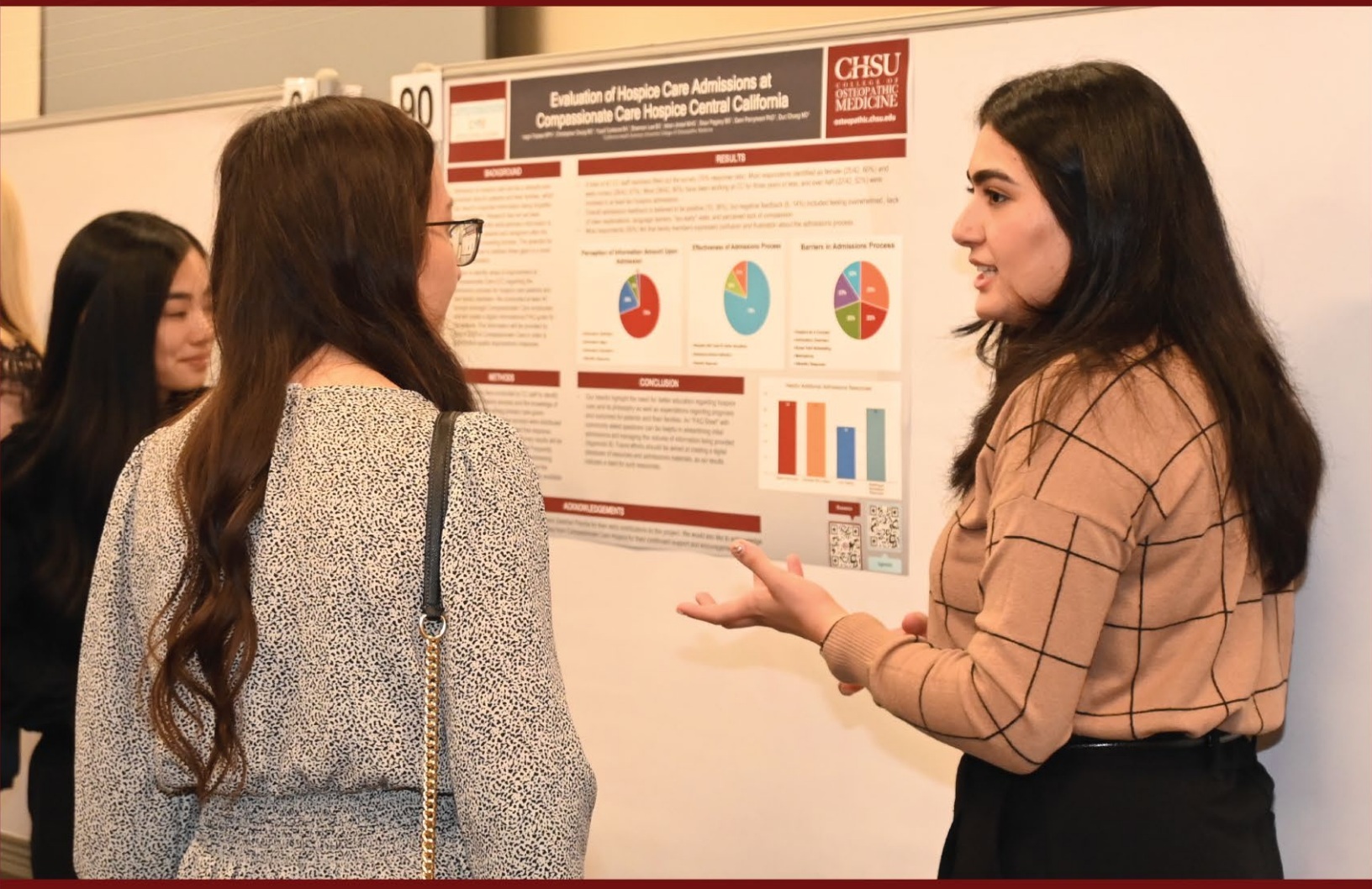
CALIFORNIA HEALTH SCIENCES UNIVERSITY

# RESEARCH DAY




## ABSTRACT BOOKLET

MAY 2, 2026

**Welcome Attendees and Presenters,**

On behalf of the **Research and Scholarship Committee** and the **Student Government Association (SGA) Research Committee**, we extend our sincere gratitude for your attendance at the annual CHSU Research Day. We welcome you to enjoy the research showcased today from researchers throughout the Central Valley, many of which are faculty and students from CHSU. Our friends and colleagues in local residency programs, and other physicians and scientists are also present today.

This year's CHSU Research Day program promises to be an enriching experience, boasting a distinguished keynote speaker. We are honored to feature **Sukhjit Brar, MD, FAPA**, a dual-board-certified adult and child psychiatrist with over a decade of experience in clinical practice and medical education.

We invite you to explore the ***over 140 poster presentations*** for your perusal covering a breadth of research topics outlined in this Abstract Booklet. There are two sessions for you to view posters and speak to the primary presenters. Even numbered posters will be presented from 10:15-11:15 am. Odd numbered posters will be presented from 11:15 am-12:15 pm.

Following the poster presentations we look forward to seeing talks of select poster presentations and the award ceremony. Please enjoy refreshments and appetizers, before proceeding to the presentation of awards for the poster competition winners in each category: Faculty, Resident Physician/Pharmacist, and Student.

We are eager to engage with you throughout this auspicious occasion and express our sincere appreciation for your invaluable support in ensuring the success of CHSU Research Day.

**Research & Scholarship Committee:**

Dr. Gisou Mohaddes (Chair)

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Edward Elizarraras

Hieu Vu

# Research Day Agenda

| | |
|---|---|
| 8:30 – 9:30 AM | Registration<br>Breakfast |
| 9:00 – 9:15 AM | Welcome Address |
| 9:15 – 10:00 AM | **Keynote Address:**<br>**Mental Health in the Digital Age: Research Insights and Pathways for Future Physicians**<br><br>**Sukhjit Brar, MD, FAPA**<br>Medical Director, Central Star Youth Psychiatric Health Facility |
| 10:00 – 10:15 AM | Break |
| 10:15 – 11:15 AM | Poster Session 1 (Even numbers) |
| 11:15 – 12:15 PM | Poster Session 2 (Odd numbers) |
| 12:15 – 12:30 PM | Break |
| 12:30 -1:15 PM | Lunch and Podium Presentations |
| 1:15 – 1:30 PM | Research Day Award Ceremony |

Keynote Presentation:

# Title: Mental Health in the Digital Age: Research Insights and Pathways for Future Physicians

Presented by:

## Sukhjit Brar, MD, FAPA

Medical Director, Central Star Youth Psychiatric Health Facility

Sukhjit Brar, MD, FAPA, is a dual-board-certified adult and child psychiatrist with over a decade of experience in clinical practice and medical education. He currently serves as Medical Director at Central Star Youth Psychiatric Health Facility in Fresno, California, and as a Clinical Faculty Preceptor at California Health Sciences University (CHSU) College of Osteopathic Medicine. Dr. Brar also mentors residents and fellows through USC-affiliated programs at Kaweah Health System.

Before his leadership roles in psychiatry, Dr. Brar spent three years traveling across the continental United States conducting Phase III pharmaceutical research trials in neurology and pain medicine, including studies on epilepsy, fibromyalgia, multiple sclerosis, and Alzheimer's disease. His research background spans global and local initiatives—from predicting mortality in burn patients at Johns Hopkins and the European Burns Association Congress to analyzing childhood asthma trends in Fresno's underserved communities.

A Fellow of the American Psychiatric Association, Dr. Brar is passionate about advancing mental health research and education in the Central Valley. His keynote will explore the intersection of technology, environment, and adolescent mental health, offering insights and actionable strategies for future physicians and researchers.

**Poster #1**

# Rapid Functional Improvement in AIS C Non-Traumatic Spinal Cord Injury During Inpatient Rehabilitation: A Case Report

Ramiz Khurram Ahmed [1], Sarah Shandy [1], Harjas Jassal [1], Tha Cha [2], Duc Chung [1]
[1] California Health Sciences University College of Osteopathic Medicine, Clovis, CA, United States
[2] San Joaquin Valley Rehabilitation Hospital, Fresno, CA, United States

**Abstract**

**Background:**
Non-traumatic spinal cord injury (NTSCI) represents a significant proportion of spinal cord injury cases and is commonly associated with degenerative spinal conditions. Patients with motor-incomplete injuries (AIS C) have demonstrated meaningful potential for neurological and functional recovery, particularly when early rehabilitation is initiated.

**Methods:**
We present a 33-year-old male with NTSCI secondary to thoracic spinal stenosis and multilevel disc herniation who underwent T1–T2 decompression and fusion followed by T1–T7 posterior fusion and laminectomies. He was admitted to inpatient rehabilitation eight days after surgical management. On admission, the patient was classified as T10 AIS C and was non-ambulatory, requiring maximal assistance for mobility and activities of daily living. During a 26-day inpatient rehabilitation course, the patient demonstrated significant functional improvement. He progressed from a non-ambulatory state to ambulating 170 feet with a front-wheeled walker and minimal assistance. Improvements were observed across mobility, transfers, and overall independence in activities of daily living. Early barriers to rehabilitation included fear of falling, which improved with repeated exposure and guided therapy.

**Results:**
Recovery following spinal cord injury is influenced by multiple factors, including injury severity, preserved neural pathways, rehabilitation intensity, and psychological engagement. Patients with AIS C injuries have been shown to achieve favorable functional outcomes, with reported ambulation rates of 60 to 75 percent. Early, multidisciplinary inpatient rehabilitation plays a critical role in maximizing recovery by promoting neuroplasticity, improving functional mobility, and addressing both physical and psychological barriers.

**Conclusion:**
This case highlights the substantial functional recovery that can be achieved in patients with AIS C NTSCI when early, structured inpatient rehabilitation is implemented. It reinforces the importance of timely rehabilitation and multidisciplinary care in optimizing outcomes for this patient population.

**Abstract Topic:** Clinical Research

**Poster #2**

# FROM METASTASES TO MYCOSES: DISSEMINATED COCCIDIOIDOMYCOSIS PRESENTING AS PRIMARY ADRENAL INSUFFICIENCY

Aremanda H[1], Majeed S[1], Yao S[1]
[1] Sierra View Medical Center

**Abstract**

**Introduction**

Primary adrenal insufficiency is a life-threatening condition resulting from various etiologies, including autoimmune disease, infection, and metastatic malignancy. Bilateral adrenal masses with systemic symptoms often raise concern for metastatic disease, particularly in patients with suspected malignancy. However, infectious causes such as disseminated coccidioidomycosis can present with similar clinical and radiologic findings, creating diagnostic challenges. We present a case of primary adrenal insufficiency initially suspected to be secondary to metastatic disease, later diagnosed as disseminated coccidioidomycosis.

**Case Presentation**

A 70-year-old male with a history of hypertension, type 2 diabetes mellitus, and hyperlipidemia presented with right flank pain, weight loss, decreased appetite, and night sweats. Initial laboratory evaluation was notable for hyponatremia (133 mmol/L), hyperkalemia (6.2 mmol/L), blood urea nitrogen 25 mg/dL, and creatinine 1.6 mg/dL.

Computed tomography of the chest, abdomen, and pelvis revealed heterogeneously enhancing bilateral adrenal masses measuring up to 27 mm on the right and 31 mm on the left, with associated periaortic and iliac lymphadenopathy. Additional findings included massive prostatomegaly with irregular enhancement and multiple osseous lesions concerning for metastatic disease. Prostate-specific antigen was elevated at 219 ng/mL, and prostate biopsy demonstrated adenocarcinoma (Gleason score 3+3). The patient was initially diagnosed with metastatic prostate cancer and started on bicalutamide.

During hospitalization, the patient developed syncope with orthostatic hypotension. Given persistent hyponatremia, hyperkalemia, and hypotension in the setting of bilateral adrenal masses, adrenal insufficiency was suspected. Laboratory evaluation revealed markedly low serum cortisol (<1 mcg/dL), low free cortisol (<0.03), and elevated adrenocorticotropic hormone (1122 pg/mL), consistent with primary adrenal insufficiency. The patient was started on hydrocortisone and fludrocortisone with clinical improvement.

Further evaluation with positron emission tomography–computed tomography demonstrated hypermetabolic adrenal masses and a hypermetabolic prostate lesion. Biopsy of the adrenal gland revealed caseating granulomatous inflammation with fungal elements, including spherules, positive on GMS and PAS stains, consistent with coccidioidomycosis. Serologic testing confirmed

the diagnosis with positive IgM and IgG antibodies and a complement fixation titer of 1:128. The patient was started on fluconazole, and malignancy was excluded on biopsy of osseous lesions.

**Discussion**

Primary adrenal insufficiency is most commonly caused by autoimmune disease; however, in the presence of bilateral adrenal masses, metastatic malignancy is often suspected. Prostate cancer, although rarely involving the adrenal glands, can present with widespread metastatic disease, contributing to diagnostic uncertainty.

Infectious etiologies, particularly disseminated coccidioidomycosis, can involve the adrenal glands and mimic metastatic disease clinically and radiographically. The presence of systemic symptoms, electrolyte abnormalities, and hemodynamic instability should prompt consideration of adrenal insufficiency and alternative diagnoses beyond malignancy.

This case highlights the importance of maintaining a broad differential diagnosis in patients with bilateral adrenal masses. Early recognition of adrenal insufficiency and timely tissue diagnosis are critical to avoid misdiagnosis and ensure appropriate management.

**Conclusion**

Disseminated coccidioidomycosis can closely mimic metastatic malignancy when presenting with bilateral adrenal masses and primary adrenal insufficiency. This case underscores the importance of maintaining a broad differential diagnosis and obtaining tissue confirmation to guide appropriate management.

**Abstract Topic:** Clinical Research

**Poster #3**

# Melanoma Beyond the Skin: Primary Gastric Melanoma Presenting as Upper Gastrointestinal Bleeding

Aremanda H[1], Sinnanan A[1], Singh T[1], Verma S[1], Parmod K[1]
[1]Sierra View Medical Center

**Abstract**

**Introduction**

Primary malignant melanoma of the stomach is an exceptionally rare and aggressive neoplasm, with only a limited number of cases reported in the literature. Gastrointestinal involvement by melanoma is far more commonly metastatic, rendering primary gastric melanoma a diagnosis of exclusion. The absence of native melanocytes within the gastric mucosa and its nonspecific clinical presentation further complicate diagnosis. We present a rare case of primary gastric melanoma presenting as upper gastrointestinal bleeding, highlighting the diagnostic challenges associated with this entity.

**Case Presentation**

A 77-year-old male with a history of hypertension, benign prostatic hyperplasia, anemia of chronic disease, and Parkinson's disease presented with dizziness and near-syncope. Laboratory evaluation revealed severe anemia with a hemoglobin level of 6.4 g/dL. He denied hematemesis or melena.

Esophagogastroduodenoscopy demonstrated a large ulcerated, excavating mass at the gastroesophageal junction extending along the lesser curvature of the stomach, concerning for malignancy. PET-CT revealed a hypermetabolic gastric mass with wall thickening and a right lower lobe pulmonary lesion. Brain MRI showed no intracranial metastasis.

Histopathologic examination of gastric biopsies demonstrated malignant melanoma with pleomorphic pigmented tumor cells infiltrating the lamina propria. Immunohistochemistry showed tumor cells negative for epithelial markers including pan-cytokeratin, CK7, and CK20, as well as P63, excluding gastric adenocarcinoma and squamous cell carcinoma. Neuroendocrine differentiation was not supported, with synaptophysin showing weak equivocal staining. Hematolymphoid malignancies were excluded with negative CD3 and CD20. Tumor cells demonstrated melanocytic differentiation with positivity for S100, HMB-45, and Melan-A. Mismatch repair proteins were intact, indicating microsatellite stability, and PD-L1 expression was absent (tumor proportion score 0%).

Comprehensive dermatologic, ophthalmologic, and mucosal evaluations revealed no alternative primary site, supporting a diagnosis of primary gastric melanoma. The case was reviewed by a multidisciplinary team, and the patient was referred for systemic immunotherapy.

**Discussion**

Melanoma is most commonly cutaneous in origin, while mucosal melanomas, including those of the gastrointestinal tract, are rare and aggressive. Primary gastric melanoma is exceedingly uncommon, as most gastric involvement represents metastatic disease. Patients often present with nonspecific symptoms such as anemia or gastrointestinal bleeding, leading to delayed diagnosis.

Differentiating primary from metastatic melanoma requires comprehensive clinical evaluation, as histopathology alone cannot determine tumor origin. This distinction has important therapeutic implications, as localized primary disease may be amenable to surgical resection, whereas metastatic melanoma is primarily managed with systemic immunotherapy.

Accurate diagnosis is critical, as misclassification may lead to inappropriate management and missed opportunities for potentially curative intervention. This case emphasizes the importance of integrating clinical, radiologic, and pathologic findings when evaluating atypical gastric lesions.

**Abstract Topic:** Clinical Research

**Poster #4**

# Recurrent Malignant Pericardial Effusion in Advanced Lung Cancer: Successful Management with Percutaneous Balloon Pericardiotomy

Aremanda HC[1], Sinanan A[1], Verma S[1], Reddy B[1]
[1]Sierra View Medical Center

**Abstract**

**Introduction**

Malignant pericardial effusion is a serious complication of advanced malignancies, most commonly associated with lung cancer, and can rapidly progress to cardiac tamponade, a life-threatening condition. Early recognition and timely intervention are essential to prevent hemodynamic compromise and improve patient outcomes. We present a case of recurrent malignant pericardial effusion requiring multimodal management, highlighting the challenges in achieving sustained symptom control.

**Case Presentation**

A 68-year-old female with a history of hypertension and recently diagnosed stage IV non-small cell lung cancer with an EGFR exon 19 deletion presented with worsening dyspnea. Chest radiograph revealed a left upper lobe mass with associated pericardial and pleural effusions. Transthoracic echocardiography confirmed a large pericardial effusion concerning for impending cardiac tamponade.

The patient underwent ultrasound-guided pericardiocentesis with drainage of 850 mL of fluid. Cytological analysis confirmed metastatic adenocarcinoma, consistent with a malignant pericardial effusion. Despite continuous drainage, the effusion reaccumulated rapidly at a rate of approximately 100–150 mL per day.

Intrapericardial cisplatin (50 mg) was administered for chemical pericardiodesis; however, persistent reaccumulation was noted within 48 hours. Given failure of conservative and chemical management, the patient underwent percutaneous balloon pericardiotomy under fluoroscopic guidance, successfully creating a pericardial window and redirecting fluid into the peritoneal cavity.

Following the procedure, the patient demonstrated significant clinical improvement with resolution of dyspnea and reduced oxygen requirements. Follow-up echocardiography at three weeks showed no recurrence of a large pericardial effusion or evidence of cardiac tamponade.

**Discussion**

Malignant pericardial effusion is a potentially life-threatening complication of advanced malignancies and is most commonly associated with lung cancer. Rapid accumulation of pericardial fluid can lead to cardiac tamponade, necessitating urgent intervention.

Management strategies include pericardiocentesis, prolonged catheter drainage, intrapericardial sclerotherapy, and surgical or percutaneous creation of a pericardial window. However, recurrence is common, particularly in malignant etiologies, making definitive management challenging.

This case highlights the limitations of conventional drainage and chemical pericardiodesis in recurrent malignant pericardial effusion. Percutaneous balloon pericardiotomy offers a minimally invasive and effective alternative for preventing recurrence, improving symptoms, and enhancing quality of life in patients with advanced malignancy.

**Abstract Topic:** Clinical Research

**Poster #5**

# Suzetrigine for Perioperative Pain Management: A Scoping Review of Pharmacology and Clinical Evidence for Selective NaV1.8 Inhibition

Daniel Bach[1], Kevin Tran[1], George Wilkins[1], Zachary Yamada[1], Paramveer Brar[1], Sudhakar Pemminati[1]

[1] California Health Sciences University College of Osteopathic Medicine

**Abstract**

**Background:** Opioid related adverse events are an important perioperative concern despite widespread adoption of combined analgesic approaches for pain management. Suzetrigine, a selective inhibitor of the NaV1.8 sodium channel, received FDA approval in January 2025 for moderate to severe acute pain, allowing the use of a novel analgesic class for clinical practice. The goal of this scoping review is to help streamline perioperative Suzetrigine use from widely available pharmacokinetic, pharmacodynamic, and clinical evidence.

**Methods:** Utilizing PRISMA-ScR guidelines, the online databases of PubMed, Embase, and ClinicalTrials.gov (January 2020–January 2026) were systematically searched for various studies investigating NaV1.8 selective compounds in acute pain contexts. A total of five reviewers conducted screening and data extraction in pairs of two with cross examination. This scoping review organized and then compiled various findings across pharmacokinetic, pharmacodynamic, and clinical applications.

**Results:** A total of 10 articles were established to have met the specified inclusion criteria for this scoping review. These articles were recognized as peer reviewed publications, clinical trial registry results, regulatory documents, conference abstracts, and preprints. Suzetrigine was found to be most effective when given orally twice per day and its selectivity for NaV1.8 was up to 30,000 times more than other sodium channel medications pursuing the same effect. Phase 3 trials in post-abdominoplasty and post-bunionectomy patients demonstrated statistically significant decreased pain levels compared to the placebo with similar pain reducing effectiveness to hydrocodone/acetaminophen. Suzetrigine was associated with a decrease in gastrointestinal symptoms when compared to opioid counterparts, a decrease of up to 40%. Mechanistic studies reveal that NaV1.8 inhibition decreases but does not abolish pain receptor firing, explaining the meaningful but incomplete analgesia observed clinically. Suzetrigine also displayed metabolism through CYP3A enzymes, displaying significant drug interaction potential.

**Conclusions:** Suzetrigine provides a unique mechanism to relieve acute pain without opioids with favorable gastrointestinal tolerability. Current evidence gaps show limited data in comprehensive surgical populations, lack of multimodal comparative effectiveness trials, and undefined long term safety outcomes. Perioperative analgesic regimens can be optimized with prioritization of research addressing these areas of lack of evidence.

**Abstract Topic:** Clinical Research

**Poster #6**

# Cancer-Associated Frailty and Reduced Motivation as Barriers to Rehabilitation Progress

Kaitlyn Boyles[1], Niki Tabatabai[1], Tha Cha, MD[2]
[1] California Health Sciences University, College of Osteopathic Medicine
[2] San Joaquin Rehabilitation Hospital

**Abstract**
Male breast cancer is a rare clinical entity, accounting for less than 1% of all breast cancer diagnoses across both sexes. Despite its low prevalence, its incidence has been gradually increasing worldwide, with invasive ductal carcinoma representing approximately 98% of cases. While the disease itself is uncommon, cancer-associated frailty and functional decline are relatively common and are major contributors to treatment-related complications and mortality. In oncology patients, frailty often shows up as diminished physiologic reserve, and often presents as weakness, fatigue, weight loss, and reduced mobility. These changes can significantly affect treatment tolerance and overall recovery. This becomes especially noticeable in the rehabilitation setting, where successful recovery relies heavily on active patient participation and multidisciplinary care. Beyond physical decline, frailty can also adversely affect cognitive function, mood, and motivation, which may limit a patient's ability and willingness to participate in rehabilitation and treatment. We present a 66-year-old male patient with non-metastatic breast cancer complicated by recurrent pleural effusion status post thoracentesis and left PleurX catheter placement. The patient was currently undergoing oral chemotherapy and was status post bilateral mastectomies. His past medical history was significant for type 2 diabetes mellitus with peripheral neuropathy, hypertension, coronary artery disease with prior myocardial infarction, hypothyroidism, obesity, osteoarthritis, and depression. He presented after a fall down approximately 17 stairs, resulting in a traumatic brain injury without loss of consciousness. During hospitalization, he was found to have a left-sided pneumothorax requiring chest tube placement and was subsequently transferred to an inpatient rehabilitation facility. During his time at San Joaquin Rehabilitation Hospital, he demonstrated marked decline from baseline with significant muscle atrophy, reduced muscle strength and very limited mobility. His endurance was poor and he often needed increased oxygen, especially with activity. His recovery was further limited by pain, fatigue, low motivation and limited engagement in therapy, which ultimately prevented progression to physical and occupational therapy goals. Overall, this case shows how much of an impact cancer-associated frailty has on fall risk, recovery, and rehabilitation outcomes. Early recognition of cancer-associated frailty may allow for timely interventions that can improve patient outcomes and recovery in this vulnerable population.

**Abstract Topic:** Clinical Research

**Poster #7**

# AgriLungAI : A Multimodal Vision- Language Framework for the Diagnosis of Farmer's Lung (Chronic Hypersensitivity Pneumonitis)

Daniel V [1], Daniel N [2], Daniel N [3], Mary S [4]
[1]. Vijai Daniel MD INC
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[3]. Clovis North Unified School System
[4]. University of Texas at Arlington

**Abstract**
Chronic Hypersensitivity Pneumonitis (CHP) is a progressive interstitial lung disease caused by repeated inhalation of environmental antigens and is particularly prevalent among agricultural workers. Differentiating CHP from other interstitial lung diseases (ILDs) remain challenging due to overlapping radiographic and clinical features, often leading to delayed diagnosis and progression to irreversible pulmonary fibrosis. Multidisciplinary team (MDT) evaluation is the current diagnostic gold standard; however, it is time-consuming and resource intensive. This study presents AgriLungAI, a multimodal vision–language model (VLM) designed to improve the early and accurate diagnosis of CHP by integrating high-resolution computed tomography (HRCT) imaging with structured clinical exposure data. A retrospective dataset of 100 patients with confirmed ILD diagnoses was assembled, with ground-truth labels derived from radiologist interpretations and final MDT consensus. Electronic medical records were reviewed to extract exposure history and symptom data. HRCT chest scans were processed as volumetric video inputs. The model was built on Qwen2.5-VL and implemented in Python using PyTorch, with both vision and language encoders fine-tuned via Low-Rank Adaptation (LoRA). The AgriLungAI model achieved over 80% predictive accuracy and demonstrated an enhanced ability to integrate radiologic patterns with clinical context, successfully distinguishing CHP from other ILDs. These findings support the hypothesis that multimodal AI can improve diagnostic reliability and enable earlier detection of CHP, particularly in high-risk agricultural regions with limited specialist access. AgriLungAI shows promise as both a scalable clinical decision-support tool and an educational resource for training medical students and residents.

**Abstract Topic:** Clinical Research

**Poster #8**

# Diagnostic Complexity of Mixed Catatonia in an Adolescent With Neurodevelopmental and Psychotic Comorbidity: A Case Report

Dinah D'Silva[1], Ani Lao[1], Anup Misra MD[2], Sukhjit Brar MD[2]
[1]California Health Sciences University, College of Osteopathic Medicine
[2]Kaweah Health Department of Psychiatry

**Abstract**

We present a case of a 15-year-old male with a complex psychiatric history including ASD, Tourette Syndrome, Obsessive Compulsive Disorder, suspected Bipolar Spectrum Disorder, and significant psychiatric family history. The adolescent was admitted to a child and adolescent inpatient facility for acute psychiatric decompensation secondary to medication nonadherence. He presented agitated, paranoid, responding to internal stimuli, non-communicative, and non-cooperative with redirection. Additionally, our team observed behavior including banging on doors, spitting on treatment team members, grimacing, fixed gaze, and repetitive lateral lip movements. Upon admission, thorough collateral information was obtained from the patient's guardians, to distinguish acute exacerbation of a known disorder from a new-onset condition. Recognition of the patient's acute state was complicated by symptom overlap with underlying neurodevelopmental and tic disorders. Given his limited cooperation and mute state, as well as severe decompensation from baseline, the patient was initially diagnosed and started treatment with intramuscular and oral lorazepam for mixed catatonia and subsequently underlying bipolar vs schizophrenia spectrum disorder. Diagnostic criteria included utilizing DSM-5 criteria for catatonia as well as a Bush-Francis Catatonia Rating Scale score of 22 indicating severe active catatonia. The patient's positive outcome in relation to an intramuscular lorazepam challenge further highlights the acute diagnosis of mixed catatonia secondary to an underlying mood or psychotic disorder. Given the patient's acute psychiatric decompensation, the goal of inpatient treatment was to improve functioning and stabilize the patient for long-term residential treatment. This goal was achieved through careful titration and a combination of oral benzodiazepines and antipsychotic medication. However, this case also illustrates how medication shortages, limited access to electroconvulsive therapy, and insurance constraints can delay the delivery of evidence-based care for pediatric catatonia. Taken together, these challenges underscore the importance of early recognition of mixed catatonia in adolescents, use of structured diagnostic tools to clarify complex presentations, prompt initiation of benzodiazepine therapy, and systems-level preparedness to ensure timely access to evidence-based treatment.

**Abstract Topic:** Clinical Research

**Poster #9**

# When Common Becomes Complex: A Case of Rhinovirus Causing Atypical Kawasaki Disease

Dinah D'Silva[1], Rupa Thacker MD.[2]
[1]California Health Sciences University, College of Osteopathic Medicine
[2]Sunshine Children's Pediatric Clinic

**Abstract**

**Background:** Kawasaki disease (KD) is an acute systemic vasculitis and the leading cause of acquired heart disease in children. Rhinovirus is a RNA virus most frequently responsible for the "common cold." Although the cause of KD is unknown, theories explore infectious etiology. Incomplete KD, particularly in infants, does not follow traditional clinical KD and can present with diagnostic challenges when concurrent viral infections further risk delayed recognition and treatment.

