of mental health in Ohio can inform targeted interventions.

Purpose: To examine changes in bad mental health days in Ohio from 2016 to 2025, compare Ohio to other states, and assess relationships with key social determinants of health (SDOH).

Methodological approach: County Health Rankings and Roadmap data were used to analyze bad mental health days in Ohio and across the United States. Paired t tests and one-way ANOVA assessed temporal and state-level differences. Correlations and stepwise linear regression evaluated associations between mental health and SDOH variables, including provider availability, median household income, and social association rate.

Findings: Bad mental health days in Ohio increased significantly from 2016 to 2025 ($p < .001$), and in 2025, Ohio ranked among the highest in the nation. Provider availability demonstrated a weak negative correlation with bad mental health days. However, median household income and social association rate together accounted for 63.2% of the variance in mental health outcomes, while the ratio of mental health providers did not significantly add to the final regression model. Mental health in Ohio has significantly worsened since 2016 and remains among the highest in the nation. Our findings suggest that economic stability and social connectedness have a substantially greater impact on population mental health than provider availability alone, thus indicating \that community-based strategies addressing upstream social determinants are crucial for meaningful mental health improvement in the future.

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Let us know how we did!