**Case Presentation:** An 8-month-old previously healthy, fully vaccinated male presented for an emergency department (ED) follow up with 2 days of fever and vomiting. Respiratory PCR was positive for rhinovirus/enterovirus, and he was managed supportively. Despite defervescence, he progressively developed a diffuse maculopapular rash, hepatomegaly, lethargy, and dehydration, raising concern for sequelae and prompting an ED referral. On ED arrival he was afebrile but tachycardic and borderline hypotensive, with labs reflecting elevated inflammatory markers, hyponatremia, hypoalbuminemia, acute kidney injury, anemia, and thrombocytopenia. He was admitted to the PICU and started on broad-spectrum antibiotics while undergoing multidisciplinary evaluation for a broad range of differential diagnoses. Transthoracic echocardiography revealed left anterior descending coronary artery dilation (Z-score +2.6) with a small pericardial effusion, confirming incomplete Kawasaki disease. He was treated with IVIG and high-dose aspirin, followed by infliximab for persistent inflammation, with normalization of coronary dimensions prior to discharge.

**Discussion:** Ability to provide daily clinic follow up aided in early escalation of care in this infant. Additionally, effective communication between outpatient and hospital teams are critical to ensuring timely intervention and treatment. This case highlights the diagnostic complexity of incomplete KD in the setting of a documented viral infection and resolving fever, emphasizing the need for echocardiography when inflammatory markers remain elevated. Multidisciplinary collaboration and consultation with specialized pediatric Kawasaki treatment teams can help guide treatment and prevent long term complications, particularly in physician shortage regions, where atypical presentations may pose additional diagnostic challenges.

**Abstract Topic:** Clinical Research

**Poster #10**

# Efficacy of GLP-1 Receptor Agonists on Weight Reduction in Patient Population at Bautista Health Care

Nhu Duong, MSBS [1], Giana Davlantes [1], Song-Ah Baek [1], Aarti Dixit [1], Ramsha Farooq [1], Michael Le [1], Matthew Ellis [1], Sabrina Tu [1], Sharlott Hariri [1], Eddie J. Merino, PhD [1], Jose Luis Flores, MD [2]

[1] California Health Sciences University College of Osteopathic Medicine

[2] Bautista Health Clinic

**Abstract**

**Introduction:** Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) have transformed the management of Type 2 Diabetes (T2D) by mimicking natural incretin hormones that enhance insulin secretion and suppress appetite. While these medications are generally effective, their real-world performance can be influenced by specific patient demographics and adherence patterns. This study investigates whether GLP-1 RAs at Bautista Health Clinic exhibit lower efficacy than national averages due to the clinic's unique patient population. We hypothesize that men using daily oral GLP-1 RAs will experience the lowest weight-loss percentage compared to national benchmarks because the higher frequency of administration may lead to more missed doses.

**Methods:** This project is a retrospective cohort study utilizing de-identified electronic health records (EHR) from the Bautista Health Clinic between 2020 and 2026. The study includes 50 adults, aged 18 to 90, with a diagnosis of T2D or obesity. Inclusion requires at least three (3) documented clinic visits with weight records both before and after the initiation of GLP-1 RAs therapy. Data points, including medication type (Semaglutide vs. Tirzepatide), route of administration (oral vs. Subcutaneous injection), and demographic markers such as age, gender, race, and ethnicity, were extracted using NextGen and IMS systems for statistical analysis.

**Results:** Existing literature indicates that GLP-1 RAs typically result in a mean weight loss of 2.69 kg for patients with diabetes and 9.19 kg for those without. Regional real-world data from T2D patients has shown an average reduction of 6 lbs over 72 weeks. Fifty (50) patients, ten (10) for each GLP-1 RA agent, were included. The use of GLP-1 RA medication shows no statistically significant difference in total weight change between drug groups ($F(4,44) = 1.00$, $p = 0.417$). The subcutaneous injectable semaglutide agent, indicated for obesity, showed the greatest mean weight reduction, suggesting a potential trend that may warrant further investigation with larger sample sizes.

**Conclusion:** The efficacy of GLP-1 RAs on weight reduction among the patient population at Bautista Health Clinic needs further investigation with an increasing sample size and considering the effects of drug dosage, indication, drug compliance, diet, exercise, patient's education, and health coverage.

**Abstract Topic:** Clinical Research

**Poster #11**

# The Effect of Psychotropic Agents on Sick Sinus Syndrome: A Case Report

Lynn Fadel BS[1], Ansar Malik MD[2], Sudhakar Pemminati PhD[1]
[1]California Health Sciences University College of Osteopathic Medicine, [2]Thriving Minds Psychiatric Services of California

**Abstract**
Sick sinus syndrome (SSS) complicates psychiatric medication management due to risks of conduction worsening and interactions with antiarrhythmic therapy. A 35-year-old woman with generalized anxiety disorder (GAD) and insomnia treated with bupropion, hydroxyzine, melatonin, and intermittent quetiapine, with comorbid SSS and supraventricular tachycardia, managed post-ablation with the β-blocker, metoprolol. A medication safety review identified several concerns. Quetiapine has dose-dependent QTc-prolonging potential and complicates management in patients with conduction disease or patients on flecainide; hydroxyzine also has recognized QTc-prolonging potential, warranting dose limitation in patients with bradyarrhythmias or structural conduction abnormalities. This can aggravate bradycardia caused by flecainide. Bupropion-associated CYP2D6 inhibition could elevate flecainide levels. Management prioritized cardiac safety by discontinuing quetiapine, limiting hydroxyzine to low doses, and continuing melatonin, alongside stress testing and reconsideration of psychotropics. This case highlights the need for careful selection of psychiatric medications in patients with SSS, favoring lower-risk alternatives such as mirtazapine with low arrhythmogenic potential and close electrocardiogram (ECG) monitoring, cardiology, and psychiatry collaboration.

**Abstract Topic:** Clinical Research

**Poster #12**

# Novel activated prothrombin complex concentrate regimen for managing warfarin- associated hemorrhages

Benjamin Falkenstein, BS[2]; Evan Cheng, BS[2]; Francisco Ibarra, PharmD[1-3]
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[2]. California Health Sciences University College of Osteopathic Medicine - Clovis, CA;
[3]. University of California San Francisco at Fresno, Department of Emergency Medicine - Fresno, CA

**Abstract**

**Background:** Warfarin is an oral anticoagulant used to prevent and treat thromboembolisms. It achieves this by inhibiting vitamin K epoxide reductase, depleting vitamin K stores, and reducing the synthesis of factors II, VII, IX, X, and Proteins C/S. Management of warfarin associated coagulopathies consists of co-administration of four-factor prothrombin complex concentrates (4F-PCC) and vitamin K. 4F-PCC contains functional clotting factors II, VII, IX, X, and Proteins C/S, providing immediate/temporary restoration of hemostasis. 4F-PCC comes in either fixed or standard dosing. Fixed doses are bing used at increasing rates, however, the perfect dosing strategy is not well known.

**Materials and Methods:** This was a retrospective chart review at two sites within a healthcare system. Patients were included if they received FEIBA for the management of a warfarin-associated coagulopathy with a baseline INR > 1.5. Patients were excluded if they were less than 18 years old, pregnant, incarcerated, did not have a post-FEIBA INR, elevated INR not associated with warfarin use, received fresh frozen plasma (FFP) before administration of FEIBA or prior to obtaining a post-FEIBA INR. Primary efficacy endpoint: % patients who achieved a post-FEIBA INR ≤ 1.5

**Results:** Nine (50%) patients in the old group achieved a post-FEIBA INR ≤ 1.5, whereas 14 (78%) patients in the new group achieved a post-FEIBA INR ≤ 1.5 (p = 0.16). The post-FEIBA INR in the old and new groups was 1.6 (1.4-2.1) and 1.4 (1.2-1.5), respectively (p = 0.02). The post-FEIBA INR values in the patients who did not achieve a post-FEIBA INR ≤ 1.5 in the new group were 1.6, 1.6, 1.8, and 2.4.

**Conclusion:** This study demonstrated that our revised fixed-dose FEIBA protocol was associated with increased hemostatic effectiveness, particularly among patients with severely elevated INRs at presentation. These results underscore the need for larger prospective studies to more clearly define the optimal fixed-dose and agent in the management of warfarin-associated hemorrhages.

**Abstract Topic:** Clinical Research

**Poster #13**

# A System-Based Review on Effects of Botulinum Toxin: Benefits vs Risks

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**Abstract**

**Introduction:** Botulinum toxin, a neurotoxic protein produced by Clostridium botulinum, inhibits acetylcholine release at the neuromuscular junction, resulting in temporary muscle paralysis. While initially developed for neuromuscular conditions, its clinical applications have expanded across multiple organ systems. We hypothesize that botulinum toxin exerts consistent therapeutic effects across diverse systems through a shared mechanism of neurotransmitter inhibition, supporting its role as a versatile, multi-system therapeutic agent.

**Methods:** This review was conducted in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Relevant literature was systematically identified and analyzed to evaluate the effects of botulinum toxin across the neuromuscular, nervous, genitourinary, gastrointestinal, and integumentary systems.

**Results:** Botulinum toxin demonstrates well-established efficacy in reducing spasticity and managing movement disorders within the neuromuscular system, though concerns remain regarding toxin diffusion and long-term muscular adaptation. In the nervous system, it reduces neuropathic pain by inhibiting the release of pain-mediating neurotransmitters, supporting its use in conditions such as chronic migraine and neuralgia. Within the genitourinary system, it improves symptoms of urinary and pelvic floor dysfunction by decreasing muscle overactivity. In the gastrointestinal system, it has been applied to smooth muscle disorders, including achalasia and chronic constipation, improving motility. Dermatologic applications, particularly in cosmetic medicine, further demonstrate its ability to modulate tissue function and aging processes. Collectively, these findings support a shared mechanistic basis underlying its diverse clinical effects.

**Conclusion:** Botulinum toxin exhibits significant cross-system therapeutic potential, consistent with its underlying mechanism of neurotransmitter inhibition. These findings highlight its versatility while emphasizing the need for careful dosing, monitoring, and continued research to better understand long-term effects and optimize safe, evidence-based clinical use.

**Abstract Topic:** Clinical Research

**Poster #14**

# Does Resident Physician Attire Matter? The Impact of Resident Clothing on Patient Recognition and Satisfaction in the Emergency Department

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**Abstract**

Physician attire has historically symbolized professionalism, with prior literature suggesting it may influence patient trust, satisfaction, and perceived competence. However, Emergency Medicine has increasingly shifted toward more casual attire, and its impact on patient perceptions—particularly for resident physicians—remains unclear. We conducted a prospective observational study in a tertiary care Emergency Department to evaluate whether resident physician attire (white coat, soft-shell jacket, or scrubs) affects patient recognition and satisfaction. Resident attire was standardized and assigned using a randomization process. Adult patients completed brief surveys assessing whether they recognized having been evaluated by a resident physician and rated their satisfaction on a 5-point scale.

A total of 251 patient responses were analyzed for recognition and 237 for satisfaction. Recognition of resident physicians was high across all attire groups (scrubs 88.0%, soft-shell jackets 86.1%, white coats 93.0%), with no significant association between attire and recognition ($\chi^2(2) = 1.839$, $p = 0.399$). Patient satisfaction was also high (mean 4.55 ± 0.74) and did not differ significantly by attire ($p = 0.250$). In contrast, patients who recognized their physician reported significantly higher satisfaction ($p = 0.033$; OR 3.13, 95% CI 1.19–8.24). Longer clinical encounter time was associated with increased odds of patient recognition (OR 1.21 per minute, $p = 0.026$). Among patients who recognized their physician, most identified them by physical characteristics rather than by name (82.2% vs 17.8%, $p < 0.001$).

Resident physician attire was not associated with differences in patient recognition or satisfaction in the Emergency Department. However, patients who recognized their physician reported significantly higher satisfaction, suggesting that communication and role clarity - not attire - drive patient experience in the ED.

**Abstract Topic:** Clinical Research

**Poster #15**

# Postural Orthostatic Tachycardia Syndrome in an Adolescent Male: A Case Report

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**Abstract**

**Introduction:** Postural orthostatic tachycardia syndrome (POTS) is a disorder of orthostatic intolerance most commonly seen in adolescent females. The neuropathic subtype, the most prevalent form, may present with lower extremity pain and sensory disturbances, broadening the differential diagnosis to include neurologic, structural, and cardiopulmonary etiologies. We describe a case of suspected neuropathic POTS in an adolescent Hispanic male whose complex presentation initially raised concern for more serious pathology.

**Case Description:** A 14-year-old previously healthy male presented with intermittent right-sided chest pain radiating to the back, dyspnea, and lightheadedness. Initial evaluation, including electrocardiogram, was unremarkable. Over several days, he developed progressive bilateral lower extremity pain, subjective weakness, numbness, perianal sensory changes, and worsening gait instability. He experienced a fall while attempting to stand and returned with persistent symptoms, including orthostatic complaints.

Physical examination revealed inconsistent lower extremity strength and sensation with preserved reflexes and no focal neurologic deficits. Gait instability required assistive support. Extensive evaluation, including MRI of the brain and entire spine, cardiac studies, chest imaging, and laboratory testing, was unrevealing. Infectious workup, including coccidioidomycosis serologies, was negative.

Orthostatic vital signs demonstrated significant tachycardia upon standing. In the context of negative diagnostic studies and progressive functional decline, a diagnosis of POTS was made. The patient was managed conservatively with increased hydration, salt intake, and physical therapy. He was discharged with a walker and, after completing 24 outpatient physical therapy sessions, regained independent ambulation without limitations.

**Discussion:** This case illustrates the diagnostic challenge of POTS presenting with prominent neurologic symptoms. Bilateral lower extremity pain and perianal sensory changes raised concern for spinal cord pathology; however, preserved reflexes, inconsistent examination findings, and normal imaging argued against structural disease. POTS is increasingly recognized as a multisystem disorder with varied presentations, particularly in adolescents, where symptoms may overlap with functional neurologic features. Early recognition is critical to avoid unnecessary diagnostic testing.

**Conclusion:** POTS can mimic serious neurologic conditions in adolescents presenting with weakness, sensory disturbances, and gait instability. Clinicians should consider autonomic dysfunction when evaluations are unrevealing, as timely diagnosis can guide appropriate management and reduce unnecessary interventions.

**Abstract Topic:** Clinical Research

**Poster #16**

# From Prescription to Dependence: Opioid Use Disorder Following Treatment of a Sports Injury in a Young Athlete

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**Abstract**

**Introduction:**

Opioid analgesics are frequently prescribed for acute musculoskeletal injuries, including those sustained during athletic activity. While effective for short-term pain control, even limited exposure may increase the risk of opioid use disorder (OUD), particularly in young adults. Athletes may be especially vulnerable due to pressure to maintain performance and return quickly to play.

**Case Description:**

A 20-year-old male baseball athlete with no prior medical history sustained a right shoulder injury during training and was prescribed hydrocodone/acetaminophen. He initially used the medication as directed with adequate pain control. However, persistent discomfort and performance limitations led to continued use beyond the expected recovery period. Over time, he escalated his opioid intake above prescribed doses. After prescriptions were discontinued, he obtained opioids from non-prescribed sources, including oxycodone and fentanyl. He developed opioid dependence and experienced multiple unsuccessful attempts at cessation, including participation in recovery programs with recurrent relapse.

Approximately six months after the initial injury, he presented to our clinic seeking treatment. Medication-assisted treatment with buprenorphine/naloxone was initiated alongside behavioral counseling and routine urine drug monitoring. Follow-up demonstrated adherence to therapy, absence of illicit opioid use, and resolution of cravings. The patient reported improved functioning and successfully returned to baseball without opioid use.

**Discussion:**

This case highlights the potential for progression to OUD following opioid prescribing for sports injuries in young athletes. Pressure to maintain performance may contribute to prolonged or escalating use. Clinicians should prioritize non-opioid strategies, including nonsteroidal anti-inflammatory medications and physical therapy. When opioids are necessary, they should be prescribed at the lowest effective dose for the shortest duration, with appropriate counseling. Early recognition of misuse is critical. Medication-assisted treatment is an effective intervention that supports recovery and return to normal activity.

**Abstract Topic:** Clinical Research

**Poster #17**

# Longitudinal Body Composition Changes and Metabolic Outcomes in Patients with Obesity, Type 2 Diabetes, and Hyperlipidemia: A Retrospective Case Series Using Serial Bioelectrical Impedance Analysis

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**Abstract**

Body mass index and weight alone are insufficient for monitoring metabolic health in patients with obesity, type 2 diabetes mellitus (T2DM), and hyperlipidemia. Serial body composition assessment offers a more comprehensive view of treatment response by capturing changes in visceral fat, percent body fat, and skeletal muscle mass. Real-world data characterizing longitudinal body composition changes alongside metabolic outcomes in outpatient endocrinology settings remain limited. This case series aimed to describe body composition changes measured by serial bioelectrical impedance analysis and their association with metabolic improvements in three patients receiving pharmacologic and lifestyle interventions over 12 to 18 months. A retrospective case series was conducted at Unified Endocrine and Diabetes Care using existing clinical data from three adult patients with obesity or T2DM and comorbid hyperlipidemia. Serial body composition measurements were obtained using the InBody 570 at multiple time points. Metabolic variables included hemoglobin A1c, fasting glucose, and lipid panels. Body composition variables included visceral fat level, percent body fat, skeletal muscle mass percentage, weight, and BMI. All three patients demonstrated consistent reductions in visceral fat and percent body fat. The patient with T2DM showed the most pronounced glycemic improvement with HbA1c declining from 13.2 to 7.1 percent alongside visceral fat reduction. The patient with prediabetes and hyperlipidemia demonstrated triglyceride reduction from 304 to 111 mg/dL in parallel with visceral fat decline. Relative skeletal muscle mass was preserved or improved in all three patients despite meaningful weight loss. Serial bioelectrical impedance analysis captured consistent body composition improvements alongside metabolic benefits in all three patients, supporting its utility as a clinical monitoring tool in outpatient endocrinology. These findings suggest that pharmacologic therapy combined with lifestyle intervention is associated with favorable changes in visceral adiposity and lean mass preservation, warranting further prospective investigation.

**Abstract Topic:** Clinical Research

**Poster #18**

# Effects of Glucagon-Like Peptide-1 Receptor Agonists on Diabetic Retinopathy

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**Abstract**

**Introduction and Background:** Diabetic retinopathy is a diabetic complication that can lead to nerve damage and blindness. In uncontrolled diabetic mellitus, hyperglycemia will lead to multi-system microvascular complications, including diabetic retinopathy. Treatments for diabetic retinopathy vary depending on the type of diabetic retinopathy, including photocoagulation, surgery, and anti-VEGF-therapy; however, it is important to note the exacerbation of diabetic retinopathy with glucagon-like peptide-1 receptor agonists (GLP-1RA's). This project evaluated the impact of GLP-1 receptor agonists on outcomes in patients with diabetic retinopathy, with the aim of determining whether their use offers benefit or poses risk when used alongside standard therapies.

**Material and Methods:** PubMed, Elsevier, Embase, Google Scholar, Scopus, and Science Direct were accessed to retrieve relevant literature on September 13, 2024, and November 14, 2025. The search was limited to meta-analyses, clinical trials, systematic reviews, and case reports published in peer-reviewed journals examining the effects of GLP-1RAs on ocular diseases; this poster specifically emphasizes diabetic retinopathy. Relevant information, including study population, proposed mechanisms, and outcomes, was reviewed and synthesized to provide a comprehensive overview of the effects of GLP-1RAs on diabetic retinopathy.

**Results and Conclusion:** Literature reported mixed findings, as studies have found significant increases in the risk of developing diabetic retinopathy exacerbations from GLP-1RAs, whilst different studies found no increased risk with GLP-1RA usage. Furthermore, when compared to other diabetes controlling agents, GLP-1RAs were also shown to either increase the risk of diabetic retinopathy or show no increased risk. Ultimately, inconclusive results compiled from studies on GLP-1RAs and diabetic retinopathy demonstrated the need for further research into the true nature of GLP-1RA usage and its effect on diabetic retinopathy.

**Abstract Topic:** Clinical Research

**Poster #19**

# Under Pressure: Navigating Paradoxical Hypotension in Pericardiocentesis Decompression Syndrome

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**Abstract**

**Introduction/Background:** Pericardiocentesis decompression syndrome (PDS) is a rare but significant complication that can occur following drainage of a pericardial effusion. It is characterized by paradoxical hypotension, jugular venous distension, and distant heart sounds due to sudden changes in cardiac hemodynamics. With reported mortality up to 30%, early recognition of PDS is important to prevent adverse outcomes.

**Case Presentation:** A 35-year-old non-verbal female with Down syndrome presented with worsening dyspnea. Initial examination was notable for mild hypotension (84/50 mmHg). Bedside echocardiography demonstrated bilateral pleural effusions and a large pericardial effusion with right ventricular diastolic collapse, concerning for tamponade. Given worsening hypotension, she was taken emergently to the catheterization lab for pericardiocentesis. A total of 940 mL of fluid was removed, and a drain was placed. Approximately six hours after the procedure, she developed severe hypotension. Repeat echocardiography showed no reaccumulation of pericardial fluid. The hypotension was managed with fluid boluses and midodrine, with gradual improvement. Over the following days, there was minimal drain output with resolution of the effusion on repeat echocardiography, and workup revealed Coxsackie virus 1–6 antibodies. She was started on indomethacin and colchicine and discharged with outpatient follow-up.

**Discussion:** PDS is thought to occur due to a rapid increase in pulmonary venous return following pericardiocentesis despite elevated systemic vascular resistance, leading to acute heart failure. Another proposed mechanism involves myocardial stunning from prior coronary compression during tamponade, which may persist after drainage. Recognizing these mechanisms is important for distinguishing PDS from other causes of post-procedural hypotension and guiding appropriate management.

**Conclusion:** Early recognition and management of PDS are critical to mitigate the risk of hemodynamic instability following pericardial fluid drainage. Clinicians should maintain a high index of suspicion for PDS in patients who develop unexplained hypotension after pericardiocentesis despite successful decompression. Prompt supportive management is essential to improve outcomes.

**Abstract Topic:** Clinical Research

**Poster #20**

# Maximizing Neuroplasticity after ischemic stroke by Rehabilitation: Role of Mediators

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**Abstract**

Ischemic stroke, caused by a blockage in the blood supply to the brain, often leads to motor, sensory, and cognitive impairments, significantly affecting an individual's quality of life. Neuroplasticity, the brain's ability to reorganize itself by forming new neural connections, is a fundamental mechanism underlying post-stroke recovery. Rehabilitation plays a critical role in the recovery process following ischemic stroke, with emerging research underlining the potential of neuroplasticity in enhancing recovery outcomes. Rehabilitation interventions, such as physical therapy, occupational therapy, and cognitive training, aim to tackle and promote neuroplastic changes in the brain, improving functional recovery. However, the effectiveness of rehabilitation is influenced by factors such as timing, intensity, and individual variability in response to therapy. This review examines current research on neuroplasticity in stroke rehabilitation, focusing on strategies to enhance neuroplasticity and brain function post-ischemic stroke. Understanding the complex relationship between rehabilitation interventions and neuroplasticity could lead to more effective, personalized treatment approaches, ultimately improving recovery outcomes for stroke patients.

**Abstract Topic:** Clinical Research

**Poster #21**

# Nonopioid Pain Protocols vs. Opioid Analgesia for Postoperative Pain Control Following Arthroscopic Surgeries: A Literature Review

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**Abstract**

Arthroscopic surgery, a technique in orthopedic practice for treating various joint pathologies, including anterior cruciate ligament (ACL) tears, meniscal injuries, and rotator cuff tears. Arthroscopy offers a minimally invasive alternative to traditional surgical options, allowing for improved recovery times and reduced soft tissue damage. Despite minimally invasive nature, postoperative pain management remains a critical component of recovery. Traditionally, opioids have been the cornerstone of analgesia following arthroscopy. However, rising opioid overdose rates and the growing awareness of opioid dependence have brought increased attention to the role of orthopedic surgeons, who are among the highest prescribers of opioids. This has led to a broader exploration of nonopioid and multimodal analgesic strategies aimed at reducing opioid consumption. Optimal pain control following arthroscopy must balance efficacy and safety through individualized strategies accounting for variability in patient demographics, surgical procedures, preoperative opioid use, and social determinants of health. Nonopioid agents, such as nonsteroidal anti-inflammatory drugs (NSAIDs), acetaminophen, gabapentinoids, and local anesthetics, have been examined for their varied mechanisms of pain relief and potential to reduce opioid dependence. Despite promising outcomes with these agents and the introduction of multimodal analgesia protocols, postoperative prescribing practices remain inconsistent across arthroscopic surgeries. This literature review compares opioid-based and nonopioid pain management strategies following arthroscopic surgery, evaluating their effectiveness in pain control, patient satisfaction, and complication rates. It also examines the risks associated with prolonged opioid use and emphasizes the importance of individualized pain management that considers both clinical and social factors. Literature analyzing multimodal analgesic regimens following arthroscopic surgery highlights which protocols yield better outcomes. Multimodal nonopioid protocols were found to provide comparable or improved pain control while significantly reducing opioid consumption and associated side effects. NSAIDs, acetaminophen, gabapentinoids, regional anesthetics, and intra-articular opioid administration demonstrate efficacy in optimizing postoperative pain control while minimizing opioid reliance. Additionally, multimodal regimens are associated with better functional outcomes, lower complication rates, such as constipation and nausea, and a reduced risk of prolonged opioid dependence. However, inconsistency in analgesic protocols and variability in patient factors continue to challenge standardization. Research is necessary to establish consistent, evidence-based postoperative analgesia guidelines for arthroscopic surgery.

**Abstract Topic:** Clinical Research

**Poster #22**

# Athletes Undergoing Bristow-Latarjet Stabilization Demonstrate Higher Rates of Full Return to Sport: A Systematic Review and Meta-analysis

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**Abstract**

**Background:** Recurrent shoulder instability is a common problem in athletes, especially those in contact, collision, or overhead sports. Surgical options include soft-tissue stabilization procedures such as Bankart repair or reverse Bankart (posterior capsulolabral repair) and bony-augmentation procedures such as the Bristow-Latarjet procedure. Return-to-sport outcomes vary across techniques, and the relative effectiveness of these approaches in athletes has not been well established.

**Hypothesis/Purpose:** Our study aimed to compare rates of return to sport after shoulder stabilization surgery. We hypothesized that the Bristow-Latarjet procedure would have the highest return to sport.

**Study Design:** Meta-Analysis

**Methods:** A systematic review and meta-analysis of randomized controlled trials and cohort studies were performed according to PRISMA guidelines. Studies on surgical stabilization of shoulder instability in athletes that reported return to sport were included. Twenty-four studies met inclusion criteria, comprising 2,323 patients with an average age of 22 (13-46). Pooled return to sport proportions were calculated. Sub-group analysis was performed based on surgical procedure.

**Results:** Full return to sport across all patients was 77% (95% CI, 0.69–0.84). Full cessation of sport was 10% (95% CI, 0.06–0.15). The Bristow-Latarjet stabilization procedure demonstrated a significantly higher full return to sport rate compared with Bankart (0.91; 95% CI, 0.83–0.96) vs (0.71; 95% CI, 0.56–0.83, p=.003). The Bristow-Latarjet procedure also demonstrated a lower full cessation of sport rate compared with Bankart (5% vs 12%) but was not statistically significant.

**Conclusions:** Athletes undergoing Bristow-Latarjet stabilization demonstrated significantly higher rates of full return to sport compared to those treated with Bankart repairs in anterior shoulder instability. These findings suggest that the Bristow-Latarjet procedure may offer higher rates of full return to sport in appropriately selected athletes with shoulder instability.

**Abstract Topic:** Clinical Research

**Poster #23**

# Feasibility of Augmented Reality in Orthopedic Trauma Care: A Narrative Review of Current Applications

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**Abstract**
Augmented reality (AR) is an emerging technological aid for surgeons, offering enhanced visualization, improved surgical precision, reduced surgical radiation exposure, and real-time access to patient anatomical data. AR is currently being explored for its role in surgical care, but its role in orthopedic trauma care remains undefined. Recent investigations include fracture fixation using intraoperative navigation, surgical training, and education. Despite promising results from early studies, the lack of standardized literature and protocols has limited the adoption of AR devices. In this review, we will explore the current applications and practicality of AR in the management of orthopedic trauma cases, highlighting its potential and limitations.

**Abstract Topic:** Clinical Research

**Poster #24**

# Patient Specific Instrumentation Does Not Improve Implant Placement in Total Shoulder Arthroplasty: A Systematic Review and Meta-analysis

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**Abstract**

**Background:** Patient-specific instrumentation (PSI) has been developed to improve glenoid component positioning in total shoulder arthroplasty (TSA) by translating preoperative three-dimensional planning into intraoperative execution. However, the clinical benefit of PSI compared with conventional instrumentation (CI) remains uncertain.

**Purpose:** The purpose of this systematic review and meta-analysis was to compare PSI with CI in TSA with respect to glenoid component positioning accuracy and functional outcomes.

**Study Design:** Meta-Analysis

**Methods:** A systematic review was performed in accordance with PRISMA guidelines and registered with PROSPERO. Comparative clinical studies evaluating deviation of glenoid component inclination and/or version in anatomical or reverse TSA using PSI versus CI were included. Secondary outcomes included Constant–Murley and American Shoulder and Elbow Surgeons (ASES) scores.

**Results:** Eleven studies encompassing 987 patients (513 PSI, 474 CI) met inclusion criteria. Deviation of inclination was reported for 243 PSI and 249 CI patients, with a pooled MD of −2.60° (95% CI, −5.49 to 0.29; $I^2$ = 81.9%). Deviation of version was reported for 193 PSI and 199 CI patients, with a pooled MD of −1.37° (95% CI, −4.21 to 1.46; $I^2$ = 88.6%). Although PSI demonstrated numerically lower deviation for both inclination and version, no statistically significant differences were observed. Functional outcomes were comparable between groups, with no significant differences in Constant–Murley score improvement (MD, 0.13; 95% CI, −8.03 to 8.29) or ASES scores (MD, 1.74; 95% CI, −1.75 to 5.22).

**Conclusions:** PSI does not significantly improve glenoid component positioning accuracy or functional outcomes compared with CI in TSA. Future studies are needed to evaluate the cost-effectiveness of patient-specific instrumentation and to better define its impact on radiographic parameters and functional outcome measures before its routine use can be recommended.

**Abstract Topic:** Clinical Research

**Poster #25**

# Neonatal Outcomes Associated with Maternal Sleep Disorders During Pregnancy: A Scoping Review

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**Abstract**

**Background:**
Sleep disorders, including insomnia, restless legs syndrome (RLS), obstructive sleep apnea (OSA), and sleep-disordered breathing (SDB) are common during pregnancy and may impact fetal and neonatal outcomes. This scoping review aims to map current literature on associations between maternal sleep disorders and offspring outcomes and identify knowledge gaps.

**Methods:**
We systematically searched PubMed and EMBASE for studies published from 2016 to 2026 involving pregnant humans with sleep disorders and neonatal outcomes, including preterm birth (PTB), small or large for gestational age (SGA/LGA), NICU admission, mortality, and APGAR scores. Screening and full-text review were conducted using Rayyan.

**Results:**
Forty-one studies were included, encompassing observational cohort, case–control, and secondary analyses. Maternal OSA/SDB were the most studied, followed by insomnia and RLS. Evidence linking maternal sleep disorders and neonatal outcomes was mostly heterogeneous, though several notable patterns emerged. Most studies found maternal OSA/SDB to be linked with PTB, congenital abnormalities, and increased NICU admission, but there were variable associations with fetal growth. Some studies linked maternal OSA/SDB to SGA, others to LGA, and some to both extremities. Emerging evidence suggests maternal OSA/SDB is associated with neurodevelopmental delay and shortened telomeres in offspring. Insomnia during pregnancy was associated with low birthweight, increased NICU admission, and miscarriages, but there were mixed associations with low APGAR scores. Maternal RLS demonstrated an association with stillbirth but mixed association with PTB.

**Conclusions:**
Maternal sleep disorders are associated with a multitude of adverse fetal and neonatal outcomes, though findings are heterogeneous across studies. Maternal OSA/SDB shows the most consistent associations with adverse neonatal outcomes, while evidence for maternal insomnia and RLS remain mixed. These findings highlight the need for standardized outcome definitions and prospective studies to clarify the impact of maternal sleep health on neonatal outcomes.

**Abstract Topic:** Clinical Research

**Poster #26**

# Anesthesia for Awake Left-sided Frontotemporal Craniotomy for Recurrent Glioblastoma Excision in Eloquent Cortex

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**Abstract**

Awake craniotomy with intraoperative brain mapping and testing has become the gold standard for resection of brain tumors in eloquent areas, allowing maximal safe resection while preserving neurological function. We report the case of a 61-year-old male with a history of Glioblastoma multiforme with previous craniotomy for resection of tumor. He presented with mild right leg weakness, occasional slurred speech which had slightly improved, and continued mild right facial droop. To offer maximal safe resection with preservation of fluency and speech, decision was made for a repeat left-sided frontotemporal craniotomy utilizing an awake craniotomy and precise anesthetic management. The surgeon began with local injections of anesthetic. Premedication was given which included famotidine, ondansetron and glycopyrrolate (to minimize secretions). Additionally, to aid with brain swelling and intraoperative localization, patient also received 20% mannitol and fluorescein 10%. Induction began with a propofol bolus of 50 mg followed by an 80 mg dose for pinning in a head clamp. The propofol infusion was maintained at a rate of 125 mcg/kg/min concurrently with a remifentanyl infusion at a rate of 0.025 mcg/kg/min from 16:23-17:30. Neurochecks were performed every 5 minutes, with the patient demonstrating appropriate responsiveness, including strong bilateral hand grip and ability to move both lower extremities from 17:45 to 18:30, along with continuous speech monitoring demonstrating fluent, appropriate verbal output, allowing for safe tumor resection. From 18:30 onwards, propofol infusion was restarted at 50 mcg/kg/min until the remainder of the case.

**Abstract Topic:** Clinical Research

**Poster #27**

# Phantosmia in a Patient With Schizophrenia: A Case Raising Concern for Temporal Lobe Epilepsy

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**Abstract**
Neuropsychiatric symptoms often overlap across conditions, creating diagnostic challenges in distinguishing primary psychiatric disorders from neurological etiologies. Recent literature has described associations between schizophrenia and temporal lobe epilepsy (TLE), particularly involving hippocampal circuitry. In this case, we present a 17-year-old male diagnosed with schizophrenia after presenting with nonsensical speech, bizarre behaviors, blunted affect, and disorganized thought processes. However, the patient consistently reported smelling non-existent odors such as cannabis, “estrogen,” and “testosterone,” a feature atypical for schizophrenia but classically associated with TLE. The olfactory hallucinations, combined with risk factors such as prior head trauma, migraines, and repetitive head nodding suggestive of possible automatisms raised suspicion for TLE. During the inpatient stay, the patient was stabilized for schizophrenic symptoms with antipsychotic treatment, but the olfactory hallucinations were reported to persist. Given limited inpatient duration, definitive neurological evaluation was not completed. Further diagnostic assessment, including electroencephalography, brain magnetic resonance imaging, and neurology consultation, would be essential to evaluate for TLE. Ultimately, this case emphasizes the importance of maintaining diagnostic vigilance for neurological etiologies in patients presenting with psychotic symptoms, particularly when atypical features such as olfactory hallucinations are present.

**Abstract Topic:** Clinical Research

**Poster #28**

# Emerging Pharmacologic Therapies for the Management of Glaucoma: A Narrative Review

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**Abstract**

Glaucoma is the progressive loss of retinal ganglion cells and corresponding visual field defects. It is currently a leading cause of irreversible blindness globally. The pathophysiology of glaucoma is driven by elevated intraocular pressure (IOP) and is closely tied to disease progression. As such, IOP is the primary target of glaucoma pharmacotherapy. Current standard therapies include prostaglandin analogs, beta-adrenergic blockers, carbonic anhydrase inhibitors, and alpha-2 adrenergic agonists. These therapies have poor adherence due to frequent dosing and limited efficacy. Current therapies also have many adverse effects that hinder quality of life, such as conjunctival hyperemia, ocular surface irritation, systemic cardiovascular effects, and ocular surface disease. This systematic review aims to explore emerging developments in glaucoma pharmacotherapy. A structured, comprehensive search strategy based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines was used to identify relevant studies and reduce bias. Novel therapies include rho-associated protein kinase inhibitors, nitric oxide–donating prostaglandin analogs, fixed-dose combination therapies, and sustained drug-delivery systems. They target alternative aqueous humor outflow pathways, enhance drug bioavailability, and minimize treatment burden through sustained-release platforms. Compared with traditional therapies, these emerging pharmacotherapies have greater efficacy and tolerability. Additionally, biologic and neuroprotective agents represent a new frontier to modify disease progression by preserving retinal ganglion cell function independent of intraocular pressure reduction. The data collectively suggests greater performance using newer monotherapies agents and combination regimens compared with standard treatments alone in terms of IOP control, patient adherence, and safety. As new clinical research unfolds, emerging therapies may play an increasingly important role in improving long-term outcomes and reducing the worldwide burden of glaucoma.

**Abstract Topic:** Clinical Research

**Poster #29**

# Improving Diabetic Nutrition with Artificial Intelligence

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**Abstract**

**Introduction and Background:** Type 2 diabetes (T2D) patients often struggle with dietary compliance, as evidenced by only half of U.S. adults adhering to recommended guidelines. The project's goal is to create a user-friendly tool that removes barriers to dietary adherence while increasing diet enjoyment. We expect our application intervention will result in participants observing a statistically significant improvement in blood glucose levels compared to our standard intervention of a glucose monitoring app and journaling.

**Materials and Methods:** Primary intervention includes the introduction and usage of our AI web app equipped with a trained and personalized model. Our control will utilize a glucose monitoring app and journaling. Glucose levels and HbA1c levels of both groups will be recorded and analyzed to compare outcomes. Surveys will be provided at the beginning and end of the study to participants receiving the primary intervention to measure comfort and effectiveness of our application.

**Future Goals:** Utilizing participants from Fresno State, the initial model of AI will be tested with many prompts to determine which aspects of the model are appropriate and which need improvement. Changes will then be made as needed according to Pilot Study participant feedback.

**Abstract Topic:** Clinical Research

**Poster #30**

# A Quality Improvement Project Using Retrospective EHR Data to Identify Barriers to Osteoporosis (DEXA Scan) Follow-up Screening

Ashley Okhovat[1], Eden Chelouche[1], Justin Civelek[1], Timothy Do[1], Brian Lee[1], Zachary Miller[1], David Vo[1], Gopi Kasturi, MD[2], Sarmad Ghazi[1], Ron Yee[1]
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**Abstract**
Osteoporosis is a progressive skeletal disorder associated with decreased bone mineral density and increased fracture risk, contributing to significant morbidity and healthcare burden among older adults. Dual-energy X-ray absorptiometry (DEXA) remains the gold standard for diagnosis and monitoring, with clinical guidelines recommending repeat screening every two years for at-risk populations. Despite these recommendations, follow-up DEXA scan adherence remains suboptimal. This quality improvement project aims to identify patient-reported barriers to follow-up DEXA scan completion at Sierra Pacific Orthopedic Center (SPOC) in Fresno, California. The study targets women ≥65 years, men ≥70 years, and adults with osteoporosis risk factors who have undergone an initial DEXA scan but have not completed recommended follow-up screening. A structured questionnaire was developed to assess demographic factors, knowledge gaps, access issues, and other perceived barriers impacting compliance. Findings from this project are expected to highlight key contributors to non-adherence, including gaps in patient understanding, logistical challenges, and system-level barriers. These insights will inform targeted interventions such as patient education, reminder systems, and provider-driven strategies to improve adherence to guideline-recommended screening. Ultimately, this initiative seeks to enhance osteoporosis monitoring, improve patient outcomes, and reduce fracture risk through increased follow-up DEXA scan compliance.

**Abstract Topic:** Clinical Research

**Poster #31**

# Early onset gout to total disability: A perfect storm of compounding risk factors in a Filipino woman status post single oophorectomy with early menopause

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**Abstract**

**Introduction and Background:** Gout is the most prevalent inflammatory arthritis in the Philippines, affecting 0.5-1.6% of the population. Cases of early onset gout in Filipino women that lead to total disability are poorly documented in current literature as rates of early onset gout in women is estimated to be 0.6 per 1,000 person-years. We aim to demonstrate how the confluence of genetic susceptibility, specialized diet, postmenopausal hormonal changes, and poor medication adherence leading to gouty arthritis with severe disability in a patient belonging to this often under-investigated cohort.

**Case Description:** We present the case of a Filipino woman with a strong family history of gout. She had a hysterectomy with a single oophorectomy in her early-30s for uterine fibroids, resulting in early onset menopause, and in her mid-30s she had her first gout flare. Due to her poor adherence to urate-lowering medications and traditional diet rich in high-purine organ meats, she developed severe polyarticular tophaceous gouty arthritis with complete functional disability in her 60s that was initially misdiagnosed as rheumatoid arthritis.

**Results and Conclusions:** This case documents the natural history of uncontrolled gout in a Filipino woman, a population with high genetic susceptibility but critically underrepresented in the gout literature. The information presented demonstrates how important early detection, intervention, and medication adherence is to prevent total disability from end-stage polyarticular gouty arthritis, with awareness that advanced tophaceous gout can present as various inflammatory arthropathies such as rheumatoid arthritis mimic. Extra care must be taken in assessing and informing Filipino women regarding increased gout risk with oophorectomy and early menopause, as well as appropriate genetic counselling for patients and their family members for gout.

**Abstract Topic:** Clinical Research

**Poster #32**

# Effects of Glucagon-Like Peptide-1 Receptor Agonists on Glaucoma and Ocular Hypertension

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**Abstract**

**Introduction and Background:** Glaucoma is a disease of the eyes that can cause optic nerve damage, loss of retinal cells, and an enlargement of the optic cup. This condition is commonly linked to increased intraocular pressure (IOP), leading to angle-closure or open-angle glaucoma. Conventional treatments for glaucoma include miotic agents, beta blockers, alpha-2 agonists, carbonic anhydrase inhibitors, mannitol, prostaglandin analogs, laser trabeculoplasty, cyclophotocoagulation, cyclocryocoagulation, insertion of stents, sclerotomy, and trabeculectomy. In this project, the use of glucagon-like peptide-1 receptor agonists (GLP-1RAs) in patients with glaucoma was assessed for beneficial or detrimental effects on prognosis, investigating its potential use in conjunction with traditional therapies.

**Material and Methods:** PubMed, Elsevier, Embase, Google Scholar, Scopus, and Science Direct were accessed to retrieve relevant literature on September 13, 2024, and November 14, 2025. The search was limited to meta-analyses, clinical trials, systematic reviews, and case reports published in peer-reviewed journals relevant to GLP-1RAs' effects on specific ocular diseases; this poster focuses on glaucoma. Relevant information such as study population, proposed mechanisms, and outcomes was reviewed and summarized to provide a comprehensive overview of the effects of GLP-1RAs on glaucoma.

**Results and Conclusion:** Literature reported significant reductions in the incidence of glaucoma and ocular hypertension in study participants utilizing GLP-1RAs. GLP-1RAs provided a stronger benefit to glaucoma when compared to other diabetic medications. Additionally, the need for alternative treatments for glaucoma may be reduced when using GLP-1RAs. Ultimately, GLP-1RAs have been associated with a reduced incidence of glaucoma and potential therapeutic benefit in its management. Further research is warranted to effectively and safely implement GLP-1RAs as an additional therapy for treating glaucoma in the future.

**Abstract Topic:** Clinical Research

**Poster #33**

# Manual Therapy Interventions for Temporomandibular Disorders: A Scoping Review

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**Abstract**

**Background:** Temporomandibular disorders (TMD) are a common cause of orofacial pain and jaw dysfunction. Manual therapies for treating TMD are frequently used in clinical practice, but the body of evidence documenting these therapies and their efficacy is heterogeneous and difficult to compare.

**Objective:** The objective of this study was to map the literature on manual therapies studied for the treatment of TMD and summarize the corresponding outcomes in pain relief and jaw function.

**Methods:** We conducted a scoping review using the Joanna Briggs Institute (JBI) methodology and PRISMA-ScR guidelines for reporting the review method and findings. Searches of the literature were performed in PubMed, Embase, and Cochrane Library for English-language human studies on manual therapy for the treatment of TMD. Eligible studies included in this review reported clinical outcomes and evaluated manual therapy as a primary intervention, as at least one arm in a multi-arm comparison, or as part of a combined intervention in conjunction with another treatment.

**Results:** Thirty-three studies were ultimately included. Most studies were randomized controlled trials (RCT) or other controlled clinical designs evaluating a wide range of manual therapy approaches, including massage, mobilization, and different osteopathic manipulative therapy techniques such as myofascial release and muscle energy technique. Pain and jaw function were the most commonly reported outcomes, but the interventions evaluated, comparators used, and follow-up periods varied widely across studies.

**Conclusion:** This scoping review found that manual therapies for TMD have been studied in diverse formats. Manual therapy may be a promising approach for TMD, but the body of evidence is heterogeneous, and studies done have mainly focused on short-term outcomes. The variability in interventions studied highlights the need for more standardized research evaluating sustained benefits of manual therapy interventions.

**Abstract Topic:** Clinical Research

**Poster #34**

# Effects of Traumatic Brain Injury in a Female Veteran: A Case Report

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**Abstract**

**Introduction and Background:** The impacts of traumatic brain injuries (TBI) are commonly discussed amongst male veterans. However, there is a lack of information regarding the effects of multiple microtraumatic injuries to the brain over time, especially in female veterans. We report a unique case in a female veteran patient with symptoms of migraine, dizziness, tinnitus, facial sensitivity, and deficiency in memory, where she had multiple incidences of TBI during military training. Understanding and recognizing the effects of TBI in females is imperative to addressing patient centered care and furthering research in symptoms and management of female veteran care. The aim of our study is to better understand the effects of TBIs in females due to the lack of research amongst female veterans and the unique biological differences seen in females.

**Methods:** Patients were screened from the Veterans Affair Medical Center (VAMC), and a female patient was chosen to understand specific symptoms females experience. During the virtual visit, the patient was asked a history from the "Headaches (Including Migraine Headaches) Disabilities Benefits Questionnaire". After obtaining her history, we performed the Montreal Cognitive Assessment (MoCA) - Blind, which has a maximum of 22 points to determine the level of mild cognitive dysfunction. A final score of 18 and above is considered normal.

**Conclusion:** In conclusion, we present a unique case of understanding how TBIs can affect women differently from men. After completing the MoCA - Blind, the patient received a score of 14, signifying mild cognitive dysfunction. Our patient experienced multiple traumas to the head resulting in migraines, facial skin sensitivity, changes in personality, and memory deficiencies. Greater attention to female sex-specific risk factors, including equipment fit during training, and systematic screening may improve patient-centered management and support future research focused on female veterans.

**Abstract Topic:** Clinical Research

**Poster #35**

# Cortisol, Benzo-a-pyrene, and Phthalates Promote Resistance to Cisplatin-Mediated Cytotoxicity in A549 Lung Cancer Cells

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**Abstract**
Platinum-based chemotherapeutic agents have been a mainstay of traditional lung cancer treatment, but improved resistance and decreased effectiveness remain significant challenges. Emerging evidence suggests that ubiquitous environmental endocrine disrupting compounds (EDCs) such as benzo-a-pyrene (BaP) and phthalates are known to interfere with hormonal homeostasis and increase cancer risk. While their classic mechanism involves binding to nuclear steroid receptors, emerging evidence indicates that EDCs can also trigger rapid, non-genomic signaling pathways. In this study, we wanted to study the effect of MAPK (a key anti-apoptosis cascade) associated survival on chemotherapy efficacy. We evaluated whether environmentally and physiologically relevant concentrations of cortisol, BaP (a polycyclic aromatic hydrocarbon generated from fossil fuel combustion methods), and several phthalates (commonly used as plasticizers and cosmetic additives) interfere with the cytotoxic effects of cisplatin on A549 human lung adenocarcinoma cells in serum free conditions. Cell survival was assessed using a colorimetric MTT assay to determine changes in cisplatin sensitivity. Our results demonstrated that chemicals such as BaP or dimethyl phthalate dramatically reduced cisplatin-induced cytotoxicity, conferring acquired chemoresistance. Cortisol similarly promoted resistance, whereas estradiol had a noticeable effect albeit much weaker than cortisol. These in vitro findings provide direct evidence that diverse endocrine disruptors can promote cisplatin resistance in A549 cells, suggesting that various environmental chemicals and endogenous hormonal factors (particularly elevated cortisol levels or hormone replacement therapy) may adversely influence lung cancer progression and therapeutic response. These findings highlight the potential for both environmental and physiological factors to undermine chemotherapy effectiveness and contribute to more aggressive tumor behavior. Further studies are needed to determine whether the observed actions of these EDCs in lung cancer are mediated through direct binding interactions to estrogen or glucocorticoid receptors.

**Abstract Topic:** Clinical Research

**Poster #36**

# Delayed Migration and Bladder Mucosal Penetration of a UroLift Implant Requiring Operative Removal: A Case Report

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**Abstract**

Benign prostatic hyperplasia (BPH) is a common condition in aging men and often leads to lower urinary tract symptoms (LUTS), including a weak urinary stream, nocturia, and a feeling of incomplete bladder emptying. The prostatic urethral lift, commonly known as the UroLift procedure, is a minimally invasive FDA-approved option for managing these symptoms. It works by placing small permanent implants that pull enlarged prostate tissue away from the urethra, helping to open the channel and improve urine flow. Unlike traditional surgical procedures for BPH, the UroLift avoids any resection, ablation, or thermal injury to the sensitive tissue and nerves in the region, which avoids unwanted sexual side effects such as erectile dysfunction or loss of sexual interest.1 In addition, the UroLift procedure is quite desirable as it is performed outpatient and requires no overnight stays, with recovery possible within days and durable results that report better symptom relief than standard BPH medications.2 Despite its favorable safety profile, UroLift is associated with common transient side effects, including hematuria, dysuria, urinary urgency, pelvic pain, temporary urinary retention, persistent symptoms, and rarely device issues causing further irritation.3 We present a case of a 58-year-old male with a history of UroLift procedure performed in 2021 by his previous urologist due to refractory lower urinary tract symptoms (LUTS) despite many trials of vibegron and oxybutynin. Further evaluation revealed migration of his UroLift implant into his urinary bladder, requiring transurethral resection of the prostate (TURP). Despite the removal of the device, the patient continued to experience LUTS symptoms associated with chronic bladder inflammation and had to undergo repeat surgical intervention in an attempt to alleviate his symptoms. This case highlights the rare, yet possible, complications associated with the UroLift procedure involving implant migration with subsequent bladder mucosal penetration and embedding, emphasizing the importance of considering retained or dislodged fragments in patients with persistent or recurrent symptoms to prevent the development of chronic sequelae.

**Abstract Topic:** Clinical Research

**Poster #37**

# Hidden in Plain Sight: Patterns of Misdiagnosis and Diagnostic Delay in Acute Porphyria - A Focused Literature Review

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**Abstract**

Acute hepatic porphyria (AHP) is a set of four related yet uncommon disorders relating to heme biosynthesis. The most common autosomal dominant disorder is characterized by an enzymatic deficiency of hydroxymethylbilane synthase (HMBS) commonly termed porphobiliogen deaminase, known as Acute Intermittent Porphyria. A deficiency of hydroxymethylbilane synthase (HMBS) results in improper heme synthesis and the accumulation of pathway metabolites δ-aminolaevulinic acid and porphobilinogen. High flux into the pathway triggers metabolite buildup and neuropsychiatric "attacks." These symptomatic attacks consist of diffuse abdominal pain, nausea, vomiting and neuropsychiatric symptoms such as anxiety, insomnia, irritability, and cognitive impairment. Due to its nonspecific symptom presentation, AHP is often misdiagnosed as gastrointestinal, neurological, or psychiatric disorders. Misdiagnosis examples include cholecystitis, intestinal obstruction, lead poisoning, Guillain-Barre syndrome, chronic pain and conversion disorder. A timely diagnosis is incredibly critical as delayed recognition leads to unnecessary treatments and interventions that put the patient at risk. The objective of this focused literature review is to examine published manuscripts to analyze patterns of misdiagnosis, diagnostic delay, and consequences in patients with AHP. To ensure a transparent search process that minimizes bias and maximizes retrieval of relevant studies for review PubMed, Embase, Web of Science and the Cochrane Library from 2010 to 2025 were used. This structured search was extracted to include study design, porphyria type, reported misdiagnoses, diagnostic delay, unnecessary procedures, and subsequent patient outcomes. Several studies and case series examining patients with AHP were reviewed, with sample sizes ranging from small cohorts of fewer than 20 patients to larger studies exceeding 100 individuals. Across these reports, abdominal pain was consistently identified as the predominant presenting symptom, frequently leading to initial diagnostic labels such as gastrointestinal disorders (e.g., appendicitis, cholecystitis, pancreatitis), psychiatric conditions, or neurologic syndromes with a mean diagnosis delay of 15 years. In the context of this long diagnosis time, this review highlights common patterns to increase clinician awareness on the diverse presentations of AHP.

**Abstract Topic:** Clinical Research

**Poster #38**

# Aortic Abdominal Aneurysm Screening in Male Smokers at UHC Clinics

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**Abstract**
Abdominal aortic aneurysm (AAA) is a progressive and potentially fatal condition characterized by the dilation of the abdominal aorta, which may rupture if left undetected. The condition is particularly prevalent among men aged 65-75 who have a history of smoking, prompting the U.S. Preventive Services Task Force (USPSTF) to recommend one-time ultrasound screening for this demographic. This review highlights key trends in the prevalence of abdominal aortic aneurysm among men aged 65 and older with a history of smoking, focusing on U.S. and international data. The central research question guiding this investigation is: What are the rates of AAA in the patient population serviced by UHC clinics? In examining this question, we aim to determine whether the prevalence of AAA within this specific clinical population is consistent with national trends. Accordingly, we hypothesize that the prevalence of AAA in the screened patient population of UHC clinics is not significantly different from the national average, representing our null hypothesis.

To assess the local prevalence of abdominal aortic aneurysms (AAA), this study employed an observational design comparing data from United Health Centers clinics to national averages. The national AAA prevalence was extrapolated from recent literature. Data was obtained through a retrospective review of UHC clinics electronic medical records (EMR). The resulting prevalence at UHC clinics was statistically compared to the national estimate using a two-tailed z-test, with a significance level set at $p < 0.05$.

Out of 14,465 patients at UHC clinics, 140 received a diagnosis of AAA (~0.968%). The national prevalence of AAA is 1.85%, and we therefore reject our null hypothesis. Of interest, 140 of the patients with AAA were ever smokers. Never smokers had an AAA prevalence of 0.55%, which is significantly lower than the 2.59% of AAA in ever-smokers at UHC clinics. Thus, a relative risk ratio shows that, amongst UHC male patients over the age of 65, smokers have an approximately 4.7 times higher risk of AAA than never-smokers.

Our data analysis showed that the prevalence of AAA for UHC patient population is lower than the national average. However, in comparing those who ever smoked to have never smoked, we found that there was a higher prevalence in the UHC population. Additionally, we found statistical significance in the difference in the age of diagnosis of AAA between never-smokers and ever-smokers. Therefore, we would like to further our research to examine potential barriers that may be limiting or deterring patients from getting screened for AAA such as socioeconomic status and cultural predispositions.

**Abstract Topic:** Clinical Research

**Poster #39**

# Clinical Staging Versus Biomarker-Guided Initiation of Continuous Renal Replacement Therapy: A Systematic Review and Meta-Analysis

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**Abstract**

**Intro and Background:** Optimal timing of continuous renal replacement therapy (CRRT) in critically ill patients with severe acute kidney injury (AKI) remains controversial. Early initiation has been proposed to mitigate metabolic derangements and prevent secondary organ dysfunction; however, clinical trials have reported inconsistent outcomes, partly due to heterogeneity in definitions of "early" initiation. This study evaluates the association between early versus delayed CRRT initiation and mortality, with stratification by initiation strategy, including clinical staging using Kidney Disease: Improving Global Outcomes (KDIGO) criteria and biomarker-guided approaches using neutrophil gelatinase-associated lipocalin (NGAL).

**Material and Methods:** A literature search was conducted in PubMed, EMBASE, and the Cochrane Library to identify studies published between January 2015 and June 2025. Eligible studies included randomized controlled trials and observational investigations that compared early and delayed CRRT initiation among critically ill adults with acute kidney injury (AKI). The primary outcome of interest was all-cause mortality measured between 28 and 90 days or at the time of intensive care unit (ICU) discharge. Pooled relative risks (RR) and odds ratios (OR) were estimated using random-effects meta-analytic models, with subgroup analyses performed according to initiation criteria. Nine studies encompassing 2,349 patients were included (six randomized trials and three observational studies).

**Results and Conclusions:** Overall, early CRRT initiation was not associated with a statistically significant decrease in mortality compared with delayed initiation (risk ratio (RR) = 0.87; 95% confidence interval (CI), 0.69-1.10; p = 0.25; I2 = 90.4%). Subgroup analysis demonstrated no significant mortality benefit with biomarker-guided (NGAL-based) early initiation (RR = 0.90; 95% CI, 0.41-2.01), whereas KDIGO-based initiation showed a borderline association favoring early therapy (RR = 0.75; 95% CI, 0.57-0.99), though heterogeneity remained substantial. No meaningful interaction was observed between initiation strategy and mortality.

**Abstract Topic:** Clinical Research

**Poster #40**

# Chronic Traumatic Encephalopathy: Early Diagnostics and Risk Assessment

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**Abstract**

**Background:** Chronic Traumatic Encephalopathy (CTE) is an insidious neurodegenerative disease associated with repeated head trauma. Over time, cumulative mechanical forces are believed to induce tau protein misfolding and aggregation, leading to neuroinflammation and progressive neuronal atrophy. Clinical manifestations often remain subtle and delayed, making early diagnosis difficult and frequently limiting definitive diagnosis to post-mortem evaluation. This review aims to evaluate current understanding of CTE pathophysiology, identify high-risk populations, and assess emerging diagnostic strategies for earlier detection and risk stratification.

**Materials and Methods:** A literature review was conducted using recent studies published between 2013 and 2026 identified through databases including PubMed, Google Scholar, and Medline. Search terms included "chronic traumatic encephalopathy", "CTE diagnosis", "tau pathology", and "tau biomarker". Studies were included based on relevance to disease mechanisms, diagnostic approaches, and populations at risk, including athletes, military personnel, and individuals exposed to repetitive head impacts (RHI).

**Results:** Current evidence suggests that repetitive head impacts are strongly associated with tau aggregation and progressive neurobehavioral decline, although diagnostic criteria remain limited and overlap significantly with other neuropsychiatric conditions. Emerging tools such as tau-specific biomarkers and PET imaging show promise but are not yet widely accessible or standardized. Biomarkers, including CCL21, CCL11, GFAP, and exosomal content release, are several distinguishing measurements between CTE from RHI and Alzheimer's Disease. Current PET imaging focuses on phosphorylated tau pathology with the absence of amyloid plaques in the CNS to differentiate CTE from AD. PET scans are best used in combination with biomarkers and cognitive assessments, but they also show promise for a developing diagnostic tool.

**Conclusion:** Despite growing insight into CTE pathophysiology, significant gaps remain in early, non-invasive diagnosis. These findings highlight a critical need for standardized, non-invasive screening methods and improved risk assessment models to enable earlier identification and intervention in vulnerable populations.

**Abstract Topic:** Clinical Research

**Poster #41**

# Addressing gaps in Cultural Competency: A Hmong-focused proposed curricular module for Undergraduate Medical Education

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**Abstract**

**Background:** The Hmong population is a historically underrepresented group in the United States healthcare system, with many disparities driven by cultural and linguistic barriers. Despite the presence of large Hmong communities worldwide, there continues to be a lack of Hmong-specific cultural competency training in medical education.

**Objective:** This project aims to evaluate the integration of Hmong health beliefs into modern healthcare systems and existing culturally responsive medical training. This project also includes the development of educational materials tailored to medical students to enhance their confidence and comfort when caring for Hmong patients.

**Methods/Approach:** A comprehensive review of published literature was conducted using databases including PubMed and Google Scholar. Articles that addressed cultural competency training in medical education and Hmong healing practices were included. Emphasis was placed on articles that compare modern health systems with traditional Hmong beliefs. Two complementary educational modules, namely a didactic session and case-based workshop, were developed with content integrated from current existing literature from established institutional resources. The curricular materials were designed to present foundational knowledge and reinforce the application of cultural humility and communication skills.

**Results:** While cultural competency training has been shown to improve patient satisfaction and health outcomes, this review exposed that existing curricula are often generalized and lack specificity regarding Hmong populations. Only a few institutions have implemented such programs.

**Conclusion:** Because of the nuances of Hmong healing practices and beliefs, it is imperative to tailor a training program that addresses the unique needs of the community. The developed multimedia modules aim to provide a framework for introducing Hmong-centered competency training into undergraduate medical education and enhance student awareness and confidence in delivering culturally sensitive care. Next steps include disseminating the educational program and evaluating effectiveness through pre- and post-intervention surveys.

**Abstract Topic:** Clinical Research

**Poster #42**

# Exploring the Potential Association Between Glucagon-Like Peptide-1 Receptor Agonist Use and Non-Arteritic Anterior Ischemic Optic Neuropathy

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**Abstract**

**Background**

Non-Arteritic Anterior Ischemic Optic Neuropathy (NAION) is currently one of the most common causes of acute optic nerve injury in individuals over 50. This sudden, painless loss of monocular vision is due to an obstructed blood supply to the anterior part of the optic nerve. Although the pathophysiology is still unclear, the onset of NAION is hypothesized to be due to apoptosis of retinal ganglion cells from ischemia of the short posterior ciliary arteries and subsequent constriction of ocular microcirculation. This narrative review aims to synthesize current findings on a potential association between GLP-1RA use and NAION.

**Materials and Methods**

This review utilized a Boolean search via PubMed, Elsevier, and Google Scholar. Key search terms included “GLP-1RA AND optic neuropathy,” “semaglutide optic neuropathy,” “GLP-1 AND NAION,” and “effects of GLP-1 on non-arteritic ischemic optic neuropathy.” Articles included retrospective studies, meta-analysis, and case reports.

**Results**

Current literature indicates GLP-1RAs as an emerging risk signal for NAION. Statistical findings from this report present increased hazard ratios that suggest a potential association between the two. All included retrospective studies found that semaglutide users, in particular, have been found to have an elevated risk in NAION onset.

**Discussion**

Establishing a causal relationship between GLP-1RA usage and NAION remains a challenge due to the unclear pathophysiology of the disease and substantial overlap between GLP-1RA users and major risk factors for NAION. Regardless, providers should recognize early signs of vision loss in GLP-1RA users or users who have recently increased their dosage.

**Abstract Topic:** Clinical Research

**Poster #43**

# Atypical Malar Rash in a Young Male with Systemic Lupus Erythematosus: Diagnostic Challenges in Skin of Color

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**Abstract**

**Background:** Systemic lupus erythematosus (SLE) is a multisystem autoimmune disease with diverse clinical manifestations. Cutaneous findings, including the classic malar rash, are a key diagnostic feature but may present atypically in patients with darker skin tones. Underrepresentation of skin of color in medical education contributes to delayed recognition and diagnosis, particularly in non-specialist settings such as the emergency department.

**Case Presentation:** An 18-year-old male presented to the emergency department with progressive generalized pain, weakness, fever, and tachycardia following a recent hospitalization for rhabdomyolysis. Approximately one month prior to his ED presentation, he developed hyperkeratotic skin changes beneath his eyebrows. Physical examination revealed joint swelling, lower extremity edema, and facial skin changes in a malar distribution characterized by hyperkeratosis and pigment alteration rather than the classic erythema. Initial evaluation prioritized infectious etiologies, and the patient was treated empirically for possible sepsis. Laboratory studies were notable for severe hyperglycemia (glucose >580 mg/dL), elevated inflammatory markers, hemoglobin A1C of 8.8%, mildly elevated creatine kinase (388 units/L) but levels not concerning for acute rhabdomyolysis, and positive autoimmune serologies including antinuclear antibodies (>1:1280), anti-dsDNA, anti-Smith, and Sm/RNP antibodies. These findings were consistent with SLE. Steroid-induced hyperglycemia was suspected due to recent outpatient prednisone use, notably two concurrent prednisone prescriptions dispensed simultaneously. The patient was admitted for multidisciplinary management and subsequently transferred for higher level of care, where he was treated with systemic corticosteroids and intravenous immunoglobulin for SLE with inflammatory myositis. He improved clinically and was discharged with close outpatient follow-up with endocrinology and rheumatology.

**Conclusion:** Recognition of atypical cutaneous manifestations of SLE in skin of color is essential to reduce diagnostic delays and improve outcomes. Increased representation of diverse skin tones in medical education is critical for enhancing clinician recognition and advancing health equity.

**Abstract Topic:** Clinical Research

**Poster #44**

# Reducing Indwelling Catheter Usage for Inpatient Rehabilitation Hospitals

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**Abstract**

**Introduction/Background:**

Indwelling urinary (Foley) catheters are associated with preventable complications, including catheter-associated urinary tract infections (CAUTIs), urethral trauma, immobility, and prolonged hospital stays. These risks are particularly impactful in inpatient rehabilitation settings, where mobility and functional recovery are critical to patient outcomes. This quality improvement initiative aimed to reduce Foley catheter utilization at San Joaquin Valley Rehabilitation Hospital through a nurse-targeted visual education intervention, with a SMART aim to decrease utilization from 12% to 8% within three months.

**Methods:**

A before-and-after quality improvement study was conducted using a Plan-Do-Study-Act (PDSA) framework. Beginning September 22, 2025, a looping educational PowerPoint was displayed in nursing breakrooms to reinforce appropriate catheter indications, CAUTI prevention strategies, and alternatives to indwelling catheters. No new policies or clinical protocols were introduced. The primary outcome was monthly Foley catheter utilization, defined as Foley-days per 100 patient-days. Pre-intervention data were collected from January 2024 through September 2025, with post-intervention data from October through December 2025.

**Results:**

The pre-intervention mean Foley utilization was 11.76 Foley-days per 100 patient-days (range 7.45–19.02). Following implementation, early post-intervention utilization averaged 12.93 Foley-days per 100 patient-days (range 10.71-16.50), remaining within baseline variability. No sustained reduction in catheter use was observed during the initial three-month period. Across all time points, the majority of catheter utilization (77- 85%) was attributed to neurogenic bladder or urinary retention, indicating a high prevalence of clinically indicated use.

**Conclusion:**

Passive visual education alone did not significantly reduce Foley catheter utilization in the short term. Future PDSA cycles will incorporate indication-specific tracking and structured daily catheter necessity reviews to better target modifiable use. With addition to, evaluating provider-level ordering patterns and their impact on Foley catheter utilization.

**Abstract Topic:** Quality Improvement

**Poster #45**

# When Lymphoma Isn't Lymphoma: A Case of Multicentric Castleman Disease Presenting with Diffuse Lymphadenopathy and Pleural Effusion

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**Abstract**

**Introduction:** Castleman disease is a rare lymphoproliferative disorder with an estimated incidence of approximately 20–25 cases per million person-years. It most commonly affects adults in the fifth to sixth decades of life and often presents with nonspecific clinical and radiologic findings that closely mimic malignancy, particularly lymphoma. Due to its rarity and variable presentation, it is frequently overlooked in the differential diagnosis of generalized lymphadenopathy.

**Case Presentation:** A 65-year-old male with a history of atrial fibrillation, sick sinus syndrome status post pacemaker implantation, and hypertension presented with progressive dyspnea and productive cough for two weeks, along with significant unintentional weight loss over six months. Imaging revealed a moderate to large left-sided pleural effusion and extensive cervical, mediastinal, axillary, mesenteric, and abdominal lymphadenopathy with splenomegaly.

Laboratory studies were notable for leukocytosis (18.6 $\times 10^3$/μL), normocytic anemia (hemoglobin 10.4 g/dL), and marked hyperproteinemia (total protein 9.5 g/dL) with hyperglobulinemia (6.4 g/dL). Thoracentesis yielded 1.4 liters of fluid negative for malignant cells, and flow cytometry did not demonstrate clonal B-cell proliferation. Prior workup, including positron emission tomography imaging, bone marrow biopsy, and lymph node biopsy, demonstrated nonspecific reactive findings despite high suspicion for lymphoma.

The patient subsequently underwent excisional lymph node biopsy at a tertiary care center, which confirmed Castleman disease. He was initiated on siltuximab for multicentric disease.

**Discussion:** Castleman disease remains a diagnostic challenge due to its overlap with more common conditions such as lymphoma, infection, and autoimmune disease. Multicentric Castleman disease is driven by cytokine dysregulation, particularly interleukin-6, resulting in systemic inflammatory manifestations. Pleural effusion, although uncommon, may occur and further complicate the clinical picture. This case highlights the limitations of minimally invasive diagnostic approaches and emphasizes the importance of excisional biopsy for definitive diagnosis.

**Conclusion:** Castleman disease should be considered in patients with persistent unexplained lymphadenopathy and systemic symptoms, particularly when initial diagnostic evaluation is inconclusive. Early pursuit of excisional biopsy is critical to establishing diagnosis and initiating appropriate targeted therapy.

**Abstract Topic:** Case Report

**Poster #46**

# Integrating Population Health Research into Medical Training: Addressing Health Disparities in California's Central Valley

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**Abstract**

**Background:** California's Central Valley faces severe health disparities exacerbated by poverty, provider shortages, and cultural barriers. The Physician's Role in the Health System (PRHS) course at California Health Sciences University College of Osteopathic Medicine (CHSU-COM), situated in Fresno County, supports medical students to address these gaps through community-engaged research.

**Objective:** To evaluate the alignment of PRHS student projects with regional health priorities.

**Methods:** We retrospectively analyzed 96 PRHS projects from 2020 to 2025 using CHSU Research Day abstracts and posters. Projects were categorized by medical research domains such as cardiovascular disorders, neurology, and behavioral health. The number of research domains and projects in each category was then compared with the prevalence rates of chronic diseases in Fresno County, California, and the United States.

**Results:** Of the 96 projects, 78% addressed Fresno's top health concerns. The most common topics were diabetes (21.88%), cardiovascular disorders (14.58%), and social determinants of health (14.58%). However, several high-burden conditions, including obesity (3.13%), high cholesterol (0%), arthritis (0%), and asthma (1.04%), were underrepresented relative to their regional prevalence. Additionally, most projects did not include primary data collection or longitudinal follow-up, limiting their immediate impact.

**Conclusions:** While PRHS successfully exposes students to community health research and aligns with some regional priorities, gaps remain between student project topics and the regional most prevalent chronic diseases. Strengthening mentorship, supporting longitudinal projects, and guiding topic selection based on local epidemiological data could enhance the program's impact and ensure research efforts more fully address the community's health needs.

**Abstract Topic:** Public Health

**Poster #47**

# Genetic and Physiological Characterization of Chalcone 25–Resistant Caenorhabditis elegans

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**Abstract**

Chalcones are plant-derived compounds with nematicidal activity and represent promising candidates for sustainable agricultural pest control. However, the genetic and physiological mechanisms underlying Chalcone 25 activity remain poorly understood. This study investigates potential modes of action by characterizing EMS-generated Caenorhabditis elegans mutants resistant to Chalcone 25.

Genetic crosses between wild-type (VC2010) males and sperm-depleted Chalcone 25–resistant hermaphrodites were performed to determine inheritance patterns. Analysis of $F_2$ segregation ratios demonstrates that resistance in two independent mutant alleles segregates as single recessive traits, suggesting disruption of specific genetic targets.

To evaluate potential physiological costs of resistance, we conducted behavioral, reproductive, and lifespan analyses. Locomotion was quantified by recording synchronized young adult worms and analyzing 15-second videos using Worm-Tracker, a Fiji/ImageJ plugin that measures movement speed, trajectories, and path complexity. Manual assessments of developmental timing and morphology, along with a dpy-10 mutant control, supplemented computational outputs. Brood size and embryonic viability were determined by daily transfers of L4 hermaphrodites and quantification of total progeny and embryo lethality rates. Lifespan assays were performed and survival distributions analyzed using Kaplan–Meier curves to assess long-term fitness effects.

Our findings reveal measurable behavioral, reproductive, and survival differences between Chalcone 25–resistant mutants and wild-type controls, indicating that resistance may be associated with physiological trade-offs. Establishing these baseline fitness profiles advances understanding of chalcone resistance mechanisms and provides insight into the broader consequences of nematicide resistance.

**Abstract Topic:** Basic Science

**Poster #48**

# Scoping Review of Literature Regarding Fatigue Effects on ACL Tears in Women's Rugby Athletes

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**Abstract**

**Background:** Anterior Cruciate Ligament (ACL) injuries are devastating injuries, often taking 9-12 months of rehabilitation to make a full recovery and return to sport. These injuries disproportionately affect women athletes compared to men. Fatigue has been highlighted as a significant risk factor predisposing athletes to ACL tears. Athletes in sports such as soccer and rugby are often placed in biomechanically compromising positions, increasing their risk of ACL injury.

**Objective:** This literature review examines the current literature on fatigue's relationship with ACL injuries in women's rugby.

**Method:** This review used PubMed, Embase, SPORTDiscus, and Google Scholar to identify articles on women athletes with knee injuries and fatigue measures published from 2015 to 2025. These papers were then reviewed by three independent researchers.

**Result:** Of 2,965 articles screened, only 34 met the inclusion criteria. The articles encompassed five continents and multiple sports. Twenty-five studies (73.53%) analyzed women athletes independently of men. Papers filtered primarily investigated rugby (50%), including 15s, 7s, and touch athletes, followed by 6 (17.65%) that explored soccer, and 4 (11.76%) that investigated multiple sports. The most common form of fatigue was characterized by game segment (35%) and player hours (26%). No standard of measurement was observed. ACL injuries were included in 8 (23.53%) papers, and 5 (14.7%) of those exclusively investigated ACL injuries. No study directly evaluated the relationship between fatigue and ACL injury in women’s rugby athletes.

**Conclusion:** Although women’s rugby is gaining popularity, there is a critical gap in the literature on fatigue and ACL risk in this population. Further research is needed in this field to expand the understanding of ACL injuries and their relationship to fatigue in women's rugby players.

**Abstract Topic:** Review Article

**Poster #49**

# Recent Advances in the Management of Type 2 Diabetes Mellitus: A Narrative Review

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**Abstract**

Type 2 diabetes mellitus (T2DM) is a metabolic disorder characterized by chronically increased blood glucose levels. It is caused by defective insulin secretion from pancreatic β-cells and insulin resistance in tissues, ultimately leading to dysregulation of blood glucose and hyperglycemia. T2DM impacts the pancreas, liver, kidneys, small intestines, skeletal muscle, and adipose tissues, elevating the individuals' risk for cardiovascular disease, kidney disease, cancer, and mortality. The International Diabetes Foundation (IDF) estimates that approximately 1 in 9 adults had diabetes in 2025 and predicts a 46% increase by 2050, with over 90% of these cases being T2DM. Notably, the costs of T2DM treatments are also rapidly increasing. T2DM is currently managed with a variety of pharmacological agents and treatment methods aimed at glycemic control, prevention of weight gain and diabetic complications, and improvement of quality of life. There are ten traditional classes of antihyperglycemic drugs, including sulfonylureas, biguanides, α-glucosidase inhibitors, thiazolidinediones, glucagon-like peptide-1 (GLP-1) receptor agonists, dipeptidyl peptidase-4 (DPP-4) inhibitors, bile acid sequestrants, dopamine receptor agonists, sodium glucose transporter-2 (SGLT-2) inhibitors, and insulin. However, conventional pharmacological treatment of T2DM may cause a range of adverse effects that negatively affect the patient's quality of life. The most common risks include severe hypoglycemia, lactic acidosis, loss of appetite, gastrointestinal discomfort, hepatotoxicity, diabetic ketoacidosis, dehydration, joint pain, urinary infections, hypersensitivity reactions, and weight gain. Recently, two other therapies have gained prevalence and entered the market, such as the combination of SGLT-2 inhibitor/DPP-4 inhibitor/biguanide [empagliflozin/linagliptin/metformin] and dual glucose-dependent insulinotropic polypeptide (GIP)/GLP-1 receptor agonists [tirzepatide]. Multiple other therapies completed phase 2 or 3 clinical trials or approved in countries outside of the US showed promising benefits in glycemic control and/or comorbidity management in the T2DM population. Recent clinical findings have shown remarkable advantages of the novel treatment over the traditional approach in lowering glycated hemoglobin (HbA1c) levels and fasting plasma glucose levels, and in balancing body weight. In this narrative review, we aim to explore and analyze the mechanisms of action, benefits, and risks of established and novel pharmacological treatments for T2DM. A thorough comparison of the benefits and risks of established and novel therapies will provide patients and physicians with greater knowledge and awareness of options uniquely tailored to the individual. By the conclusion of our review, we will determine current and recent pharmacological advancements in T2DM management by examining the latest literature. Improving understanding and treatment of this prevalent disorder will inform future research and clinical practice and improve outcomes for T2DM patients.

**Abstract Topic:** Basic Science

**Poster #50**

# Chronic Headache Presenting as Severe, Unexplained Headache, Finally Diagnosed as Idiopathic Intracranial Hypertension in May 2025: A Case Report

Kaniz Mou, MD, Vladimir Royter,MD, Shruti Javali, MD

**Abstract**

A 22-year-old Hispanic male with a history of anxiety and overweight (180 lbs, BMI 27) presented to the Emergency Department (ED) in April 2024 with acute worsening of headache—the most severe of his life—accompanied by one day of nausea, vomiting, blurry vision, and a single episode of epistaxis. He had experienced intermittent headaches for two weeks after starting agricultural work.

On the initial ED visit, the neurological exam was normal, without nuchal rigidity. Head CT without contrast showed no acute intracranial hemorrhage; ventricles were normal in size and shape. He was treated with diazepam and discharged after symptom improvement. However, he returned later that day with a 10/10 front-to-back radiating headache. He had taken ibuprofen home but vomited shortly after. Vitals showed elevated blood pressure. Lumbar puncture revealed an opening pressure of 50 cm $H_2O$; only 4 cc of cerebrospinal fluid was withdrawn, which improved symptoms. Possible pesticide exposure was considered a contributing factor. Transfer to a tertiary facility was considered, however due to patient's return to baseline, he was discharged on analgesics and muscle relaxants with outpatient follow-up.

In May 2024, primary care follow-up-initiated naproxen PRN and daily topiramate. By July 2024, he continued to experience headaches with occasional vomiting despite twice daily topiramate. MRI was found to be negative for acute findings, and a transition to acetazolamide was recommended.

In October 2024, he reported bitemporal and occipital headaches with epistaxis occurring 2–3 times weekly, without aura. By November 2024, symptoms improved with topiramate.

In May 2025, he presented to the ED with altered mental status and hyperventilation while working in the fields. BP was elevated; CT brain was again negative. He improved with diazepam. It was noted that he had not initiated acetazolamide as previously advised. Acetazolamide 500 mg BID was restarted at discharge.

At follow-up that month, symptoms were stable on acetazolamide, and topiramate was discontinued. Weight increased to 238 lbs (BMI 35). Due to scheduling barriers, neurosurgery follow-up was not obtained, and he was referred to neurology.

In June 2025, neurology diagnosed benign intracranial hypertension based on history and imaging. Symptoms remained controlled on acetazolamide. Weight had further increased to 246 lbs (BMI 38). He was counseled on lifestyle changes and awaited an ophthalmologic evaluation to assess papilledema.

**Abstract Topic:** Case Report

**Poster #51**

# Patient-Specific Instrumentation Provides Limited Improvements in Implant Placement in Total Shoulder Arthroplasty: A Systematic Review and Meta-analysis of Comparative Studies

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**Abstract**

**Background:** Patient-specific instrumentation (PSI) has been developed to improve glenoid component positioning in total shoulder arthroplasty (TSA) by translating preoperative three-dimensional planning into intraoperative implant positioning. However, the radiographic and clinical benefits of PSI compared with conventional instrumentation (CI) remains uncertain. The purpose of this systematic review and meta-analysis was to compare PSI with CI in TSA with respect to glenoid component positioning accuracy and functional outcomes.

**Methods:** A systematic review was performed in accordance with PRISMA guidelines and registered with PROSPERO. We included comparative clinical studies evaluating PSI versus CI that assessed deviation from preoperative glenoid component planning for inclination and version in anatomic or reverse TSA. Secondary outcomes included Constant–Murley and American Shoulder and Elbow Surgeons scores.

**Results:** A total of eleven studies, including four randomized controlled trials and seven retrospective cohort studies, comprising 987 patients (513 PSI, 474 CI), met inclusion criteria. Deviation in inclination and version was lower in the PSI group; however, these differences were not statistically significant (MD −2.60°, 95% CI −5.49 to 0.29) and (MD -1.37°, 95% CI −4.21 to 1.46). Functional outcomes were comparable between groups, with no significant differences in Constant–Murley score improvement (MD, 0.13, 95% CI, −8.03 to 8.29) or ASES scores (MD, 1.74, 95% CI, −1.75 to 5.22).

**Conclusions:** PSI does not significantly improve glenoid component positioning accuracy or functional outcomes compared with CI in TSA. Future studies are needed to evaluate the cost-effectiveness of PSI and to better define its impact on radiographic parameters and functional outcome measures before its routine use can be recommended.

**Level of Evidence:** II

**Keywords:** Total Shoulder Arthroplasty, Patient-specific instrumentation, Reverse Total Shoulder Arthroplasty, 3D preoperative planning

**Poster #52**

# 7-Hydroxymitragynine and Nicotine Pouch Withdrawal Syndrome: A Case Report

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**Abstract**
Novel psychoactive substances (NPSs) such as kratom and oral nicotine pouches present new challenges in clinical management, particularly regarding dependence and withdrawal. We report a case of severe withdrawal from concentrated 7-hydroxymitragynine (7-OH), a potent kratom alkaloid, and high-dose oral nicotine pouches, following long-term use in a patient with a history of polysubstance use. The patient developed acute, overlapping opioid-like (insomnia, myalgia, anxiety, diaphoresis, and gastrointestinal upset) and nicotinic (intense craving, irritability, restlessness, and difficulty concentrating) withdrawal symptoms. These symptoms rapidly escalated to severe agitation, psychosis, and respiratory compromise requiring intubation and intensive care. The clinical course was further complicated by failed outpatient management, precipitated withdrawal after initiation of buprenorphine, and eventual discharge against medical advice (AMA). This case report highlights the diagnostic and therapeutic complexities of managing withdrawal from novel psychoactive substances, the need for multidisciplinary and flexible approaches, and the importance of systematic assessment and harm reduction as these products become increasingly prevalent.

**Abstract Topic:** Case Report

**Poster #53**

# Management of Relative Energy Deficiency in Sport (RED-S): A Systematic Review

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**Abstract**

**Background:** Relative Energy Deficiency in Sport (RED-S) is a clinical syndrome resulting from an imbalance between dietary energy intake and energy expenditure, defined by low energy availability. This insufficiency leads to impaired physiological functioning across multiple systems, including metabolic rate, menstrual function, bone health, cardiovascular function, and psychological well-being. Historically, this has been studied primarily in the female population; however, recent studies have also shown parallels of RED-S in male patients. With a focus on nutritional, medical, psychological, and training-related interventions, this literature review evaluates current evidence-based approaches to the management of RED-S to assess their effectiveness in restoring health and performance in athletes.

**Methods:** A systematic search was conducted for studies published between 2005 and 2025. Inclusion criteria encompassed clinical trials, cohort studies, and case series addressing the treatment or management of RED-S or its components. Consensus statements were also included separately in this review to assess potential agreements amongst organizations. Quality assessment was conducted using the PRISMA guidelines.

**Results:** A total of 46 studies met criteria for review, including randomized controlled trials, prospective and retrospective cohort studies, and observational case studies. Nutritional replenishment over a sustained period of time demonstrated the strongest and most consistent evidence for restoration of menstrual function, improvement in bone turnover markers, and recovery of bone mineral density. Multidisciplinary treatment models incorporating dietary counseling, mental health support, and family involvement were associated with superior clinical outcomes compared to single-modality approaches.

**Conclusion:** Management of RED-S requires an individualized, multidisciplinary approach centered on restoring energy availability and addressing underlying behavioral and psychological factors. Consensus statements across organizations agreed on the significance of restoring energy availability to prevent long-term systemic dysfunction but differed in recommended screening tools, thresholds for intervention, and return-to-play criteria. Further longitudinal studies are needed to establish standardized protocols and evaluate the extent of long-term systemic consequences in female athletes. Future approaches should also encompass treatment options to address RED-S in male athletes and non-elite sport populations.

**Abstract Topic:** Review Article

**Poster #54**

# County-level modeled extreme heat risk and premature all-cause mortality related to cardio-kidney-metabolic syndrome in the United States: A cross-sectional analysis

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**Abstract**

Background: The aim of this study was to evaluate the association between extreme heat waves and age-adjusted cardio-kidney-metabolic syndrome (CKM) all-cause mortality rate in the US. Methods: In this cross-sectional study, the county level age-adjusted CKM premature (age < 65 years) all-cause mortality rate (CKM aaMR) was collected from the Center for Disease Control (CDC) WONDER (Wide-ranging Online Data for Epidemiologic Research) (2010-2019). The primary exposure was the 2023 US Federal Emergency Management Agency heat wave risk index (HWRI), a marker of extreme heat event frequency. Counties were grouped by the quartile (Q) of their HWRI. Generalized linear models with a Poisson rate regression were fitted to evaluate the association between CKM aaMR and HWRI quartiles adjusting for county-level median age, percentage of ethnic minorities, prevalence of hypertension, diabetes, obesity, coronary artery disease, and stroke; results were reported as incident rate ratios (IRR) and 95 % confidence intervals. Results: Out of 3243, we included data from 2834 (90%) of counties. The median (25th-75th) CKM aaMR was 64 (47-85) deaths per 100 000 residents. The county-level median HWRI was 56.4 (32.0, 78.1). Nationwide, compared to counties in HWRI Q1, those in Q2 [IRR 1.03 (0.99, 1.06); $p < 0.1$], Q3 [IRR 1.05 (1.01, 1.08); $p < 0.01$], and Q4 [IRR 1.09 (1.05, 1.12); $p < 0.001$] were associated with higher CKM aaMR. Conclusion: In the US, counties at more risk to extreme heat events were noted to have higher rates of age-adjusted cardio-kidney-metabolic syndrome all-cause mortality rates.

**Abstract Topic:** Public Health

**Poster #55**

# Identifying Staff Barriers in Distribution of the Depression Screening PHQ-9 Form in Aria Health Clinics

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**Abstract**

**Introduction.** Depression is a major public health issue affecting about 21 million US adults annually. The US Preventative Services Task Force (USPSTF) recommends early identification of depression in primary care settings through routine screenings with the Patient Health Questionanaire-9 (PHQ-9). Despite existing protocols to screen depression, consistent distribution of PHQ-9 remains a challenge in many clinics, especially in underserved communities. Previous studies have found barriers to PHQ-9 implementation including time constraints, a lack of training, limited referral resources, and language barriers. This quality improvement project aims to identify key barriers that staff at Aria Community Health Center clinics experience that hinder their consistent distribution of the PHQ-9 survey during patient visits. The SMART aim of this study was to identify two to three major barriers to PHQ-9 distribution at these clinics by May 2026.

**Methods.** An anonymous electronic survey was emailed to clinical and administrative staff at Aria Community Health Clinics in Fresno and Kings County. The survey collected staff demographics including role, length of employment, followed by Likert-scale questions that assessed their agreement with proposed barriers based on prior literature. These included time limitations, insufficient training, referral challenges, and communication barriers. Participants were also given an open-ended question to identify any barriers not listed in the survey. Surveys were emailed to staff and took approximately ten minutes to complete. Responses were then analyzed with descriptive statistics to evaluate potential associations between perceived barriers and staff demographics

**Results.** A total of 50 staff members from Aria Community Health Center clinics completed the survey. Overall, 60% of respondents agreed or strongly agreed that they were aware of barriers to distributing the PHQ-9 questionnaire. The most identified barrier was patient literacy and language comprehension, with 70% of participants agreeing this was a challenge. Time constraints during patient visits were the next most frequently reported barrier, with 68% agreement. Additionally, 60% of respondents disagreed that they felt uncomfortable explaining the purpose of the PHQ-9 to patients.

**Conclusion.** These findings highlight the importance of addressing clinical operations like language and literacy challenges and time constraints during patient visits, represent the most significant barriers in consistently distributing PHQ-9 at Aria Community Health Center clinics. These findings suggest that adjusting workflow and improving language accessibility may help improve staff conformity in depression screening protocols and consistent usage of PHQ-9 in this primary care setting.

**Abstract Topic:** Quality Improvement

**Poster #56**

# The Effects of Blue Light Emission on Sleep Quality and Circadian Rhythm in Postgraduate Students

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**Abstract**
Blue light emitted from electronic devices has become integrated into daily life, especially among postgraduate students who rely heavily on screens for academic and personal activities. Emerging research suggests that blue light may both positively and negatively influence melatonin secretion, circadian rhythm regulation, and overall sleep quality. This systemic literature review aimed to synthesize current evidence examining the relationship between blue light exposure and sleep outcomes in postgraduate students.

The review was conducted between September 2025 and April 2026. Seventeen peer-reviewed studies were identified through electronic database searches, including PubMed and Google Scholar. Inclusion criteria consisted of peer-reviewed studies published in 2010 or later that assessed sleep outcomes in student populations relevant to postgraduate academic environments. Studies were excluded if they focused on pediatric or non-student populations. The included studies had an average sample size of 330 participants.

Recent findings on blue light exposure and sleep show inconclusive evidence. Device use in the evenings or within 30 minutes of intended sleep has the strongest correlation with worse sleep quality as observed through longer sleep latency, shorter sleep duration, higher Pittsburgh Sleep Quality Index (PSQI) scores, and more daytime dysfunction. However, several studies also reported no significant association between blue light exposure and sleep quality duration, particularly those replying on self-reported measures. A major limitation within the literature is the reliance on self-reported questionnaires rather than objective physiological measures such as brain activity and measured melatonin levels.

Future research should prioritize longitudinal study designs and experimental designs with alternative measures, such as physiological sleep measures, to better clarify how blue light exposure influences long-term clinically significant effects.

**Abstract Topic:** Public Health

**Poster #57**

# Cardiovascular Effects of Energy Drink Consumption in Young Adults

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**Abstract**

**Background:** Energy drink consumption has dramatically increased among adolescents and young adults often consumed to aid in academic performance, alertness, or work efficiency. These beverages contain high concentrations of caffeine, taurine, and B-vitamins all of which can influence cardiovascular physiology by increasing sympathetic nervous system activity, resulting in elevated heart rate, blood pressure, and myocardial excitability.

**Objective:** This narrative review sets out to assess whether moderate energy drink consumption (1-2 drinks per day) in young adults aged 15-35 years is associated with an increased risk of cardiac arrhythmias.

**Methods:** To examine these questions, a systematic review of the existing literature was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The articles used in this review were found using databases such as PubMed and Google Scholar. Keywords used were “energy drinks,” “caffeine,” “arrhythmia,” and “young adults.” Of the case reports, randomized controlled trials, and systematic reviews that evaluate cardiovascular outcomes following energy drink ingestion, evidence suggests that arrythmias, prolonged QT interval, increase in heart rate and blood pressure, and autonomic nervous system alterations were the most reported outcomes of increased energy drink intake.

**Results:** The results from our study illustrate that moderate consumption of energy drinks has been associated with cardiac arrythmias in young adults.

**Conclusion:** Current evidence suggests that moderate energy drink consumption (1-2 drinks per day) in healthy individuals who are ages 15-25 years is associated with an elevated heart rate, increase in blood pressure, prolonged QT interval, and reported cases of arrhythmias. Although causation cannot be established, findings from the randomized trials as well as case reports suggest an increased risk of arrhythmias within the focus population. Future systematic research and more longitudinal studies within the defined age group is essential to determine long-term cardiovascular risk.

**Abstract Topic:** Systematic Review

**Poster #58**

# Effects of Intermittent Fasting on Lipid Panels in Patients at Risk for Cardiovascular Disease

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**All California Health Sciences University Master of Science in Biomedical Science

**Abstract**

**Introduction:**
Intermittent fasting (IF) has emerged as a non-pharmacological strategy for improving cardiometabolic health. This review evaluates the effects of various IF regimens on lipid panel outcomes in patients with or at risk for cardiovascular disease.

**Methods:**
A structured literature review was conducted using multiple peer-reviewed clinical trials, meta-analyses, and systematic reviews. Studies including pediatric populations were excluded. Fasting regimens included alternate-day fasting (ADF), time-restricted eating (TRE), 24-hour fasting, Ramadan fasting, and 5:2 diets (ratio of 5 feast days to 2 fast days per week). Primary outcomes assessed were changes in triglycerides (TG), total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), and high-density lipoprotein cholesterol (HDL-C).

**Results:**
Due to inconsistencies in the current literature, this review examined various intermittent fasting regimens, including alternate-day fasting (ADF), energy-restricted diets (ERD), 24-hour fasts (whole-day fasts), and ad libitum diets (e.g., 5:2 diet), and their effects on lipid panels in patients at risk for cardiovascular disease. Across multiple studies, intermittent fasting has shown overall improvements in lipid panels, including decreased triglycerides, total cholesterol, and modest decrease in LDL, with variable HDL panels. While these changes may reduce short-term cardiovascular risk, longer-term studies are needed to evaluate the effects of intermittent fasting on chronic cardiovascular disease outcomes.

**Conclusion:**
Intermittent fasting is associated with short-term improvements in triglycerides and total cholesterol, with modest and inconsistent effects on LDL-C and HDL-C. Lipid improvements appear largely mediated by weight loss and caloric reduction rather than fasting timing alone. While IF may support cardiometabolic risk reduction, further long-term studies are needed to determine its sustained impact in cardiovascular populations.

**Abstract Topic:** Basic Science

**Poster #59**

# Seen but Unmeasured: The Psychosocial Burden of Post-Inflammatory Hyperpigmentation in Skin of Color

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**Abstract**

**Introduction:**
Post-inflammatory hyperpigmentation (PIH) is a common sequela of cutaneous inflammation that disproportionately affects patients with skin of color. Although often identified as a cosmetic concern, PIH results in persistent psychosocial distress after inflammation. Inequities in recognition, treatment, and measurement exacerbate psychosocial burden among patients with skin of color.

**Methods:**
A narrative review of the literature was conducted to examine the recognition, clinical presentation, and psychosocial impact of PIH in patients with skin of color, with attention to how underrecognized inflammation, pigmentation differences, and social factors contribute to patient distress and disparities in care.

**Results:**
Biologic susceptibility, such as hyperactive melanocytes and inflammation-driven melanogenesis, contributes to PIH development, but does not fully account for psychosocial impact. Underrecognition of inflammation, due to non-classical morphology and diminished erythema, can delay treatment, prolong inflammation, and increase PIH risk. Patients with skin of color often experience distress in daily life, including impacts on social interactions, self-esteem, and quality of life.

**Conclusions:**
Addressing PIH-related distress requires early and proactive inflammation control, patient counseling that validates pigment-related concerns, and pigment-inclusive outcome measures in clinical trials. Recognizing PIH as both a psychosocial and health equity outcome is essential to improving patient-centered dermatologic care and guiding pigment-inclusive research in dermatology.

**Poster #60**

# From Ion to Iron: Magnesium supplementation in muscle strength and recovery

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**Abstract**

**Introduction:** Magnesium supplementation aids in managing various conditions, including cardiovascular disease, insomnia, migraines, and constipation. In recent years, magnesium use for muscle recovery has increased in popularity. While evidence for this indication remains limited, the mechanisms by which magnesium influences muscle function and inflammation are an emerging area of research. This review summarizes the benefits of magnesium intake in exercise performance and muscle recovery.

**Methods:** A PubMed literature search was conducted for articles published between 2000 and 2024 that contained the terms “magnesium” and “muscle” in their title. The initial screening excluded animal studies, review articles, meta-analyses, commentaries, and guidelines. Following the initial screening, studies without clinical muscle outcome data, muscle performance measures, or data unrelated to muscle strength or recovery were excluded.

**Results:** The electronic search identified 101 articles, of which 92 were excluded. Five of the 9 included articles were randomized controlled trials, and 6 evaluated supplemental magnesium intake. Daily magnesium intake ranged from 250-500 mg. Of the studies included, 2 evaluated muscle soreness, 5 evaluated muscle strength, 5 evaluated fat-free mass, and 4 evaluated inflammatory markers. In the studies evaluating muscle soreness, supplemental magnesium significantly reduced perceived muscle soreness at 24-, 48-, and 72-hours post-exercise. Muscle strength was assessed using a variety of measures, including handgrip strength, repetitions to failure, rating of perceived exertion, knee extension torque, and ankle extension strength. In these studies, increased magnesium intake was associated with increased muscle strength. Of the 5 studies evaluating fat-free mass, 4 demonstrated a positive association between higher magnesium intake and greater fat-free mass. The inflammatory markers monitored in the included studies were C-reactive protein and interleukin-6, where increased magnesium intake was associated with reduced inflammation and increased skeletal muscle mass.

**Conclusions:** The existing body of literature on magnesium supplementation suggests potential benefits for enhancing muscle strength, promoting recovery, and reducing markers of inflammation. Clinicians and researchers may consider these findings when selecting pharmacological options to support musculoskeletal health and address muscle dysfunction and inflammation.

**Abstract Topic:** Basic Science

**Poster #61**

# Adenosine kinase: a node of circadian (dys)function in irradiated and cancer brain

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**Abstract**

• **Introduction/Background** – Cranial radiotherapy (CRT) frequently causes sleep and circadian disturbances in patients with brain tumors, significantly impacting quality of life. We hypothesized that CRT disrupts circadian regulation of astrocytic adenosine kinase (ADK), thereby contributing to radiation-induced sleep dysregulation.

• **Methods** – Murine astrocytoma models were treated with clinically relevant 9 Gy head-only irradiation. Triple-channel immunohistostaining was performed to evaluate BMAL1, ADK, and astrocytic expression in circadian regulatory brain regions, namely the paraventricular nucleus.

• **Results** – CRT was found to be associated with decreased BMAL1 expression and increased ADK expression. Our findings suggest that BMAL1 negatively regulates ADK expression, supporting a potential mechanism by which radiation alters astrocytic adenosine metabolism and disrupts circadian homeostasis.

• **Conclusion** – These findings support a novel BMAL1–ADK regulatory axis in CRT-induced sleep dysregulation and identify this pathway as a potential therapeutic target for reducing radiation-related effects on quality of life.

**Abstract Topic:** Basic Science

**Poster #62**

# Unusual Pediatric Presentation of Hepatomegaly: A Case Report

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**Abstract**

**Background:** Epstein–Barr virus (EBV) infection is a common cause of febrile illness in children and is often associated with mild, transient elevations in liver enzymes. When transaminase levels are significantly elevated, however, alternative or concurrent causes should be considered. Acute Hepatitis A is a known cause of hepatocellular injury and can present with more marked enzyme elevation. Coinfection with EBV and Hepatitis A is uncommon but can complicate the clinical picture.

**Case Report:** A 9-year-old male presented with a 10-day history of fever and fatigue. Physical exam was notable for cervical lymphadenopathy, palatal petechiae, and hepatomegaly without splenomegaly. Laboratory evaluation revealed elevated liver enzymes, with an ALT of 339 U/L. EBV serology was consistent with acute primary infection, with positive VCA IgM and IgG and negative EBNA. Given the degree of transaminase elevation, additional workup was pursued. Hepatitis A IgM returned positive, confirming concurrent acute infection. The patient also had a history of recent oseltamivir use and incomplete Hepatitis A vaccination, which initially raised concern for drug-induced liver injury, though this was considered less likely.

**Discussion:** EBV-related hepatitis is typically mild, and transaminase elevations are usually modest. In contrast, Hepatitis A often causes higher levels of liver enzyme elevation. In this case, the degree of transaminase elevation was higher than expected for EBV alone, prompting further evaluation and leading to the diagnosis of coinfection. This highlights the importance of not attributing abnormal liver enzymes solely to EBV in the appropriate clinical context.

**Conclusion:** This case emphasizes the importance of maintaining a broad differential in pediatric patients presenting with hepatomegaly and viral symptoms. Significant transaminase elevation should prompt further evaluation for additional causes, including concurrent infections, to ensure accurate diagnosis and appropriate management.

**Poster #63**

# Impact of Sleep Disorders and Sleep Deprivation on the Risk of Metabolic Syndrome and Diabetes in Young Adults Aged 18–25 Years

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**Abstract**

Irregular sleeping patterns have been associated with insulin resistance, systemic inflammation, and dysregulated hormones, all of which contribute to the development of metabolic syndrome and diabetes. The goal of this literature review is to extend the knowledge of research on sleep disorders, sleep deprivation, and the risk of metabolic syndrome and diabetes in young adults aged 18–25 years.

A comprehensive literature review and standardized data extraction were performed using PubMed, Scopus, and ScienceDirect databases to assess the association of sleep deprivation with metabolic syndrome and diabetes risk. Search terms included “sleep deprivation,” “diabetes,” and “metabolic syndrome.” Boolean operators “AND” and “OR” were used to optimize search sensitivity and specificity. Using PRISMA guidelines, this study reviewed the findings related to mechanisms, sleep characteristics, and metabolic outcomes.

An experimental sleep restriction study showed that men who slept an average of 4 hours a night over 3 nights had elevated free fatty acids in the morning and a 23% reduction in insulin sensitivity; these levels are comparable to those of prediabetic patients. Additionally, a U-shaped curve showed that individuals who sleep <7 hours and individuals who sleep >9 hours a night had significantly higher Metabolic Syndrome Severity Score when compared to individuals sleeping 7 to 8 hours a night. Specifically, short duration of sleep was associated with elevated fasted glucose levels and systolic blood pressure, whereas longer duration of sleep was linked to higher triglycerides. The lack of sufficient sleep is correlated with night eating syndrome, increased carbohydrate intake, and higher diabetes risk scores. Poor quality sleep can have significant negative impacts on health, and incorporating routine screenings and awareness in young adults can reduce their risk of developing metabolic syndrome. Further research should prioritize longitudinal studies, sleep assessments should be conducted, and investigations of mechanisms to inform preventive frameworks.

**Poster #64**

# The Role of Gut Microbiome Composition in Parkinson's and Alzheimer's Disease in Cesarean Section vs. Vaginally Delivered Neonates

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**Abstract**

**Background:** Early life influences can set the trajectory for long-term microbial balance, immune development, and gut–brain axis signaling- ultimately affecting an individual's susceptibility to neurodegenerative diseases later in life.

**Objective:** In this study, we examine the role of the gut microbiome and its association with the development of Alzheimer's and Parkinson's disease.

**Methods:** We used PubMed, ScienceDirect, Springer, OpenAccess, and National Institute of Health (NIH) to research data. The key words we mentioned while researching were gut microbiome in c-section vs. vaginal delivery, specific bacteria involved in the gut such as Lactobacillus, fecal microbiota transplants, microbiota-gut-brain axis, gut microbiota, vaginal microbiota, gut causing mood disorders, and gut colonization.

**Results:** The neonatal gut microbiome is initially shaped by factors such as mode of delivery, early antibiotic exposure, and maternal microbial composition. Vaginally delivered neonates tend to have microbiota that closely resemble their mother's vaginal and fecal flora, with a strong presence of beneficial bacteria like Lactobacillus. Cesarean-section (C-section) neonates are likely to be colonized by skin and hospital-associated microbes such as Staphylococcus and Propionobacterium. These early microbial differences matter because the gut microbiome communicates with the brain through multiple pathways including signaling via the vagus nerve, immune pathways involving cytokine release and neuroinflammation. The microbiome regulates tryptophan metabolism through serotonin synthesis pathway and Kynurenine pathway activation. Imbalances in tryptophan metabolism, crossing of short chain fatty acids (SCFAs) across the placenta, dysbiosis due to microglial cells alteration may influence neuroinflammation and neurodevelopmental disorders.

**Conclusion:** Studies suggest Fecal Microbiota Transplantation (FMT), prebiotics, and probiotics may be used as potential treatments for Alzheimer's and Parkinson's Disease. There seems to be a close relationship between various types of bacteria and their clinical outcomes. FMT administration would restore gut microbial diversity. Improved cognitive performances in preclinical models have been seen for both Alzheimer's and Parkinson's.

**Abstract Topic:** Basic Science

**Poster #65**

# Cognitive Load Is Not the Whole Story: AI Use, Decision Offloading, and Educational Implications for Clinical Reasoning

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**Abstract**

**Background:** Artificial intelligence is increasingly used in medical education for efficiency and support, yet its influence may extend beyond convenience to learners' ownership of clinical judgment. Because clinical reasoning requires justification, verification, and accountability, repeated AI use may foster passive decision offloading rather than merely increase generalized cognitive burden. This study examined whether AI-use frequency is more strongly associated with generalized cognitive load or with perceived decision offloading.

**Methods:** We performed a secondary analysis of the public, de-identified Cognitive Load, Fatigue & Decision Offloading 2025 dataset from the Human Clarity Institute. The sample included 503 English-speaking adults from the United Kingdom, United States, Australia, New Zealand, and Ireland. Nineteen Likert-style items were grouped into four theory-informed domains: Cognitive Load, Decision Offloading, Aftereffects, and Recovery. Analyses included descriptive statistics, Cronbach alpha for internal consistency, Welch t tests with Hedges g for group comparisons, adjusted ordinary least squares regression with HC3 robust standard errors, and Spearman correlations.

**Results:** Of the 503 participants, 81.5% reported AI use. AI users scored higher than non-users on decision offloading, aftereffects, and global strain, with the largest between-group effect observed for decision offloading (Hedges g = 0.46). AI-use frequency showed only weak correlations overall, but its strongest association was with decision offloading (Spearman rho = 0.19). In adjusted analyses controlling for age, gender, country, and work status, more frequent AI use remained associated with greater decision offloading (beta = 0.093). The overall pattern indicated that the clearest and most consistent relationship with AI use was perceived transfer of judgment to the tool rather than generalized cognitive load.

**Conclusions:** AI use appeared to align more strongly with decision offloading than with generalized cognitive load, suggesting that the central educational concern may be transfer of judgment ownership rather than simple mental overload. For medical education, this has implications for the teaching of clinical reasoning, verification, and accountability. Educational strategies may need to emphasize independent first-pass reasoning, trust calibration, source appraisal, uncertainty recognition, and accountable use of AI-supported input. Future work should examine these patterns in medical students, residents, and clinicians and test interventions that preserve learner agency while supporting thoughtful AI use.

**Keywords:** artificial intelligence; medical education; clinical reasoning; decision offloading; cognitive load; cognitive autonomy; trust calibration; verification; learner agency; health professions education.

**Abstract Topic:** Quantitative Cross-Sectional Analytic Study

**Poster #66**

# Closing the Gap: A Student-Led Initiative to Enhance Naloxone Prescribing Practices for United Health Center Minnewawa Patients

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**Abstract**

**Introduction/Background**: In 2017, the opioid epidemic was designated a national public health emergency and remains one of the leading causes of preventable deaths today. In 2023, over 80,000 opioid-overdose related deaths occurred in the United States. Naloxone (Narcan) is a readily-available over-the-counter drug that rapidly reverses the effects of an opioid overdose. According to the CDC, in California, less than 1 (0.7) naloxone is prescribed per 100 persons, whereas the opioid prescription rate is 23.8 per 100 persons. Increased naloxone access reduces overdose mortality, whether through provider prescriptions, state programs, or community-based distribution. Physician-led education and counseling are key drivers in naloxone access, with research showing counseling increasing the likelihood patients will obtain and keep a naloxone kit at home. Primary care centers serve as a critical access point for at-risk populations, so understanding the clinic specific prescribing patterns allows healthcare professionals to identify disparities in education and access.

**Methods**: This study used voluntary, anonymous surveys administered to adult patients (≥ 18 years old) in the waiting room of United Health Center (UHC) - Minnewawa by CHSU-COM students. The surveys were available in both English and Spanish. The responses were collected by Google Forms on Microsoft Surface Pro devices for secure administration.

**Results**: 96% of patients prescribed an opioid from UHC were never prescribed or dispensed a naloxone prescription which aligns with California's dispensing practices of 0.7 naloxone prescriptions per 100 persons.

72% of patients who reported never being prescribed an "opiate/opioid" later indicated they had been prescribed one when shown a list of opioids. This finding underscores a significant gap in patients' understanding of opioid-classified medications and highlights an important opportunity for prescribers to provide clearer education.

Latino/Hispanics and those with less education were less likely to identify what naloxone is used for. This finding highlights a critical need for targeted education within these groups, which represent a large portion of the county's population.

**Conclusion:** Overall, the results reveal substantial gaps in opioid and naloxone awareness—reflected in low naloxone co-prescribing rates, widespread misunderstanding of opioid-classified medications, and lower naloxone knowledge among Latino/Hispanics and those with less formal education—highlighting an urgent need for clearer patient communication and targeted educational efforts. For next steps, we will provide the data to UHC Minnewawa and work with them to close the identified gaps and expand this project to other UHC sites.

**Abstract Topic:** Public Health

**Poster #67**

# Optimal Glucose Reduction in Diabetic Emergencies (OG-RIDE)

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**Abstract**

**Purpose of Study:** To minimize the risk of cerebral edema in the management of hyperglycemic emergencies, guidelines recommend gradually decreasing serum glucose levels. However, there is limited literature validating these reduction goals or evaluating outcomes associated with different correction rates. This study evaluated cerebral edema rates associated with two different serum glucose correction rates in adults with hyperglycemic emergencies.

**Methods:** This was an IRB approved, retrospective study. The primary endpoint was the incidence of cerebral edema. Secondary endpoints included average hourly changes in sodium, potassium, chloride, bicarbonate, anion gap, glucose, blood urea nitrogen, creatinine, and calculated osmolality, over the treatment course. Patients were divided into two groups based on their average hourly serum glucose correction rate (> 75 mg/dL and ≤ 75 mg/dL) and their outcomes were compared. Patients were included if they were ≥ 18 years old, received the institutions' diabetic ketoacidosis or hyperglycemic hyperosmolar state insulin infusion order set within 12 hours of presenting to the hospital, and had a pre-insulin infusion glucose > 600 mg/dL.

**Results:** 134 patients had a slow correction rate and 51 had a rapid correction rate. The median time from starting the insulin infusion to achieving a glucose < 300 mg/dL in the slow and rapid correction rate groups was 9.9 hours and 6.1 hours, respectively ($p < 0.001$). In the total population, 2 (1.5%) cerebral edema events occurred. Both patients were in the slow correction rate group, and had radiographic evidence of cerebral edema on post-return of spontaneous circulation imaging. There were significantly larger decreases in glucose and osmolality levels in the rapid correction rate group at several time points during treatment.

**Conclusions:** Rapid serum glucose correction rates were not associated with increased cerebral edema events. Our findings suggest glucose and osmolality levels can be corrected faster than what is currently recommended.

**Poster #68**

# Representation of Skin Tones in Images Depicting Cutaneous Autoimmune Diseases in Current Medical Education Texts

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**Abstract**

**Background:** Images are a cornerstone of teaching dermatological conditions. Education material that does not include a variety of skin tone may have an impact on future ability to diagnose in diverse skin tones. This is especially relevant for autoimmune diseases such as systemic lupus erythematosus (SLE) and systemic sclerosis, with SLE more common in Asian, Black, Hispanic, and Indigenous populations, and systemic sclerosis showing greater severity in Black individuals. To assess representation across skin tones, skin color in this study will be classified using the Individual Typology Angle (ITA) rather than the Fitzpatrick scale. While the Fitzpatrick scale remains the current gold standard for categorizing skin tone, ITA offers a more objective, quantitative approach, using a three-dimensional color model to approximate perceived skin color. ITA is divided into 6 skin types: very light, light, intermediate, tan, brown, dark, and very dark.

**Methods:** We went through every US medical school's website to identify a publicly available textbook list and any textbooks covering dermatology, rheumatology, internal medicine, and clinical skills was noted. Then, we extracted photos for systemic lupus erythematosus, rheumatoid arthritis, dermatomyositis, systemic sclerosis, Sjogren syndrome, mixed connective tissue disease, relapsing polychondritis, bullous pemphigoid, pemphigus vulgaris, dermatitis herpetiformis, epidermolysis bullosa acquisita, psoriasis, vitiligo, alopecia areata, and lichen sclerosus. Images were run through a rule-based image processing algorithm which adjusted lighting differences between images, identified skin areas, filtered out abnormally red regions, and calculated ITA to determine skin tone.

**Results:** Of the 206 medical schools, we identified 251 textbooks, 100 of which we were able to access through our institution's library and online. From these textbooks, 1952 colored images showcasing skin were extracted and the algorithm categorized each image into one of the 7 ITA skin types. 5 images were categorized as very light, 205 as light, 1048 as intermediate, 672 as tan, and 22 as brown. There were no pictures that were categorized into the dark and very dark ITA skin tones.

**Conclusions:** Although there is a variety of skin tones in images showing autoimmune cutaneous diseases, there is only a small number of images in the brown skin tone and a complete lack of images in the dark and very dark skin classifications. Using an algorithm allowed us to have a standardized way to analyze these photos but image quality, lighting, and non-skin objects may alter the reading of the image. Regardless, it is evident that textbooks need to increase their representation of different skin colors in images to better educate future physicians.

**Poster #69**

# The Biochemistry and Histopathological Tissue Response to Injectable Fillers: A Scoping Review

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**Abstract**

In-office non-surgical aesthetic procedures have increased in popularity over the years and include the use of injectable dermal fillers. Commonly used fillers are off-the-shelf fillers manufactured to be available for instant use in clinics. With increased dermal filler use in recent years, it is important to understand tissue response to these substances. Some representative examples include hyaluronic acid, calcium hydroxylapatite (CaHA), poly-L-lactic acid (PLLA), and polymethylmethacryalte (PMMA) fillers. This review summarizes the current literature outlining the biochemistry and histopathology of dermal fillers. Literature was found through advanced search queries in PubMed/MEDLINE, Cochrane Library, and Embase. Terms included keywords relating to histopathology (histology, histopathology) or biochemistry (biochemistry) and regarding an injectable filler (injectable filler, dermal filler). Histopathological and biochemical features differ for each type of filler. Some key histologic findings include hyaluronic acid appearing as amorphous basophilic material, calcium hydroxylapatite appearing as blue-gray calcific microspheres, and PLLA with a fusiform or spiky shape. A shared histological feature is granuloma formation due to foreign body reaction, a common complication seen with most of these fillers. Biochemically, hyaluronic acid, CaHA, and PLLA particles can resist phagocytosis due to their large size. Hyaluronic acid functions by promoting an inflammatory response, integrating the injected gel into host tissue while CaHA and PLLA can stimulate fibroblasts and induce collagen synthesis. The complexities behind the histologic and biochemical reactions to injectable fillers are vast. This review provides background for future dermatopathological studies visualizing and understanding long-term effects of fillers.

**Poster #70**

# War on Substance Use Treatment: The Controlled Substances Act's Impact on Addiction Medicine

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**Abstract**

**Context:** The Nixon Administration's "War on Drugs," formalized through the Controlled Substances Act (CSA) of 1970, established a five-schedule system classifying substances by perceived medical utility and abuse potential. This legislation was followed by key federal actions, including the creation of the Drug Enforcement Administration (DEA) through Reorganization Plan No. 2 of 1973 and the regulation of addiction treatment programs under the Narcotic Addict Treatment Act (NATA) of 1974. Together, these policies shifted substance use disorder (SUD) from a medical issue toward a law enforcement priority, shaping federal oversight, limiting physician practice, and influencing public perception.

**Objective:** This policy case study examines how the War on Drugs and the CSA institutionalized law enforcement involvement in addiction care, constrained physician autonomy, and delayed the recognition of addiction medicine as a formal medical subspecialty in the United States.

**Methods:** This study uses qualitative analysis of primary policy documents, including the CSA (1970), Reorganization Plan No. 2 (1973), NATA (1974), and the Drug Addiction Treatment Act (DATA) of 2000, to trace the evolution of federal governance in addiction treatment. Secondary analysis of the 1995 Committee on the Federal Regulation of Methadone Treatment provides additional context on downstream impacts.

**Results:** The CSA classified methadone as Schedule II, restricting access and limiting clinical use. The establishment of the DEA introduced direct law enforcement oversight into addiction care, shifting treatment toward a compliance-driven model. NATA imposed strict regulations on treatment programs, including narrow eligibility criteria and extensive federal monitoring. These constraints persisted until partial regulatory easing in the late 1980s. Subsequent reforms expanded access to medications such as buprenorphine, with DATA 2000 enabling office-based treatment. However, regulatory barriers and stigma continued to limit adoption.

**Conclusion:** The War on Drugs and the CSA fundamentally reshaped addiction treatment by prioritizing enforcement over healthcare. These policies restricted physician autonomy, limited treatment capacity, and contributed to access disparities. Although later reforms improved access, longstanding frameworks delayed the recognition of addiction medicine as a subspecialty until 2015. This history underscores the need for future policies that prioritize evidence-based, physician-led care and equitable access to treatment for substance use disorders.

**Abstract Topic:** Policy Case Study

**Poster #71**

# Evaluating a Student-Facilitated Medical Education Model to Improve Opioid Overdose Response Knowledge and Preparedness

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**Abstract**

**Purpose of Study:** Despite increased access to naloxone, many individuals, including medical students, lack the knowledge and confidence to effectively respond to an opioid overdose. According to the CDC, a potential bystander was present in approximately 43% of drug overdose deaths in 2023. To reduce the number of opioid overdoses occurring with a bystander present, the Overdose Prevention Committee (OPC) at the California Health Sciences University College of Osteopathic Medicine (CHSU-COM) developed an opioid overdose preparedness training. The training was integrated into the first-year osteopathic medical students' (OMS-I) clinical skills curriculum and included a presentation followed by practical, hands-on simulation exercises designed to mirror real-world clinical scenarios. The purpose of this study was to evaluate the effectiveness of the CHSU-COM OPC led training.

**Methods:** OMS-I completed an anonymous pre- and post-intervention survey, with questions developed to evaluate students' knowledge of how to respond to an opioid overdose and to determine if there were differences in baseline knowledge based on sex, age, race, and/or previous work experiences. Each student was assigned a unique identifier to complete the pre- and post-intervention surveys. This identifier was not disclosed to the study investigators and was solely used to track individual performance over time. This study was approved by the local IRB.

**Results:** 151 students were included in the data analysis. 90% of students knew that naloxone reversed opioid toxicity in the pre-intervention group, in comparison to 100% in the post-intervention group ($p < 0.001$). The percentage of students who knew that anyone can administer naloxone increased from 74% to 98% ($p < 0.001$). 31% of students knew that increased pupil size and responsiveness were signs of a positive response following naloxone administration in the pre-intervention group, in comparison to 83% in the post-intervention group ($p < 0.001$). The percentage of students who felt they were confident in responding to an opioid overdose increased from 14% to 97% ($p < 0.001$). Students who identified as Black/African American and were first responders prior to medical school answered the most pre-intervention questions correctly.

**Conclusions:** CHSU-COM OPC's program increased the number of OMS-I trained to respond to an opioid overdose. Prior work experience and race influenced baseline knowledge of how to respond to an opioid overdose.

**Abstract Topic:** Public Health

**Poster #72**

# PHENOmenal PUSH: Safety of Front-Loaded Intravenous Push Phenobarbital in Alcohol Withdrawal

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**Abstract**

This study aimed to determine if phenobarbital doses > 260 mg can safely be administered as an intravenous push (IVP). Preliminary analysis suggests IVP phenobarbital is not more likely to cause hypotension, bradycardia, or respiratory suppression than intravenous piggyback phenobarbital. Preferential selection should be given to administering phenobarbital as an IVP to facilitate faster medication administration times and decrease pharmacy workload.

**Background:** Phenobarbital is a GABA-A agonist commonly used in the management of alcohol withdrawal and seizures. Depending on the indication, lower doses may be administered as an intravenous push (IVP), whereas larger doses are commonly prepared and sent from the pharmacy as an intravenous piggyback (IVPB) to minimize the risk of infusion related complications. However, the latter approach may delay treatment and lead to suboptimal patient outcomes. Similar to how levetiracetam and lacosamide were previously prepared as IVPB solutions until studies demonstrated safety with IVP administration, our institution was interested in reevaluating our practice of administering IV phenobarbital. The purpose of this study was to determine the safety of IVP phenobarbital.

**Methods:** This is an ongoing retrospective chart review conducted at two sites within a health care system. Patients were included if they were 18 years or older and received phenobarbital as an IVP or IVPB at a dose greater than 260 mg during their hospital stay. Orders for phenobarbital IVP were removed from automated dispensing cabinets for the nurse to administer via a syringe push, whereas IVPB doses were prepared and sent from the main pharmacy for the nurse to administer via an infusion pump. Product selection was at the discretion of the provider. The primary endpoints included rates of respiratory depression, hypotension, and bradycardia within two hours of study drug administration. Respiratory depression was defined as an increase in oxygen requirement following medication administration. Hypotension was defined as a 20% decrease in systolic blood pressure after medication administration. Bradycardia was defined as a 20% decrease in heart rate after medication administration. All study measures and procedures were approved by the local Institutional Review Board and there are no conflicts of interest to report.

**Results:** Preliminary analysis included 111 encounters encompassing 65 IVP and 72 IVPB doses (n = 137). The median (interquartile range, IQR) IVP and IVPB doses were 520 mg (390-520) and 860

mg (540-1248), respectively ($p < 0.001$). The median (IQR) time to medication administration after order placement was 15 min (8-28) and 72 min (54-99) in the IVP and IVPB groups, respectively ($p < 0.001$). The number of patients who developed bradycardia after phenobarbital administration in the IVP and IVPB groups were 11 (16.9%) and 16 (22.2%), respectively ($p = 0.44$). The number of patients who developed hypotension after phenobarbital administration in the IVP and IVPB groups were 12 (18.5%) and 7 (9.7%), respectively ($p = 0.14$). Nine (13.8%) patients were intubated prior to phenobarbital administration in the IVP group, in comparison to 54 (75%) patients in the IVPB group ($p < 0.001$). In the patients that were not intubated prior to phenobarbital administration, 6 (10.7 %) in the IVP group required an increase in oxygen requirements, whereas two (11.1%) in the IVPB group required an increase in oxygen requirements ($p = 1$).

**Conclusions:** Preliminary analysis suggests phenobarbital doses > 260 mg can safely be administered as an IVP. Preferential selection should be given to administering phenobarbital as an IVP to facilitate faster medication administration times and decrease pharmacy workload.

**Abstract Topic:** Basic Science

**Poster #73**

# Use of Artificial Intelligence (AI) in Early Breast Cancer & Leukemia Detection and Diagnosis

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**Abstract**

**Background:** Traditional diagnostic approaches for breast cancer and acute myeloid leukemia (AML) rely heavily on imaging modalities and clinician interpretation. While effective, these methods may miss subtle disease indicators and often require specialized expertise. Early detection remains critical to improving survival, remission rates, and overall patient outcomes.

**Objectives:** This narrative review examines recent advances in artificial intelligence (AI)–based approaches designed to enhance early detection and diagnostic accuracy in breast cancer and AML.

**Methods:** A comprehensive literature search was conducted using PubMed, Google Scholar, and the National Library of Medicine databases. Recent primary research articles and ongoing clinical trials evaluating AI applications in breast cancer and AML detection were reviewed. Studies focusing on imaging analysis, machine learning classification models, and multimodal diagnostic platforms were included.

**Results:** In breast cancer screening, AI systems improved detection of subtle abnormalities in mammography and MRI, reduced recall rates, and demonstrated potential for earlier identification of interval cancers when used as radiologist support tools. Ongoing clinical trials are evaluating AI as a "third reader," aiming to enhance screening accuracy and detection rates.

In AML, AI models, including convolutional neural networks (CNNs) and Random Forest algorithms, achieved near-perfect accuracy in malignant cell classification. Multimodal platforms integrating infrared spectroscopy with biochemical markers demonstrated up to 98% sensitivity in adult AML screening. Workflow-enhancing systems such as LEAP improved diagnostic speed and clinician confidence.

**Conclusion:** AI-based diagnostic tools show strong potential to augment traditional cancer detection strategies by improving sensitivity, reducing variability, and accelerating clinical decision-making. However, variability across datasets, concerns regarding generalizability, and integration challenges remain. Continued validation and refinement are necessary before widespread clinical implementation. With further development, AI may significantly contribute to earlier diagnosis and improved patient outcomes in breast cancer and AML.

**Abstract Topic:** Literature Review

**Poster #74**

# Shiitake Flagellate Dermatitis

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**Abstract**
Flagellate Dermatitis or Shiitake flagellate dermatitis is an erythematous linear streaky pruritic rash that resembles whiplash marks which commonly appear after a patient has consumed undercooked or raw Shiitake mushrooms (lentinula edodes). Generally, the rash will appear approximately 24 hours after consuming undercooked mushrooms however it can take as long as 5 days in some patients. Due to the uncommon clinical presentation of these patients and its similarity with dermatomyositis or bleomycin use these patients can often be misdiagnosed. This leads to a barrage of unnecessary tests which only prolong proper treatment. In hopes of shedding more light into atypical rash presentations, this case report aims to provide a clearer picture of how a patient with Flagellate dermatitis may present and its most common cause which is the consumption of a popular food, Shiitake mushrooms, found in many restaurant dishes.

**Abstract Topic:** Case Report

**Poster #75**

# Characteristics of Rodeo Injuries and Risk Prevention

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**Abstract**
Rodeo is among the most physically demanding and high-risk athletic environments, yet it remains significantly underrepresented in sports medicine literature. Unlike traditional team-based sports, rodeo athletes are exposed to unpredictable, high-energy forces that produce a unique combination of acute traumatic injuries and chronic musculoskeletal conditions. This literature review aims to characterize injury patterns, underlying biomechanical mechanisms, and the cultural and structural factors that influence injury risk and reporting among rodeo competitors.
A structured search of PubMed, Scopus, and Google Scholar was conducted for studies published between 1990 and 2024. Search terms included “rodeo injuries,” “bull riding,” “barrel racing,” “rodeo biomechanics,” and “concussion in rodeo.” Peer-reviewed studies reporting injury-related outcomes in rodeo athletes were included, while non–peer-reviewed and non-competition-related studies were excluded. Due to heterogeneity in study design and reporting metrics, findings were synthesized qualitatively.
The literature consistently demonstrates that rodeo athletes sustain high injury rates, ranging from 4.2 to 19.1 injuries per 1,000 competitor-exposures, exceeding rates observed in many conventional sports. Rough-stock events carry the highest injury burden, characterized by axial loading, high-velocity impacts, and crush mechanisms, while timed events are associated with repetitive, asymmetric loading and upper extremity overuse. Common injuries include concussions, spinal trauma, ligamentous knee injuries, and rotator cuff pathology. Despite this burden, injury surveillance remains limited due to the sport's decentralized structure.
Cultural and financial pressures further exacerbate injury risk as rodeo athletes often compete as independent contractors without access to consistent medical care, formal return-to-play protocols, or income protection during injury. The absence of an injured-reserve system, combined with performance-based financial incentives, promotes competition despite injury and contributes to underreporting and reinjury. Additionally, the “cowboy up” ethos reinforces delayed care-seeking behavior.
Significant gaps remain in longitudinal outcomes research, biomechanical modeling, and standardized injury prevention strategies. The findings of this review highlight the urgent need for improved surveillance systems, evidence-based safety protocols, and culturally tailored interventions to reduce injury risk and long-term morbidity in this underserved athletic population.

**Abstract Topic:** Literature Review

**Poster #76**

# BCI's for Symptom Modulation in PTSD and Depression

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**Abstract**
Depression and PTSD are two mental disorders that manifest in a common change in the medial prefrontal cortex (MPFC), along with various other neurological changes. Although there are various pharmacological and psychotherapeutic treatments, a significant proportion of patients aren't adequately responsive to these options. Brain–computer interfaces (BCIs) offer a novel approach by enabling real-time detection and modulation of dysfunctional neural circuits underlying emotional regulation and related symptoms. This systematic literature review evaluates the theoretical, neurobiological, and emerging clinical evidence supporting the role of BCIs in symptom modulation of depression and PTSD.
A structured review following PRISMA guidelines was conducted using peer-reviewed studies on brain-computer interface (BCI) technologies in depression and post-traumatic stress disorder. The databases used included PubMed, APA, ClinicalKey, EBSCOhost, Tandfonline, and ScienceDirect. The search involved Key concepts: brain–computer interface, neurofeedback, closed-loop neuromodulation, emotional regulation, PTSD, and depression. A diverse overview of systems was conducted, including comparisons between non-invasive and invasive approaches, and between real-time adaptation and post-intervention monitoring. The review focused on how these approaches help improve emotional control, change brain activity, and reduce symptoms.
Evidence supports depression and PTSD as disorders of distributed neural networks, particularly involving prefrontal–limbic and fear extinction circuits. BCIs, particularly closed-loop systems, can monitor and modulate these neural networks using real-time feedback. While clinical trials remain limited, evidence from neurobiology, biomarker research, and neurofeedback studies supports the feasibility of BCI-based interventions
Brain-computer interfaces (BCIs) show strong potential as a supplemental therapy for symptom modulation in depression and PTSD, particularly among treatment-resistant populations, as existing treatments leave a substantial burden of residual symptoms. BCIs directly target the neural circuits involved in emotional regulation and fear processing. Future clinical trials with careful attention to ethical and accessibility considerations are needed to determine efficacy and ensure equitable implementation.

**Abstract Topic:** Literature Review

**Poster #77**

# Evaluating the Association Between Caregiver IBS and Pediatric Constipation in the Central Valley

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**Abstract**

**Background:** Irritable bowel syndrome (IBS) is a common functional gastrointestinal disorder affecting approximately 10–15% of adults, while childhood constipation affects 3–10% of children and may persist into adulthood. Emerging evidence suggests intergenerational links in gastrointestinal disorders through shared biological, behavioral, and psychosocial pathways. This study examines the association between caregiver IBS and pediatric constipation within a socioeconomically diverse population.

**Methods:** We conducted a cross-sectional study of caregiver–child dyads presenting to a pediatric gastroenterology clinic in Fresno, California, from December 2024 to November 2025. Adult caregivers completed structured, anonymous surveys assessing IBS symptoms using components of the IBS Severity Scoring System (IBS-SSS), along with demographic and socioeconomic variables. Pediatric constipation status was reported by caregivers. Participants were categorized by caregiver IBS status and child constipation status. Statistical analyses evaluated associations between caregiver IBS and pediatric constipation, with significance set at $\alpha < 0.05$.

**Results:** A total of 174 eligible caregiver responses were analyzed. The cohort was predominantly Hispanic (66.7%) and primarily English-speaking. Preliminary findings suggest an increased prevalence of IBS symptoms among caregivers of children with constipation compared to those without, with a statistically significant p-value of 0.003. No statistically significant association was observed between IBS severity and ethnicity. Discrepancies between reported IBS symptoms and formal diagnosis rates were noted, potentially reflecting healthcare access disparities and socioeconomic factors.

**Conclusions:** Caregiver IBS is associated with pediatric constipation in this clinic-based population, supporting a biopsychosocial and intergenerational model of functional gastrointestinal disorders. Socioeconomic determinants may influence both symptom perception and healthcare utilization. Further studies are warranted to explore causal mechanisms and to inform family-centered management strategies for functional GI disorders.

**Abstract Topic:** Quality Improvement

**Poster #78**

# Identifying Patient-Reported Barriers to Colorectal Cancer Screening in an Underserved Central Valley Population

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**Abstract**
**Background:** Colorectal cancer (CRC) remains a leading cause of cancer-related morbidity and mortality in the United States, with screening significantly reducing both incidence and mortality. Despite established guidelines recommending screening beginning at age 45, completion rates remain suboptimal in underserved populations, including patients served by Federally Qualified Health Centers (FQHCs). Understanding patient-reported barriers and preferred support strategies is essential to inform effective, clinic-driven interventions.
Objective: To identify the most common patient-reported barriers to CRC screening and determine preferred support strategies among adults aged 45–75 who are not up to date with screening at OMNI Health.
**Methods:** This quality improvement project utilized a cross-sectional, survey-based design. A structured 37-item phone survey was administered to eligible patients (n=40) identified through OMNI Health records as overdue for CRC screening. Surveys were conducted by trained student researchers using a standardized script, with responses recorded in a de-identified database. Descriptive statistics were used to summarize frequencies and percentages of reported barriers and support preferences.
**Results:** Among 40 participants, the majority were aged 55–65 years (57%) and female (70%), with a diverse representation of White (47%) and Hispanic/Latino (42%) patients. While most participants reported regular healthcare engagement (85% see a doctor regularly) and adequate access to care (93% reported reliable transportation), significant gaps in screening awareness and provider communication were identified. Only 68% of participants had heard of CRC screening, and 60% understood its purpose. Notably, only 45% reported receiving a provider recommendation for screening. Psychological concerns were present but less prominent, with 41% expressing fear of a cancer diagnosis and 28% fear of the screening test itself. Structural barriers such as cost (36%) and transportation were less frequently reported. Participants demonstrated strong interest in supportive interventions, including text message reminders (78%), phone call reminders (70%), in-person explanations from providers (70%), and mailed at-home test kits (68%). Clear instructions in the patient's preferred language were identified as particularly important (90%).
**Conclusion:** In this underserved patient population, the primary barriers to CRC screening were not structural limitations but gaps in patient awareness and provider-driven communication, despite high levels of healthcare engagement. Patients expressed strong preference for simple, scalable interventions such as reminders, mailed testing, and clear educational materials. These findings suggest that targeted, low-cost strategies focused on improving communication and patient education may substantially improve CRC screening uptake in similar settings.

**Abstract Topic:** Quality Improvement

**Poster #79**

# Evaluating LGBTQIA+ Healthcare & Inclusivity at United Health Centers (UHC): A Comparison Between UHC Tuolumne & UHC Blackstone

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**Abstract**

Many studies have found that LGBTQIA+ patients frequently express concerns regarding stigma, bias, and judgment in healthcare settings, leading to a reluctance to seek care. Barriers to healthcare at every level for LGBTQIA+ patients highlight the need for more nuanced patient care. By June 2026, we aimed to compare the baseline LGBTQIA+ inclusivity scores of UHC Tuolumne to UHC Blackstone using their checklist scores to assess notable discrepancies between the two clinics and provide actionable recommendations to UHC Tuolumne regarding promoting inclusivity. The Checklist for Recommendations to Improve Primary Care for Sexual and Gender Minority Patients was used to identify inclusivity factors currently present at both clinics. The checklist assessed five domains of SGM-inclusive care: affirmative clinic policies, welcoming physical environment, documentation of sexual orientation and gender identity (SO/GI), staff cultural competency training, and workforce development, recording each category as "Yes," "No," "Not Applicable," or "Uncertain." Compliance rates for UHC Tuolumne vs. UHC Blackstone were: affirmative policies (95% vs 90%), physical environment (9% vs 27%), SO/GI documentation (31% vs 38%), competency training (100% vs 92%), and workforce development (76% vs 71%). Both UHC Tuolumne and UHC Blackstone fulfill many of the checklist criteria for inclusivity; however, they may significantly improve the LGBTQIA+ patient experience by implementing inclusive visuals, increasing the accessibility of clinic policies, and ensuring documentation that allows for open-ended responses.

**Abstract Topic:** Quality Improvement

**Poster #80**

# Chordoid Meningioma Presenting With Progressive Vision Loss: A Review of Prognostic Considerations

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**Abstract**
Chordoid meningiomas are a rare WHO grade II tumour subtype, comprising less than 1% of all meningiomas, with limited data to guide prognosis and management. This report presents a case of a male in his 60s who developed progressive visual disturbances and cognitive symptoms due to a large parieto-occipital chordoid meningioma invading the superior sagittal sinus. Despite initial subtotal resection and a relatively low Ki-67 index (3–4%), the tumour demonstrated rapid postoperative progression, necessitating repeat surgical debulking and planned adjuvant radiation therapy. Pathology analysis confirmed a chordoid meningioma without evidence of Castleman syndrome. This case highlights the aggressive and recurrent potential of chordoid meningiomas, even with lower proliferative indices, underscoring the importance of maximal safe resection, close postoperative surveillance, and the contribution of individual cases to the limited global literature to improve prognostic understanding and clinical decision-making.

**Abstract Topic:** Case Report

**Poster #81**

# Identifying the Barriers to Childhood and Adolescent Immunizations Through the Development of a Parent Survey

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**Abstract**
Childhood immunizations remain a cornerstone of preventive medicine; however, vaccination rates in underserved regions of California's Central Valley (Fresno, Kern, Kings, and Tulare counties) remain significantly below national averages. Omni Health reports vaccination completion rates as low as 12 percent compared to the national average of approximately 40 percent. Vaccine hesitancy is influenced by multifactorial barriers including limited health literacy, transportation challenges, language differences, cultural beliefs, and distrust in healthcare systems. The aim of this quality improvement project is to implement a parent-focused survey across 33 Omni Health clinics to identify modifiable barriers to childhood and adolescent immunization and inform targeted interventions to improve vaccination uptake.

This project utilized a Plan-Do-Study-Act framework to systematically identify and analyze barriers among parents or legal guardians of pediatric (ages 2–12) and adolescent (ages 13–17) patients who are non-compliant with recommended immunizations. Participants were identified through clinic records and contacted via the Omni Health corporate call center. A structured survey adapted from validated vaccine hesitancy tools was administered via phone, with translation services available. The questionnaire evaluated logistical barriers (transportation, clinic access, cost), informational barriers (vaccine literacy, misinformation exposure), experiential concerns (prior adverse events), and sociocultural influences (religious beliefs, perceived community norms). Demographic data including age, education, income, race/ethnicity, and primary language were collected in de-identified form. Composite barrier scores were calculated and analyzed using descriptive statistics, bivariate testing, and multivariate logistic regression to identify independent predictors of immunization status.

Our data revealed that 56.6% of respondents said "yes" to facing at least 1 barrier when attempting to complete childhood and adolescent vaccinations for their child. Many parents and/or guardians of patients who are non-compliant with recommended childhood and adolescent immunizations said "yes" when asked if they have heard or read negative media regarding vaccinations (7 of 30), if they were told vaccines were not safe (9 of 30) and if their child has a fear of needles (13 of 30). This highlights three categories as major barriers for the sampled population: social influence, vaccine education, and individual concerns.

In conclusion, this community-focused quality improvement initiative seeks to define actionable drivers of vaccine hesitancy in California's Central Valley. By identifying specific and measurable barriers, Omni Health can implement targeted interventions, focusing on patient education and strengthening provider-parent dialogue to improve childhood immunization rates and reduce preventable health disparities in underserved populations.

**Abstract Topic:** Quality Improvement

**Poster #82**

# Effect of Desk Exercise on Anxiety Level for Employee Wellness

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**Abstract**

**Introduction/Background**: Workplace anxiety can negatively affect employee well-being, productivity, and job satisfaction. Although physical activity has been shown to reduce anxiety and improve mental health outcomes, participation during the workday is often limited due to time constraints.1 Desk-based exercise ("deskercise") may provide a practical strategy to increase physical activity without disrupting workflow; however its effectiveness as a structured workplace intervention has not been well established. We hypothesized that increasing daily employee exercise duration at Camarena Health from 10 to 15 minutes will reduce mean Generalized Anxiety Disorder-7 (GAD-7) anxiety scores compared with baseline.

**Methods:** In this single-group longitudinal pre-post study at Camarena Health, desk-based employees (≥18 years of age) participated in a three month intervention increasing daily desk based exercise from 10 to 15 minutes. Anxiety was measured at baseline and monthly using the GAD-7. Changes in mean GAD-7 scores and prevalence of clinical anxiety were evaluated using descriptive statistics and inferential analyses.

**Results:** A total of 108 participants completed the GAD-7 survey across three time points (November n = 64; January n = 22; February n = 22). Mean GAD scores decreased from November (M = 6.45, SD = 5.74) to January (M = 3.50, SD = 4.21) and slightly increased in February (M = 4.32, SD = 4.59). A one-way ANOVA showed a significant difference in scores across months, $F(2,105) = 3.20$, $p = .045$, with a small effect size ($\eta^2 = .057$); however, Tukey HSD post hoc tests found no significant pairwise differences. Severe anxiety decreased from 9.4% in November to 0% in January and 4.5% in February. Clinical anxiety (GAD-7 ≥ 10) was reported by 30.6% of participants in November, 23.1% in January, and 18.8% in February, with no significant association between month and clinical anxiety status, $\chi^2(2) = 0.98$, $p = .613$. No significant correlations were found between GAD scores and desk exercise participation ($r = .131$, $p = .177$) or exercise outside the program ($r = .021$, $p = .827$).

**Conclusion:** Increasing daily deskercise time from 10 to 15 minutes was associated with a reduction in mean GAD-7 scores and a downward trend in clinical anxiety prevalence over time. Although pairwise differences were not statistically significant, the overall pattern suggests brief workplace physical activity may benefit employee mental health. These findings suggest that brief desk-based exercise interventions may be feasible in healthcare settings and warrant further investigation to determine their potential impact on staff well-being.

**Abstract Topic:** Quality Improvement

**Poster #83**

# Early-Onset Extrapyramidal Symptoms in an Adolescent Following Short-Term Aripiprazole Treatment

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**Abstract**

**Introduction/Background:** Although second-generation antipsychotics, such as aripiprazole, carry a lower risk of extrapyramidal symptoms (EPS) compared to first-generation antipsychotics, pediatric patients appear particularly susceptible to neurologic side effects. Meta-analytic data demonstrate a mean EPS incidence of 17.1% in children and adolescents treated with aripiprazole, with rates significantly higher than placebo for Parkinsonism and tremor. In pediatric schizophrenia trials, EPS-related events occurred in 25% of aripiprazole-treated adolescents versus 7% with placebo, with evidence of a dose-response relationship. We describe a 14-year-old male who developed orofacial dyskinesia and tremor after brief aripiprazole exposure, underscoring the need for vigilant movement monitoring when initiating antipsychotics in youth.

**Case:** A 14-year-old male with no prior psychiatric hospitalizations was placed on a 5250 hold for suicidal and nonspecific homicidal ideation, paranoia, and auditory hallucinations. Given his presentation and recent cannabis use, the differential included cannabis-induced psychotic disorder versus primary schizophrenia. Aripiprazole 5 mg daily was started and increased to 10 mg daily for persistent psychosis. Movement assessments using the Abnormal Involuntary Movement Scale (AIMS) were performed throughout admission.

**Results:** Five days after reaching 10 mg daily, the patient developed new tremor and orofacial movements—specifically tongue twitching and perioral muscle spasms that persisted during sleep. AIMS documented mild perioral abnormalities (score: 1). He had no previous antipsychotic exposure. His psychotic symptoms resolved during hospitalization. Aripiprazole was reduced to 5 mg daily, leading to improvement in abnormal movements. At discharge, he remained psychiatrically stable per parental report.

**Conclusion:** Extrapyramidal symptoms can emerge rapidly in children and adolescents on aripiprazole, even at modest doses. This case reinforces current guidelines recommending baseline and ongoing movement disorder assessments when initiating antipsychotic therapy in pediatric patients. Routine AIMS screening enables early detection of subtle movement disorders and facilitates prompt intervention.

**Poster #84**

# Mapping Valley Fever: Detection of Coccidioides in Fresno County Dust

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**Abstract**
Valley Fever (Coccidioidomycosis) is a fungal infection endemic to the southwestern United States. It is caused by two closely related species Coccidioides immitis and Coccidioides posadasii and transmitted via inhalation of soil-borne spores. With annual reported cases in California rising to approximately 8,000, high-risk groups include individuals with prolonged exposure to disturbed soil, such as agricultural and construction workers. This study aims to investigate Coccidioides prevalence in dust samples collected from Fresno and Clovis, regions where former farmland is being rapidly developed for residential and recreational use, creating optimal conditions for soil disruption and subsequent spore dispersal. Dust collection devices were installed at six sites in Fresno and Clovis to passively capture airborne dust particles. Samples were collected monthly from March 2025 through March 2026 and subjected to DNA extraction followed by nested PCR targeting Coccidioides, utilizing C. posadasii genomic DNA as the positive control. Results were visualized by gel electrophoresis, and bands at approximately 500 bp were interpreted as positive for Coccidioides DNA. Of 70 samples analyzed, two tested positive for Coccidioides. Both positive samples originated from a northeastern rural area. Samples from other sites, including active residential construction and more densely populated locations, were negative. Localized environmental factors such as undisturbed soil, microclimate conditions, or intermittent soil disturbance may have contributed to the detection in the rural setting, while the absence at sites close to residential construction may be due to differences in dust composition, sampling timing, or transient dispersal patterns. The study is ongoing, and several samples have produced inconclusive bands that require further analysis. Additionally, sequencing will be performed to validate PCR-based detection. Continued sampling and molecular testing are needed to better understand spatial and temporal patterns of Coccidioides distribution.

**Abstract Topic:** Public Health

**Poster #85**

# Exploring Gut Microbiome-Metabolic Interactions in Glycogen Storage Disorder Type I

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**Abstract**
Glycogen storage disorder type I (GSD I) is a rare genetic disease resulting from mutations in genes affecting glucose-6-phosphatase activity and glycogen/glucose homeostasis. There is currently no definitive cure for GSD I, and standard of care treatment involves the use of uncooked cornstarch to maintain normoglycemia, and patients must adhere to strict, lifelong dietary interventions. There is a need for a deeper understanding of the disease to develop more effective treatments that will also improve quality of life. However, current literature on GSD I and its clinical manifestations is limited, presumably due to its rare prevalence. Gut dysbiosis has been associated with several symptoms of GSD I. However, a clear underlying mechanism linking the two has not been established yet. This study aims to explore the basis of common clinical manifestations of GSD I and how they may be related to gut dysbiosis. A literature review was conducted using PubMed and OpenEvidence to identify articles detailing the pathogenesis of GSD I and potential connections between gut microbiota and its clinical symptoms. The hallmark presentations of GSD I include hypoglycemia, lactic acidosis, and hepatomegaly. Patients may also present with hyperuricemia, anemia, and hypercholesterolemia. Altered gut environment due to restrictive dietary management and metabolic dysregulation exerts significant stress on the gut microbiome. In particular, bacterial species that produce short-chain fatty acids such as Bacteroides and Faecalibacterium are decreased, allowing for a shift in the microbiome which facilitates increased colonization by potentially pathogenic species including Escherichia and Shigella. This dysbiosis contributes to inflammatory bowel disease-like symptoms in patients with GSD I. Additionally, studies have demonstrated associations between gut dysbiosis and insulin resistance, hyperuricemia, and anemia. Thus, gut microbiome alterations may contribute to the clinical manifestations of GSD I and represent a potential avenue for future research.

**Poster #86**

# High-Potency Cannabis–Related Psychosis in a Black Adolescent: Diagnostic Challenges and Transition Risk to Early-Onset Schizophrenia

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**Abstract**
**Introduction/Background:** Cannabis potency has increased dramatically in recent years, coinciding with rising adolescent use rates globally. High-potency cannabis is associated with an earlier onset of psychosis and an increased risk of transition to chronic psychotic disorders. Minority youth face disproportionate risks due to access disparities, social determinants of health, and diagnostic bias within mental health systems. This case illustrates the diagnostic complexity and the short-term treatment response in an adolescent presenting with acute psychosis following cannabis use in the context of familial schizophrenia risk.
**Case:** A 16-year-old Black male with no prior psychiatric hospitalization was placed on a 5250 hold for danger to self following an acute onset of disorganized behavior, grandiosity, and auditory hallucinations after recent cannabis use. During admission, psychosis improved with risperidone and supportive care, though grandiosity and disorganized behavior showed improvement shortly before discharge. Differential diagnosis included cannabis-induced psychotic disorder (CIPD) versus early-onset schizophrenia (EOS), complicated by family history of schizophrenia and patient's race.
**Discussion:** Distinguishing cannabis-induced psychotic disorder (CIPD) from early-onset schizophrenia (EOS) in adolescents is challenging, particularly with genetic vulnerability. CIPD often presents abruptly with preserved premorbid function, whereas EOS is typically insidious. However, up to 50% of CIPD cases convert to chronic psychosis, especially with family history. High-potency THC disrupts adolescent dopaminergic and endocannabinoid systems, increasing psychosis risk. Black adolescents face additional disparities, including delayed behavioral health diagnosis and higher rates of schizophrenia labeling once psychosis emerges, reflecting structural racism and diagnostic bias that may contribute to premature diagnostic closure and disproportionate treatment intensity.
**Conclusion:** This case underscores the critical need for early screening, culturally competent care, and cautious diagnostic formulation when managing psychosis in minority adolescents following cannabis use. Given the high transition risk from CIPD to chronic psychosis, particularly in youth with a family history, longitudinal follow-up is essential to differentiate substance-induced psychosis from emerging primary psychotic disorders and guide long-term management. Addressing systemic barriers to care and diagnostic bias is paramount to improving outcomes for vulnerable populations. Public health efforts should emphasize prevention through education about high-potency cannabis risks, particularly for adolescents with a family history of psychotic disorders.

**Abstract Topic:** Case Report

**Poster #87**

# Implementing an Educational Wound Care Pamphlet in the Community

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**Abstract**
Wound care knowledge is an important component of health literacy, yet many individuals without medical training lack education on proper wound assessment and management. This lack of knowledge increases the risk of infection, delayed healing, and unnecessary healthcare visits. This project evaluated whether an educational wound care pamphlet improved participants' knowledge and comfort with wound care practices using pre- and post-questionnaires and a two-week follow-up survey to assess knowledge retention.

Participants were eligible if they were 18 years of age or older and did not have a license in medical training. Participation was incentivized through a raffle for a $25 gift card. Participants could complete the study using either a paper copy of the survey or a QR code linked to a Microsoft Form. After providing informed consent and demographic information, participants completed a 9-question survey assessing general wound care knowledge. They were then provided with a high-yield educational pamphlet written at a fifth-grade reading level. After reviewing the pamphlet, participants completed a post-survey consisting of the same 9 questions.

A total of 31 participants completed the surveys. The mean pre-education score was 4.7 (SD 1.7), which increased to 6.7 (SD 2.3) following the intervention. A paired t-test demonstrated a statistically significant improvement in scores ($t(30) = 5.75$, $p < 0.001$). Item-level analysis using McNemar's exact test was then performed. Survey questions were grouped into three categories: those showing statistically significant improvement, those with high baseline correct responses (ceiling effect), and those requiring greater emphasis during the educational intervention. Four, three, and two questions fell into these categories, respectively. For example, Question 4 showed an increase from 10 percent correct responses before the intervention to 48 percent after the intervention, representing a greater than 400 percent improvement ($p = 0.0001$). Although limitations in recruitment and survey completion were encountered, the educational intervention successfully improved community members' understanding of essential principles of wound assessment and management.

**Abstract Topic:** Public Health

**Poster #88**

# Establishing a Student-Led Initiative for Rare Disease Education and Advocacy

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**Abstract**

Rare diseases are commonly underrepresented in medical care due to misdiagnosis, little research, and limited advocacy. National Organization for Rare Disorders (NORD) is a non-profit organization that advocates and provides support for rare disease families. NORD's student division, Students for Rare, has multiple chapters across high schools, universities, and medical schools in the United States. California Health Sciences University College of Osteopathic Medicine (CHSU-COM) initiated a chapter of Students for Rare on their campus to promote awareness and advocacy for rare diseases in the California Central Valley--a large medically underserved area.

CHSU-COM's Students for Rare chapter encourages medical students to understand the importance of rare diseases through educational sessions. Core programming includes fellow student speakers and guest physician speakers who share their experiences in the rare disease field. Students for Rare is also active on social media through Rare Spotlight--an interactive trivia game that highlights a specific rare disease each month. This activity had over 30 participants in one semester. These educational events have garnered more interest in rare diseases on campus, and club membership has increased steadily since initiation of the organization.

Establishing Students for Rare at CHSU-COM is important to the advancement of rare disease diagnosis and research because the organization inspires future physicians to recognize various rare diseases. The organization plans to implement participant feedback at future events to facilitate more student involvement and continuously improve as a club. In addition to engaging students on campus, Students for Rare hopes to continue raising awareness through educational events and expand out of campus to make a bigger impact in the local community. Students for Rare serves as a beneficial enrichment to core academic curriculum and is a valuable mechanism for empowering the next generation to advocate for individuals with rare diseases.

**Poster #89**

# Socioeconomic and Geographic Patterns of OB/GYN Clinic Distribution in Fresno County, California

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**Abstract**

**Introduction:** Access to OB/GYN services is essential for reproductive and maternal health, yet clinic distribution may not align with community needs. This study evaluates potential disparities in clinic placement in Fresno County, California, by comparing communities with and without OB/GYN services across socioeconomic status (SES), demographic, and geographic indicators. This analysis explores whether clinic placement disproportionately affects rural and socioeconomically disadvantaged communities.

**Methods:** OB/GYN clinics were identified through publicly available sources, verified for activity, and geocoded for Geographic Information System (GIS) mapping. Zip Code Tabulation Areas (ZCTA) level socioeconomic data was obtained from the American Community Survey 2023 five-year estimates. ZCTAs were classified as "Clinic-Present" (≥ 1 clinic) or "Clinic-Absent." Variables included percentages of: Hispanic residents, agricultural workers, individuals below poverty level, educational attainment, limited English proficiency, households without internet access, non-insured and unemployed individuals. SES quartiles (Q1 = low, Q4 = high) were synthesized into a composite index. Clinic and non-clinic ZCTAs were compared using descriptive statistics, t-tests, Mann-Whitney tests, and binary logistical regression to identify predictors of clinic presence.

**Results:** Areas with OB/GYN clinic presence had higher SES index scores than clinic-absent areas (25.06% vs 20.38%), suggesting that clinics tend to be located in more socioeconomically advantaged areas ($p = 0.074$, 90% CI). Agricultural employment was substantially lower in clinic-present ZCTAs (7.494% vs 18.924%, $p = 0.028$). Logistic regression identified agricultural worker proportion as a significant predictor ($p = 0.047$), with a 6% decrease in odds of clinic presence for every 1% increase in agricultural employment. Clinic-present ZCTAs also had fewer Hispanic residents (52.99% vs 61.62%, $p = 0.207$) and higher educational attainment (24.45% vs 17.85%, $p = 0.104$). Poverty, income, unemployment, and uninsured rates were comparable between ZCTAs. Additionally, GIS mapping demonstrated visible central geographic clustering of clinics.

**Conclusion:** The analysis reveals a consistent inverse relationship between SES indicators and OB/GYN clinic presence. Overall, clinic placement disproportionately favors high SES populations and underserves marginalized communities and agricultural workers in rural areas, highlighting geographic and socioeconomic disparities in women's healthcare.

**Abstract Topic:** Public Health

**Poster #90**

# Exploring the Relationships Among Depression, Obesity, and Sleep Disorders and Their Associations with Low Testosterone and Testosterone Replacement Therapy (TRT) in Adult Men

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**Abstract**

Low testosterone levels in adult men have been associated with a wide range of physical and psychological health conditions, including depression, obesity, and sleep disorders. Although testosterone replacement therapy (TRT) has become increasingly utilized in clinical practice, existing literature examining the relationships between low testosterone, TRT, and mental or metabolic health outcomes remains fragmented. Differences in study design, population characteristics, and measurement of outcomes have made it difficult to synthesize findings and draw consistent conclusions regarding the effects of TRT on these conditions. The objective of this scoping review is to map the existing literature examining the relationships between low testosterone, TRT, and depression, obesity, and sleep disorders in adult men (18 years and older), while identifying key research gaps and inconsistencies.

A comprehensive search strategy was developed using multiple electronic databases, including PubMed, Embase, Google Scholar, and Dimensions, in addition to selected grey literature sources. Search terms included combinations of keywords and Medical Subject Headings related to testosterone, testosterone replacement therapy, hypogonadism, depression, obesity, and sleep disorders. Following database searches, citations were deduplicated and imported into Rayyan for screening. Title and abstract screening is being conducted by independent reviewers using predefined inclusion and exclusion criteria. Eligible studies include English-language human studies involving adult men with low testosterone or those receiving TRT, where depression, obesity, or sleep outcomes are examined.

Initial searches yielded 5,561 records. After deduplication, 5,306 citations remained for screening. Title and abstract screening is currently in progress. Preliminary screening has identified a broad and diverse body of literature examining the relationship between testosterone levels, TRT, and various metabolic and psychologic outcomes. Studies vary widely in design, including observational studies, randomized trials, and clinical cohort analyses. Progress to date shows that of the 2,338 articles screened, 80% were agreed upon as included (756) or excluded (1,124), while conflicts (347) and maybes

(111) remained relatively low at 20%, supporting the consistency of the screening process.

This scoping review aimed to determine a possible relationship between either low testosterone or TRT and depression, obesity, and sleep disorders in adult men. Trends are starting to indicate a relationship between these, but the review must be completed before any conclusions may be drawn. By mapping the current evidence base, this study aims to identify gaps in the literature and highlight areas requiring further research to better understand the clinical implications of TRT for mental and metabolic health outcomes.

**Abstract Topic:** Scoping Review

**Poster #91**

# Computer-Assisted and Artificial Intelligence-Based Technologies in Head and Neck Cancer Reconstruction: A Systematic Review of Clinical and Patient-Reported Outcomes

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**Abstract**

**Background:** Head and neck cancer reconstruction demands precise restoration of craniofacial form and function, yet outcome assessment remains reliant on subjective evaluation with poor inter-rater standardization. Computer-assisted and artificial intelligence (AI)-based technologies offer objective, reproducible alternatives for surgical planning, intraoperative guidance, and outcome quantification. This systematic review evaluates the clinical utility, diagnostic accuracy, predictive performance, and patient-reported outcomes of these technologies in head and neck cancer reconstruction.

**Methods:** We searched PubMed, Embase, and Cochrane for studies published between January 2010 and January 2026. Eligible studies applied computer-assisted, 3D, or AI-based tools to adult patients undergoing reconstructive surgery following head and neck oncologic resection. Of 892 records identified, 14 studies met inclusion criteria (1 RCT, cohort/matched-pair analyses, and case series; n = 5-311 patients per study across 8 countries). Risk of bias was assessed using the Newcastle-Ottawa Scale for cohort studies and the Joanna Briggs Institute checklist for case series.

**Results:** All 14 studies demonstrated clinical feasibility; 12 reported statistically significant improvements ($p < 0.05$). Virtual surgical planning and CAD/CAM were utilized in 12 studies, 3D printing in 8, and immersive visualization (AR/VR) in 4. Machine learning models achieved AUC 0.93-0.99 for oncological outcome prediction, with 95.1% accuracy for distant recurrence and 98.6% for new primary detection. Digital tools improved diagnostic accuracy by 29.6% and procedural precision by 36.2%. Reconstructive accuracy was superior with digital planning (bone marker deviation: 4.11 vs. 6.92 mm, $p < 0.05$). Operative time decreased by a mean of 1.7 hours. Complication rates were lower in digital groups (plate displacement: 12% vs. 37%). Patient-reported outcomes were consistently favorable, with FACE-Q scores reaching 80/100 for overall appearance.

**Conclusion:** Computer-assisted and AI-driven technologies are clinically feasible and associated with significant improvements in reconstructive precision, operative efficiency, complication rates, and patient satisfaction. Evidence is constrained by small sample sizes and methodological heterogeneity. Multicenter RCTs with standardized outcome measures and long-term follow-up are needed to confirm definitive clinical advantages.

**Abstract Topic:** Systematic Review

**Poster #92**

# Barriers to Annual Wellness Visit Attendance: A Quality Improvement Survey Project at OMNI Health

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**Abstract**

**Introduction and Background**

Annual Wellness Visits (AWVs) are preventive health appointments recommended for adults to promote early disease detection and support chronic disease management. Despite their recognized importance, many patients do not attend AWVs, and the factors contributing to this gap remain poorly understood. This project aims to identify patient-level barriers and beliefs related to AWVs at OMNI Health, based on the hypothesis that logistical challenges, limited awareness, and perceived costs contribute to low attendance rates. The SMART aim is to determine the top three modifiable barriers to AWV completion in order to guide targeted interventions and improve participation.

**Methods**

We conducted a telephone-based survey of adult patients receiving care at OMNI Health who have yet to complete their AWV. Medical students contacted patients and obtained verbal consent prior to participation. The survey assessed awareness and prior experience with AWVs, perceived barriers and beliefs, demographic characteristics, and access to technology. Responses were collected using yes/no questions, multiple choice items, and Likert scale measures. Participation was voluntary, and all responses were kept confidential and de-identified for analysis.

**Results**

A total of 62 survey responses were obtained from 482 outreach calls (response rate: 12.9%). Among respondents, 41 reported being aware of Annual Wellness Visits (AWVs), while only 13 indicated they had been contacted by the clinic to schedule one.
The most commonly reported barriers to AWV attendance were lack of awareness about what an AWV entails and the perception that an AWV was not personally necessary. Despite this, 49 respondents agreed or strongly agreed that AWVs are valuable. Perceived cost was identified as a significant barrier by 14 respondents, while fewer participants cited scheduling convenience (n=6) and communication comfort (n=3) as concerns.

The respondent population was predominantly female (80%), with 48% identifying as Caucasian and 30% as Hispanic or Latino. Most participants were Medicaid recipients (89%). In terms of employment status, 49% were retired and 40% reported being disabled or unable to work. Notably,

86.7% of respondents had attended more than three medical visits in the past year, and 50 reported having access to a device capable of supporting telehealth.

**Conclusion**

This survey may not fully represent the broader Central Valley patient population served by OMNI Health. Because outreach calls were conducted during standard working hours, respondents were more likely to be retired or unable to work, leading to overrepresentation of these groups. Despite this limitation, the findings suggest that limited awareness, competing health priorities, and insufficient clinic outreach for scheduling AWVs are key factors influencing attendance. Identifying these barriers provides actionable insights to inform targeted interventions aimed at increasing participation in preventive care.

**Abstract Topic:** Quality Improvement

**Poster #93**

# Medical Student Insights from an Early Pilot of Stanford Chronic Disease Modules

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**Abstract**

**Introduction & Background:**

The Stanford Youth Diabetes Coaches Program (SYDCP) is a preventive health education initiative that improves youth health literacy through near-peer teaching models. This project represents an early pilot study of newly adapted chronic disease modules for the Summer 2025 Oakland cohort, taught by a medical student (Song-Ah Baek, OMS II), with reflection on both educational outcomes and instructor experience. By embedding preventive health education in schools, this project aims to address gaps in preventive care access that disproportionately affect medically underserved communities, where structural and socioeconomic barriers limit engagement in preventive services.

**Methods:**

Four 1-hour preventive disease modules were developed by SYDCP team and delivered to high school students in Oakland. Module topics included heart disease, stroke, cancer, and infectious disease, with the infectious disease session emphasizing vaccine-based prevention.

37 students participated in the study and post-lesson surveys were administered after each session. Surveys included four Likert-scale items (1 = Strongly Agree to 5 = Strongly Disagree) assessing usefulness, engagement, acquisition of new knowledge, and applicability to others. Post-survey responses were analyzed and compared across the four lessons.

**Results:**

The cohort consists of high school students with the majority (78.3%) in 10th and 11th grades, with 89.2% female and 81.1% identifying as Hispanic. Race identifiers were White 21.6%, Black or African American 10.8%, Asian or Asian American 8.1%, and American Indian or Alaska Native 5.4%. 43.8% reported coming from a disadvantaged background, 12.5% reported living in a rural area.

Across all four lessons, more than 90% of participants agreed or strongly agreed that lessons were

useful, interesting, and provided new knowledge. When individual lessons were compared, the lesson on infectious diseases (including vaccine content) received higher ratings (100%) for usefulness compared to the other modules.

**Conclusion:**
A recent Spring 2026 cohort was successfully implemented with Central Valley high school students with ongoing instruction from medical students and residents. The cohort benefited from active learning strategies—including case-based discussions and personal anecdotes—to help maintain student interest and attendance throughout the program. Subsequent analysis will enable further evaluation of the curriculum's effectiveness across diverse demographic and healthcare access settings

**Abstract Topic:** Public Health

**Poster #94**

# Analyzing the Effect of Training CHSU-COM Students on an Online Resource Directory

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**Abstract**

**Introduction:** Unmet basic needs such as housing, food, and access to healthcare contribute significantly to poor health outcomes, particularly in underserved communities such as Fresno County, California, where gaps persist in connecting individuals to available resources. Despite the existence of community services, they remain underutilized due to limited awareness and accessibility. Rotating medical students are uniquely positioned to bridge this gap due to their ability to spend more time with patients as needed; however, formal training in resource navigation is either limited or nonexistent.

**Methods/Materials:** This study evaluated the impact of a brief educational intervention on third-year osteopathic medical students at California Health Sciences University, focusing on the use of findhelp.org, a web-based resource directory. Participants completed anonymous pre- and post-intervention surveys using a 5-point Likert scale to assess knowledge, confidence, familiarity, and anticipated use of the community resource tool.

**Results:** A total of 101 students completed the pre-survey and 80 completed the post-survey. Analysis using the Wilcoxon signed-rank test demonstrated statistically significant improvements in mean result values in multiple domains, including confidence in providing resource information (3.16 to 4.05, $p<0.001$), familiarity with the platform (2.25 to 4.05, $p<0.001$), ability to navigate the directory (2.13 to 4.14, $p<0.001$), prior use of similar tools (2.01 to 3.06, $p<0.001$), likelihood of incorporating the resource into clinical practice (3.06 to 4.20, $p<0.001$), and belief that such tools improve patient outcomes (3.39 to 4.34, $p<0.001$). A smaller but statistically significant increase was also observed in anticipated practice in resource-limited settings ($p=0.007$). No significant changes were observed in frequency of encountering patients in need or time constraints in providing referrals, suggesting the intervention improved preparedness without increasing perceived burden.

**Discussion:** These findings suggest that a brief, structured training can significantly enhance medical students' preparedness to address social determinants of health, supporting the integration of resource navigation education into medical school curriculum to improve patient care.

**Poster #95**

# Structured Low-Dose Aspirin Protocol Improves Screening, Prescribing and Maternal Outcomes A quality improvement–informed quasi experimental pre–post study.

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**Abstract**

**INTRODUCTION:** Preeclampsia is a leading cause of maternal and perinatal morbidity and mortality. Evidence suggests abnormal placentation involving angiogenic imbalance, endothelial dysfunction, inflammation, and thrombosis as key mechanisms. Low dose aspirin (LDA), through cyclooxygenase1 inhibition, reduces platelet aggregation and inflammation. Randomized trials and meta-analyses demonstrate that early LDA initiation reduces the risk of preterm preeclampsia; however, structured LDA screening and prescribing protocols remain limited in federally qualified health centers.

**PURPOSE OF STUDY**: To evaluate the feasibility and effectiveness of a structured LDA screening and prescribing protocol in an FQHC and assess its impact on preeclampsia, gestational hypertension (GHTN), and preterm birth among patients.

**METHODS:** We conducted a quasi-experimental pre–post cohort study comparing pregnancy outcomes before and after implementation of a structured low dose aspirin (LDA) screening and prescribing protocol at a federally qualified health center. Pregnant patients receiving care prior to protocol implementation served as historical controls, while those receiving care after implementation were prospectively screened according to standardized criteria. Primary outcomes included preeclampsia, gestational hypertension (GHTN), and preterm birth. Postimplementation adherence to LDA was assessed.

**RESULTS:** Ninety-two patients were included in the pre-implementation cohort; 51 were prescribed LDA, with 9.8% developing preeclampsia and 4.3% experiencing preterm birth. Adherence to LDA was not available for this cohort. Postimplementation, 156 patients were screened; 7 were excluded, and 120 met criteria for LDA, of whom 117 were prescribed aspirin. Among those prescribed LDA, 84 were adherent, and 33 were noncompliant. Preeclampsia incidence was significantly lower among adherent patients compared with noncompliant patients (3.6% vs 15.2%; p=0.0329). Rates of GHTN and preterm birth did not differ significantly between groups (p=0.2016 and p=1.0, respectively).

**CONCLUSIONS:** Implementation of a structured LDA screening and prescribing protocol in a federally qualified health center was feasible and associated with improved adherence and a significant reduction in preeclampsia among compliant patients. No significant differences were observed in rates of gestational hypertension or preterm birth. These findings support structured LDA protocols as an effective quality improvement strategy to reduce preeclampsia risk in high risk, safety net populations, with larger studies needed to assess effects on additional maternal outcomes.

**Abstract Topic:** Quality Improvement

**Poster #96**

# Signal to Structure: ECG-Linked Prediction of Structural Heart Disease

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**Abstract**

**Background:** Electrocardiography (ECG) is inexpensive, rapidly obtained, and widely used across clinical settings. Although primarily interpreted as a test of cardiac electrical activity, routine ECG-linked variables may also reflect broader physiologic and structural cardiac processes. Structural heart disease (SHD) is clinically important and typically requires echocardiography for confirmation. We evaluated whether routine ECG-linked features could be used to generate an interpretable estimate of SHD risk that may support echocardiographic prioritization.

**Methods:** We conducted a retrospective prediction study using the EchoNext dataset, which links ECG data to echocardiographic labels. The dataset included 100,000 ECGs from 36,286 unique patients. Reported analytic splits included 72,475 ECGs for training, 4,626 for validation, and 5,442 for testing. The primary outcome was moderate-or-greater structural heart disease. The main model used 7 routine predictors: sex, ventricular rate, atrial rate, PR interval, QRS duration, corrected QT, and age at ECG. Evaluation included AUROC, AUPRC, Brier score, calibration, decision-curve analysis, and subgroup analyses by sex, race/ethnicity, and clinical setting.

**Results:** The logistic-regression model demonstrated moderate performance, with AUROC values of 0.706 in training, 0.735 in validation, and 0.748 in testing. Test AUPRC was 0.677 and test Brier score was 0.208. Outcome prevalence remained stable across held-out cohorts, at 43.0% in validation and 42.6% in test. Calibration showed generally good agreement between predicted and observed outcomes, with only modest miscalibration. Decision-curve analysis demonstrated higher net benefit than treat-all and treat-none strategies across a clinically meaningful range of thresholds, with greatest advantage at intermediate thresholds. SHD prevalence varied by care setting, highest among inpatients and lowest in outpatient settings.

**Conclusions:** Routine ECG-linked variables can be organized into an interpretable estimate of structural heart disease risk. In this retrospective analysis, a 7-variable logistic-regression model showed moderate discrimination, supportive calibration, and favorable decision-curve performance. These findings suggest that simple ECG-linked models may help connect routine ECG information to consideration of echocardiographic prioritization, while not replacing imaging or clinician judgment. Future work should include external validation, component-outcome analysis, comparison with waveform-based or multimodal approaches, and prospective assessment of workflow impact.

**Keywords:** electrocardiography; structural heart disease; echocardiography; logistic regression; clinical prediction model; risk stratification; decision-curve analysis; calibration; EchoNext; cardiovascular artificial intelligence.

**Abstract Topic:** Observational Quantitative Study

**Poster #97**

# Are California Hispanics/Latinos Facing Colorectal Screening Barriers at Critical Prevention Age?

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**Abstract**

**Background:** Colorectal cancer (CRC) is a growing concern for all people, but especially for the Hispanic/Latino community. With over 17,000 projected cases for Hispanics/Latinos in 2024, having screening access is essential; however, this community's low CRC screening rates can contribute to more advanced diagnoses and influence their chance of survival (American Cancer Society, 2024; Santiago-Rodríguez et. al, 2023). This study aims to contribute to the limited scientific literature about CRC screening adherence in California Hispanics/Latinos and to investigate associations in a person's demographic and health behaviors.

**Method:** This study utilized data from the 2022 California Health Interview Survey to evaluate CRC screening barriers in Hispanics/Latinos, a critical time point due to the COVID-19 pandemic's impact on preventative health services. Through odds ratio and multinominal logistic regression models, this study sought to understand how age, citizenship, insurance status, gender, and socioeconomic status can predict California Hispanic's/Latino's CRC screening completion.

**Results:** Multinomial logistic regression analyses identified several demographic factors significantly associated with CRC screening completion among California Hispanics/Latinos. Individuals aged 45–54 had significantly lower odds of completing CRC screening compared to older age groups. Additionally, uninsured individuals were substantially less likely to report CRC screening completion compared to those with health insurance. Non-citizens also demonstrated lower screening rates relative to naturalized citizens. Socioeconomic status further influenced screening behavior, with lower-income individuals exhibiting reduced likelihood of screening adherence. These findings collectively suggest that both structural and demographic factors contribute to disparities in CRC screening uptake.

**Conclusions:** Understanding demographic barriers can guide health programs and policies to improve access to life-saving screenings in high-risk populations. There is a need to address communities' awareness of the U.S. Preventive Task Force's suggested age change of 50 to 45 for CRC screenings and reevaluate its efficacy (Shafique et al., 2024). Future CRC studies should implement an "intersectional perspective" by looking at both demographic variables and qualitative variables (e.g. cultural beliefs) to identify how CRC screening barriers impact marginalized populations (Cofie et al., 2020, p. 461).

**Abstract Topic:** Public Health

**Poster #98**

# Smartwatch-Based Electrocardiogram Detection of Atrial Fibrillation

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**Abstract**

**Background:** Atrial fibrillation (AF) is the most common treated cardiac arrhythmia in the United States, contributing substantially to morbidity, mortality, and healthcare costs. AF is associated with significant complications, including ischemic stroke and heart failure, and often occurs in patients with underlying cardiovascular risk factors such as hypertension, diabetes, and structural heart disease. Given its variable presentation, from asymptomatic to life-threatening, early detection remains a critical component of effective management. The widespread adoption of wearable technologies has introduced new opportunities for scalable, noninvasive AF screening in the general population.

**Objective:** This review aims to evaluate the role of smartwatch-based electrocardiogram (ECG) technologies in the detection of atrial fibrillation, with a focus on device functionality, regulatory considerations, and current evidence regarding diagnostic performance.

**Methods:** A narrative review of the literature was conducted, synthesizing data from regulatory documents, clinical validation studies, and publicly available manufacturer specifications. Key areas of focus included smartwatch ECG technology, photoplethysmography (PPG)-based rhythm detection, US Food and Drug Administration (FDA) regulatory pathways, and reported sensitivity and specificity of commercially available devices.

**Results:** Smartwatches from major manufacturers, including Apple, Samsung, and Withings, incorporate PPG and single-lead ECG capabilities to detect irregular heart rhythms and classify episodes as sinus rhythm, atrial fibrillation, or inconclusive. These devices have received FDA clearance as Class II medical devices or software as a medical device (SaMD), enabling over-the-counter use for AF screening. Reported diagnostic performance varies, with sensitivity and specificity estimates of approximately 85% and 75% for Apple and Samsung devices, and 58% and 75% for Withings devices. Despite their accessibility and scalability, limitations include incomplete detection of short-duration AF episodes, potential for inconclusive readings, and reliance on user engagement. Additionally, evolving software algorithms raise ongoing regulatory and cybersecurity considerations.

**Conclusions:** Smartwatch-based ECG technologies represent a promising adjunct for the early detection of atrial fibrillation, offering a widely accessible and user-friendly screening tool. However, these devices are not intended to provide definitive diagnoses and should be integrated into clinical care with appropriate patient education and confirmatory testing. While current evidence supports their potential utility, further independent validation studies and long-term outcome data are needed to clarify their role in improving cardiovascular outcomes and reducing healthcare burden.

**Abstract Topic:** Review

**Poster #99**

# Dermatologic Manual for Medically Underserved Individuals in Eastern Africa

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**Abstract**

**Introduction/Background:** Dermatologic conditions account for a significant portion of outpatient visits worldwide, yet physicians in medically underserved areas often manage these conditions without access to specialized dermatology training or resources. Existing dermatologic reference materials have historically underrepresented skin of color, limiting their applicability in diverse and resource-limited settings. The prevalence of infectious dermatoses and tropical diseases in Eastern Africa differs markedly from that seen in higher-income settings, contributing to delayed or inaccurate care. This project aims to address gaps in dermatologic care for individuals in Tanzania and surrounding regions who have limited access to dermatology specialists, with the goal of improving recognition of conditions in Fitzpatrick skin types IV-VI and supporting timely, appropriate clinical management.

**Methods:** The Fitzpatrick skin type classification system guided the selection of clinical images for this manual. A structured literature review was conducted to synthesize clinical management recommendations from established guidelines and peer-reviewed literature, adapted to reflect local resource availability. Clinical images were sourced from databases including DermNet and the Skin of Color Atlas, as well as locally obtained images. Conditions were organized by etiology and included deidentified images to support recognition and diagnosis.

**Results:** A comprehensive dermatologic reference manual was developed, emphasizing presentations consistent with Fitzpatrick skin types IV-VI as seen in the Tanzanian population. The manual addresses high-burden disease categories including fungal, parasitic, bacterial, viral, and HIV-associated dermatoses, as well as inflammatory and systemic conditions. Each condition entry includes clinical presentation, etiology, risk factors, management options, complications, and prognosis. The manual incorporates regionally prevalent infections and conditions that are frequently misdiagnosed or underdiagnosed in resource-limited settings, offering accessible clinical guidance tailored to local practice constraints.

**Conclusion:** This dermatologic manual addresses a critical gap in accessible, skin-of-color-inclusive reference materials for clinicians in Eastern Africa, and has the potential to enhance early detection and timely management of dermatologic conditions, ultimately reducing preventable morbidity and mortality in an underserved population

**Abstract Topic:** Public Health

**Poster #100**

# Impact of Free Health Screenings on Health System Engagement Among Seniors

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**Abstract**

**Introduction and Background:** Residents of California's Central Valley face significant healthcare challenges, including cost, limited access, and provider shortages. In 2024, 63% reported delaying or foregoing care due to cost, which is higher than other regions in California. Free community health screenings may improve outcomes by promoting early detection and increasing access to preventive care. This study evaluates whether such screenings influence seniors' knowledge, perceived barriers, and intent to follow up with a primary care provider (PCP).

**Methods:** This survey-based quality improvement study included adults aged ≥50 years attending a free health screening event. Participants completed anonymous pre- and post-intervention surveys linked by a self-generated code. Baseline measures included health status, access to care, and barriers to care. Participants then received standardized screenings and education from medical students under physician supervision. Post-surveys assessed knowledge, intent to seek care, and satisfaction.

**Results:** Nine adults participated (N = 9). McNemar's test was not performed due to the absence of discordant pairs, indicating no change in reported barriers. However, knowledge and intent improved. Over half (55.6%) reported learning new information, and all participants reported improved understanding of PCPs and satisfaction with the experience. One-third (33.3%) intended to make health-related changes. Most participants (n = 8) had a PCP. Among these individuals, 62.5% reported learning something new and 37.5% intended behavior changes. The participant without a PCP reported neither outcome. Two-thirds expressed intent to attend future checkups, though those with multiple barriers were less likely to do so.

**Conclusion:** Free health screenings improved knowledge, satisfaction, and intent to engage in care but did not change perceived barriers. The small sample size limits statistical significance and generalizability. Larger studies are needed to assess the impact of free screenings on follow-up with primary care providers.

**Abstract Topic:** Quality Improvement

**Poster #101**

# Lower Extremity Injuries in Adult Pickleball Players: A Systematic Review of Injury Types, Mechanisms, and Risk Factors

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**Abstract**

**Background:** Pickleball is one of the fastest-growing sports in the United States, particularly among adults aged 50 and older. As participation has increased, so have reports of musculoskeletal injuries, with the lower extremity frequently identified as the most commonly affected region. Despite growing clinical awareness, no systematic review has comprehensively examined the types, mechanisms, and risk factors associated with lower extremity injuries in adult pickleball players.

**Methods:** A systematic review was conducted following PRISMA guidelines. PubMed, MEDLINE, EMBASE, and Google Scholar were searched for peer-reviewed articles published between 2004 and 2025. Studies were included if they reported pickleball-specific injury data in adults aged 18 years or older and addressed lower extremity injuries, injury types, mechanisms, or risk factors. Fifteen studies met inclusion criteria and were independently reviewed by all authors. Findings were synthesized narratively across four thematic categories.

**Results:** Sprains/strains (17-31%) and fractures (28-33%) were the most commonly reported injury types. Achilles tendon rupture accounted for 39.4% of injuries in one study of elderly players. Falls were the leading mechanism (up to 65.5%), followed by lunging (30.9%) and foot/ankle inversion (15.5%). Age over 50 was a consistent risk factor. Males sustained more soft tissue injuries, while females were disproportionately affected by fractures ($p < 0.001$).

**Conclusion:** Lower extremity injuries in pickleball are common and disproportionately affect older adults. Falls and rapid directional movements are the primary mechanisms. These findings support targeted prevention strategies including structured warm-up protocols, proprioceptive training, and footwear optimization for recreational players.

**Abstract Topic:** Basic Science

**Poster #102**

# NADPH Oxidase Biochemistry, Pathological Consequences, and Potential Therapeutic Applications

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**Abstract**

This literature review provides an overview of the nicotinamide adenine dinucleotide phosphate (NADPH) oxidase enzyme family, including its seven core members and essential accessory subunits required for enzymatic activation. The poster presentation summarizes the biochemical functions, tissue distribution, and diverse physiological roles of NOX enzymes, with particular emphasis on their contribution to reactive oxygen species production and redox signaling. The paper further examines the pathological consequences of NOX overactivation across multiple disease states and highlights emerging research on isoform-specific NOX inhibitors as potential therapeutic strategies.

Of the seven members of the enzyme family, this presentation focuses on Dual oxidase 1 (DUOX1) and dual oxidase 2 (DUOX2) that generate hydrogen peroxide, a key reactive oxygen species regularly involved in lung and thyroid function. DUOX1 is primarily expressed in epithelial tissues of the respiratory tract and skin, where it supports mucosal immunity, wound healing, and epithelial repair. Dysregulation of DUOX1 has been associated with inflammatory airway and skin diseases. DUOX2 is highly expressed in the thyroid and is essential for thyroid hormone synthesis. DUOX2 dysfunction has been found to be linked to congenital hypothyroidism and emerging associations with malignancies such as pancreatic cancer. In this poster, we will specifically discuss the pathophysiological relevance of DUOX1 and DUOX2 enzymes and potential inhibitors that may facilitate disease management.

**Abstract Topic:** Basic Science

**Poster #103**

# When Yellow Signals Red: Untreated Chronic Hepatitis B and Alcohol Use Presenting as Fulminant Acute-on-Chronic Liver Failure

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**Abstract**

**Introduction:** Chronic hepatitis B virus (HBV) infection remains a major global cause of cirrhosis, hepatocellular carcinoma (HCC), and liver-related death, with an estimated 254 million people living with chronic HBV infection in 2022 and approximately 1.1 million associated deaths annually. Acute-on-chronic liver failure (ACLF) is a distinct syndrome of acute hepatic decompensation associated with extrahepatic organ failure and high short-term mortality. Severe acute exacerbation or reactivation of chronic HBV is a recognized trigger of ACLF. Additionally, alcohol-related liver disease may amplify HBV-mediated liver injury through synergistic inflammatory and oxidative mechanisms.

**Case Presentation:** A 46-year-old male with untreated chronic hepatitis B and heavy active alcohol use presented with progressive jaundice, abdominal pain and distension, melena. On admission, blood pressure was 96/63 mmHg. Initial laboratory testing showed WBC 15.8 ×10^9/L, hemoglobin 10.3 g/dL, platelets 108 ×10^9/L, sodium 131 mmol/L, creatinine 2.0 mg/dL, INR 2.0, total bilirubin 13.8 mg/dL, AST 195 U/L, ALT 156 U/L, and alkaline phosphatase 154 U/L. Hepatitis testing showed positive HBsAg, negative HBc IgM, and HBV DNA 1.89 ×10^6 IU/mL, consistent with untreated chronic HBV with acute severe flare rather than primary acute infection. Upper endoscopy demonstrated grade II esophageal varices requiring band ligation. Course was complicated by severe coagulopathy, thrombocytopenia, hyperbilirubinemia, hepatic encephalopathy, and eventually renal failure requiring dialysis, mechanical ventilation, and vasopressor-dependent shock, classifying him as grade 3 ACLF. Antiviral therapy was delayed due to medication availability, and transfer to tertiary centers for advanced hepatology care was declined because of hemodynamic instability. Despite maximal supportive care, he progressed to refractory multiorgan failure and expired after transition to comfort care.

**Discussion:** This case highlights the fulminant trajectory of untreated chronic HBV with acute severe flare in the setting of alcohol-related cirrhosis. The combination of high viral replication and alcohol-mediated immune dysregulation likely accelerated hepatocellular decompensation and systemic inflammation, culminating in ACLF. Guideline-directed nucleos(t)ide analog therapy is recommended for all HBsAg-positive adults with decompensated cirrhosis regardless of HBV DNA level, yet logistical delays may compromise outcomes.

**Conclusion:** Untreated chronic HBV with concurrent alcohol use represents a high-risk phenotype for rapidly progressive ACLF. Early linkage to care, timely antiviral initiation, and access to advanced hepatology or transplant-level evaluation are essential to reduce preventable mortality.

**Abstract Topic:** Case Study

**Poster #104**

# Anatomical Variations of the Brachial Plexus: A Systematic Review of Cadaveric and Imaging Studies with Implications for Osteopathic Practice

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California Health Sciences University, Biomedical Education Department

**Abstract**

**Background:** Classical textbook depictions of the brachial plexus capture only a narrow subset of configurations observed in practice. Anatomical variations in nerve root formation, cord branching, and terminal nerve trajectory are well-documented in cadaveric literature but remain incompletely integrated into clinical reasoning, surgical planning, and osteopathic evaluation. No recent systematic review has synthesized the prevalence and clinical implications of these variations with attention to osteopathic practice.

**Methods:** A systematic review was conducted following PRISMA guidelines. PubMed, SCOPUS, EMBASE, and Google Scholar were searched for human cadaveric, imaging-based, and meta-analytic studies published between 2003 and 2025 reporting specific brachial plexus anatomical variations. Two reviewers independently screened 283 records, with disagreements resolved by consensus. Fifteen studies met inclusion criteria.

**Results:** Anatomical variations were reported in 12.8% to 83.6% of specimens across included studies. The most frequently documented variations were communicating branches between terminal nerves (5-65%, 8 studies), prefixed/postfixed plexus configurations (11-47.3%, 4 studies), and variant posterior cord branching (classical pattern in only 10.7% in one study). Clinically significant findings included dorsal scapular nerve entrapment within the scalene musculature (60.8%), long thoracic nerve entrapment (44.6%), and thoracodorsal nerve arising from the axillary nerve in 57.3% of specimens.

**Conclusion:** Brachial plexus variation is the norm rather than the exception. These findings have direct implications for surgical dissection, regional anesthesia, and osteopathic palpatory diagnosis. The high rates of nerve entrapment within scalene musculature are particularly relevant for clinicians performing cervical and thoracic outlet evaluation. Clinicians should approach the plexus as a spectrum of normal presentations rather than a fixed arrangement.

**Keywords:** brachial plexus, anatomical variation, systematic review, osteopathic medicine, cadaveric study

**Abstract Topic:** Basic Science

**Poster #105**

# The Type B Dissection Gap in Marfan Syndrome: A Scoping Review of Emerging Biomarkers for Risk Stratification Beyond Aortic Diameter

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**Abstract**

**Background:** Marfan syndrome is an autosomal dominant connective tissue disorder caused primarily by pathogenic variants in FBN1, with aortic dissection as a leading cause of mortality. While improved surgical thresholds have reduced Type A dissection incidence, Type B dissections remain poorly predicted and represent an underrecognized clinical gap.

**Objective:** To synthesize current evidence on molecular, genetic, and pharmacologic biomarkers for Type B aortic dissection risk stratification in Marfan syndrome, and to identify gaps informing a future research agenda.

**Methods:** A scoping review was conducted across PubMed, Embase, Web of Science, and Cochrane Library for articles published between January 2010 and 2025. Search terms targeted TGF-β pathway components, FBN1 variant subtypes, RAAS signaling, and Type B dissection outcomes. Inclusion was limited to human studies of Marfan or clinically suspected Marfan populations. Forty-one articles met criteria after screening.

**Results:** Four thematic gaps emerged. First, TGFβ2 and TGFβR2 mRNA expression inversely correlate with aortic diameter but lack validation as circulating biomarkers. Second, cysteine loss variants correlate with severity but are not incorporated into the Ghent criteria. Third, angiotensin II signaling and losartan-based therapy show variable efficacy without clear patient-selection guidance. Fourth, no tool stratifies Type B risk in genotype-negative patients.

**Conclusions:** Type B dissection in Marfan syndrome remains underresearched relative to Type A. A multimodal risk model integrating genotype, TGF-β pathway biomarkers, and pharmacogenomic response to RAAS modulation represents the next research frontier. Validated circulating biomarkers are needed to guide surveillance, surgical timing, and family screening.

**Abstract Topic:** Basic Science

**Poster #106**

# Barriers to Referral Delays in Rural Surgical Care: A Quality Improvement Approach

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**Abstract**

**Introduction.** Timely surgical intervention is essential for optimal oncologic outcomes, particularly in rural regions where access to specialty care is limited. This quality improvement initiative aimed to characterize the current-state referral workflow at a rural general surgery clinic in California's Central Valley and identify system-level barriers contributing to delays in consultation and surgical scheduling.

**Methods.** This study was conducted within the Define and Measure phases of the Define, Measure, Analyze, Improve, Control (DMAIC) framework, and involved semi-structured interviews with key stakeholders, including the surgeon, referral coordinators, medical assistants, and front desk staff, along with direct observation of referral intake procedures. A detailed process map was constructed detailing the pathway from referral acquisition to operative scheduling. A thematic analysis was performed to identify workflow inefficiencies.

**Results.** Some delays were found to originate before referral receipt, such as a prolonged interval between diagnosis and referral submission. Other barriers were found within the clinic shortly after receiving the initial referral, such as missing insurance authorization, incorrect Current Procedural Technology/International Classification of Diseases (CPT/ICD) coding, and miscommunication with fax-based information relay. Structural constraints, including limited clinic availability and operating room capacity, contributed to surgical scheduling delays of 2–3 months. Additionally, electronic prescribing difficulties due to low Electronic Medical Records (EMR) usage for medication, creating postoperative administrative burden and patient inconvenience.

**Conclusion.** This analysis revealed interconnected referral, communication, and structural barriers, providing a foundation for targeted quality improvement interventions to reduce referral-to-surgery timelines and improve access to surgical care in rural settings.

**Abstract Topic:** Quality Improvement

**Poster #107**

# From Joints to Valves to Vessels: Rheumatoid Arthritis Presenting as Endocarditis and Embolic Stroke

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**Abstract**

Non-bacterial thrombotic endocarditis (NBTE), also known as marantic endocarditis, is an underrecognized form of endocarditis, characterized by sterile vegetations composed of sterile platelet thrombi and fibrin on cardiac valves, most commonly aortic and mitral valves. Common causes include malignancy particularly mucin releasing adenocarcinomas of the lung, pancreas, ovary and gastrointestinal tract, and autoimmune diseases especially antiphospholipid antibody syndrome, systemic lupus erythematosus, and rheumatoid arthritis). NBTE remains a diagnostic challenge with an estimated prevalence ranging from 0.3% to 9.3% in clinical series and approximately 1% in autopsy studies. NBTE relies on past medical history and index of suspicion, with historical autopsy studies demonstrating that the majority of cases are identified post-mortem, particularly in patients with malignancy. NBTE frequently presents with thromboembolic complications, most commonly strokes involving multiple vascular territories, and carries significant morbidity and mortality.

**Case presentation:**

A 84-year-old female past medical history of rheumatoid arthritis, hypertension, and hyperlipidemia who presented to the emergency department with chief complaint of left-sided facial droop, slurred speech and left-sided numbness. On admission, blood pressure was 190/89 mmHg, heart rate 97 bpm, and oxygen saturation 97% on room air. Laboratory evaluation revealed leukocytosis (WBC 13.1 $\times 10^9$/L), troponin I elevation (0.998 ng/mL, peaking at 1.377 ng/mL), BNP 204 pg/mL, and normal hemoglobin (13.6 g/dL). MRI brain imaging showed multiple embolic type subcentimeter foci of left cerebral hemisphere, right vermis, left occipital lobe, bitemporal temporal lobes and bilateral parietal lobes. Patient subsequently underwent transesophageal echo showing two echodensities: Small echodensity attached to the Coumadin ridge in the LAA around 0.7 cm, broad-based irregular with mild calcification suggestive of more vegetation pathology rather than thrombus, second echodensity noted left atrial aspect of anterior mitral valve leaflet around 2.0 x 6.0 cm which is broad-based, irregular, mild calcified with a mobile distal tip. Given the patient's history of rheumatoid arthritis, subsequent negative infectious workup, admission cultures negative and procalcitonin negative as well as next hospitalization blood cultures negative, and imaging showing no suspicion for malignancy, valvular lesions deemed to be sterile and diagnosis of marantic endocarditis was highly considered. Multidisciplinary discussions with internal medicine, cardiology and neurology concluded the patient was to be medically managed with aspirin and clopidogrel and discharged to a skilled nursing facility for physical therapy.

**Discussion:**
This case demonstrates the often underrecognized cause of NBTE, which can mimic infective endocarditis but requires distinctive management. The association between NBTE and autoimmune diseases underscores the importance of maintaining high suspicion in patients with relevant risk factors and negative infectious workup presenting with embolic events. Transesophageal echocardiography is required for definitive diagnosis and management involving anticoagulation and treatment of underlying conditions. Management is centered on systemic anticoagulation and treatment of the underlying condition, though formal guidelines are limited.

**Conclusion:**
This case emphasizes the critical importance of including autoimmune NBTE in differential diagnosis who present with embolic phenomena, as early recognition and treatment may improve outcomes in these high risk populations.

**Abstract Topic:** Basic Science

**Poster #108**

# Chronic Unilateral Leg Swelling Following ECMO-Associated Thrombosis in a Pediatric Patient with Angelman Syndrome

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**Abstract**

**Introduction**

Angelman syndrome is a rare neurogenetic disorder caused by abnormal expression of the maternal UBE3A gene, most commonly due to chromosome 15q11–q13 deletions. It is characterized by severe developmental delay, intellectual disability, minimal or absent speech, ataxia, seizures, and a distinctive behavioral phenotype of frequent laughter and a persistently happy demeanor. Clinical features typically emerge after the first year of life, though delays may be noted as early as six months. In addition to neurological manifestations, patients often have systemic complications including epilepsy, sleep disturbances, and ophthalmologic abnormalities such as strabismus and refractive errors. Sleep disorders affect up to 70–80% of patients and significantly impact quality of life, requiring multidisciplinary, supportive management.

Although classic features are well described, atypical presentations continue to expand the clinical spectrum. Early nonspecific findings such as hypotonia or failure to thrive may delay diagnosis, while rare autonomic phenomena, including laughter-induced syncope or asystole, have been reported. Vascular complications remain underrecognized, particularly in patients with complex medical histories requiring interventions such as extracorporeal membrane oxygenation (ECMO), which may increase the risk of thrombotic events and long-term sequelae such as post-thrombotic syndrome. We describe a pediatric patient with Angelman syndrome who developed chronic unilateral lower extremity swelling following ECMO-associated deep vein thrombosis, highlighting this underrecognized complication.

**Case Presentation**

We report a 4-year-9-month-old male with Angelman syndrome, seizure disorder, global developmental delay, and chronic lung disease, who presented with persistent right lower extremity swelling of two years' duration. The swelling began following veno-venous extracorporeal membrane oxygenation (ECMO) in September 2023 for acute hypoxemic respiratory failure secondary to viral infection.

His ECMO course was complicated by extensive deep vein thrombosis (DVT) involving the right external iliac, common femoral, and superficial femoral veins, as well as the right internal jugular

vein. He completed six months of anticoagulation therapy, with subsequent imaging demonstrating residual nonocclusive chronic thrombus and partial recanalization.

At follow-up, the patient continued to have stable, non-painful unilateral right leg swelling without functional impairment. Due to limited verbal communication, symptom assessment relied on caregiver observation. Physical examination confirmed persistent asymmetry without erythema, warmth, or tenderness, consistent with post-thrombotic syndrome.

Additional findings included a recent episode of transient loss of consciousness while laughing without convulsive activity, visual concerns with poor compliance to corrective lenses, and severe obstructive sleep apnea on polysomnography.

The patient remains off anticoagulation and is followed by hematology for suspected post-thrombotic syndrome. Additional referrals were made to ophthalmology and cardiology, with continued monitoring for seizure recurrence and progression of symptoms.

**Discussion**

This case highlights chronic unilateral leg swelling as a manifestation of post-thrombotic syndrome following ECMO-associated DVT in a child with Angelman syndrome. It underscores the importance of recognizing long-term vascular complications in pediatric patients with complex medical histories, particularly when communication limitations may delay symptom recognition.

**Abstract Topic:** Case Report

**Poster #109**

# Mechanical Thrombectomy in Submassive Pulmonary Embolism with Severe Right Ventricular Strain: A Case Report

Brian Graham DO [1] Anil Reddy Anumandla MD [2], Tanveer Singh MD [3]

**Abstract**

Pulmonary embolism (PE) is a potentially life-threatening condition, and treatment strategies are guided by risk stratification. Most patients are treated with systemic anticoagulation, while systemic thrombolysis is generally reserved for high-risk (massive) PE with hemodynamic instability. In intermediate-risk (submassive) PE, management is more nuanced and may involve advanced therapies when there is right ventricular (RV) dysfunction, elevated cardiac biomarkers, significant clot burden, or clinical deterioration despite anticoagulation.

Mechanical thrombectomy has emerged as an alternative reperfusion strategy, allowing rapid clot removal while minimizing bleeding risk associated with systemic thrombolysis. Contemporary guidelines suggest considering catheter-directed therapies in selected patients with intermediate-high-risk PE who demonstrate RV strain, elevated troponin or B-type natriuretic peptide (BNP), worsening hypoxemia, or large thrombus burden.

We present the case of a 43-year-old male without significant past medical history who presented with progressive dyspnea and substernal chest pain. Imaging demonstrated extensive bilateral pulmonary emboli with severe pulmonary hypertension and right ventricular dilation. The patient's Pulmonary Embolism Severity Index (PESI) score was class II (low-risk), but the combination of RV dilation, elevated cardiac biomarkers, and severe pulmonary hypertension without systemic hypotension supported classification as intermediate-high-risk (submassive) PE. Despite anticoagulation and supplemental oxygen, RV strain, clot burden, and hypoxia persisted.

Following evaluation by a pulmonary embolism response team (PERT), the patient underwent staged catheter-directed mechanical thrombectomy of the left and right pulmonary arteries using a Penumbra aspiration thrombectomy system. This resulted in significant improvement in pulmonary artery pressures and symptoms. This case highlights the role of catheter-based mechanical thrombectomy in carefully selected patients with intermediate-high-risk PE and significant right ventricular dysfunction.

**Abstract Topic:** Case Report

**Poster #110**

# Influenza-Associated PVL-Positive MRSA Necrotizing Pneumonia Complicated by Cardiac Arrest and ECMO in an Adolescent

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**Abstract**
Influenza infection predisposes patients to secondary bacterial pneumonia, including severe disease caused by community-acquired methicillin-resistant Staphylococcus aureus (MRSA). Panton-Valentine leukocidin (PVL) positive MRSA is associated with rapidly progressive necrotizing pneumonia, particularly in young, previously healthy individuals.

We report a 16-year-old previously healthy female with pertinent history of daily e-cigarette Vape use, who presented with acute hypoxic respiratory failure following 15 days of influenza-like symptoms. Evaluation revealed leukopenia and blood-tinged sputum. Chest CT demonstrated multifocal cavitary necrotizing pneumonia. Blood and respiratory cultures grew PVL-positive MRSA. Despite antiviral therapy and combination MRSA-directed antibiotics with toxin-suppressing properties, the patient rapidly deteriorated, progressing from high-flow nasal cannula to mechanical ventilation.

On hospital day three, she suffered cardiac arrest with return of spontaneous circulation after two rounds of CPR but remained profoundly hypoxemic. She required VV ECMO with subsequent escalation to VA ECMO due to cardiopulmonary instability.

This case highlights the devastating synergy between influenza and PVL-positive MRSA. It underscores the importance of early recognition, toxin-suppressing therapy, and timely escalation to extracorporeal support. It also highlights the possible influence of Electronic Vape Associated Lung Injury (EVALI) on otherwise healthy patients.

**Abstract Topic:** Case Report

**Poster #111**

# Lifestyle Wellness Program for Patients Post-Cancer Treatment

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**Abstract**
**Introduction:** Cancer survivors often suffer from long-term effects such as fatigue, weakness, anxiety, and depression, which can significantly impact daily functioning and quality of life. While formal rehabilitation programs can help, many patients face barriers such as cost, transportation, and limited access, especially in underserved areas like the Central Valley. Simple lifestyle changes like low-intensity exercise and mindfulness have been shown to improve both physical and mental well-being, but patients are not always given practical guidance on how to incorporate these into their daily lives; therefore, they may lack confidence and perceived ability to manage post-treatment symptoms with accessible, home-based interventions. Our SMART AIM states that Cancer survivors in the Central Valley who receive an educational handout on simple, home-based exercise and mindfulness strategies to reduce post-treatment related symptoms will demonstrate greater comfort in managing aspects of their health, increased hopefulness about recovery, and improved quality of life, as measured by a pre- and post-survey testing health-related education, attitude, and behavior.
**Methods:** A quality improvement project using a pre- and post-survey design was conducted at an outpatient oncology clinic. Sixteen adult cancer survivors in remission were recruited voluntarily and anonymously during routine visits; patients without a cancer diagnosis were excluded. Demographics of sex and age were collected. Participants completed a 10-question pre-intervention survey assessing attitudes toward exercise and wellness behaviors using the SCI Exercise Self-Efficacy Scale (ESES). They then reviewed an educational handout focused on low-intensity exercises (e.g., calf raises, arm circles) and mindfulness techniques (e.g., box breathing), followed by a post-intervention survey using the same ESES during the same visit. Data were analyzed using descriptive statistics and paired t-tests, with significance set at $p < 0.05$.
**Results:** The study had 16 total participants. Internal reliability of the survey was strong (Cronbach's $\alpha = 0.842$), and data were normally distributed (Shapiro-Wilk $p = 0.075$). There was a statistically significant improvement in overall self-efficacy scores following the intervention (paired t-test; $n = 16$, mean increase $\approx 3.34$ points, $p = 0.020$). A large effect size was observed (Cohen's $d = 1.09$; Hedges' $g = 1.03$), indicating strong intervention impact. Question-specific analysis demonstrated significant improvements in patients' confidence to overcome barriers to physical activity (paired t-test; $p = 0.0269$) and to engage in exercise despite fatigue (paired t-test; $p = 0.0114$). Improvements were consistent across demographic groups, with no significant differences based on age or gender.
**Conclusion:** A brief, low-cost educational wellness handout significantly improved cancer survivors' confidence in managing long-term treatment-related side effects with at home exercises and mindfulness activities, with impact seen regardless of age and gender. These findings support the use of simple, accessible interventions to empower cancer survivors to engage in health-promoting behaviors. Given the barriers many patients face in accessing formal rehabilitation services, these interventions may serve as valuable tools in survivorship care.

**Abstract Topic:** Quality Improvement

**Poster #112**

# A Twisted Stomach in a Failing Circulation: Gastric Volvulus Masquerading as Small Bowel Obstruction in the Setting of Embolic Stroke and Aortic Stenosis

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**Abstract**

**Background:** Gastric volvulus is a rare but potentially life-threatening condition characterized by abnormal rotation of the stomach along one of its axes, leading to obstruction with a high risk of ischemia and perforation. Its clinical presentation is often nonspecific and may mimic more common conditions such as small bowel obstruction, making timely diagnosis challenging and frequently delayed.

**Case Presentation:** A 71-year-old female with a history of hiatal hernia, severe aortic stenosis, and prior small bowel obstruction presented with coffee-ground emesis and abdominal discomfort. The patient was tachycardic with leukocytosis, anemia, and acute kidney injury. Initial computed tomography suggested small bowel obstruction, though the patient continued to have bowel movements. Imaging also showed a large hiatal hernia, which was present on prior studies. During hospitalization, the patient developed acute right upper extremity weakness and was found to have multiple embolic strokes on magnetic resonance imaging, along with new-onset atrial fibrillation with rapid ventricular response. Endoscopy later revealed distal esophageal ulceration and ischemic gastric changes concerning for gastric volvulus with outlet obstruction, confirmed on contrast studies. Due to hemodynamic instability and severe aortic stenosis, the patient was transferred for staged management, undergoing transcatheter aortic valve replacement followed by robotic-assisted partial gastrectomy without complication.

**Discussion:** This case underscores the diagnostic difficulty of gastric volvulus when it mimics small bowel obstruction. Preserved bowel function and inconsistent imaging should prompt early reconsideration and evaluation for alternative causes. It also highlights a rare complication: secondary cardiac arrhythmias, such as new-onset atrial fibrillation, which may contribute to thromboembolic events like stroke rather than simply reflecting physiologic stress.

**Conclusion:** Gastric volvulus should be considered in suspected small bowel obstruction with atypical features. Early recognition and prompt intervention are critical, with multidisciplinary management essential to optimize outcomes, especially in patients with complex comorbidities.

**Abstract Topic:** Case Study

**Poster #113**

# Ninety-Day Outcomes Following Primary Elective Hip and Knee Arthroplasty in a Community Hospital: A Pre- and Post-COVID Comparison of Same-Day Discharge and Inpatient Cases

Panganiban R, Jassal A, Mai K, MD

**Abstract**

**Background**: Outpatient arthroplasty has expanded substantially over the past decade due to advances in perioperative optimization, multimodal pain control, and enhanced recovery pathways. The COVID-19 pandemic further accelerated this transition by necessitating reduced inpatient utilization and minimizing hospital exposure. While same-day discharge (SDD) following hip and knee arthroplasty has been well studied in large academic centers, comparatively little data exist describing outcomes in community hospitals that serve medically and socioeconomically complex patient populations.

**Objective**: To compare ninety-day postoperative outcomes—including major complications, readmissions, emergency department (ED) visits, and returns to the operating room—between same-day discharge and inpatient cases among patients undergoing primary elective hip and knee arthroplasty by a single surgeon at a community hospital in California's Central Valley. A secondary objective was to evaluate how discharge practices and outcomes differed before and after the onset of the COVID-19 pandemic.

**Methods**: We conducted a retrospective cohort study using prospectively maintained data from all primary elective total hip arthroplasty (THA), total knee arthroplasty (TKA), and unicompartmental knee arthroplasty (UKA) procedures performed by a single surgeon. Revision, trauma, and nonelective cases were excluded. Patients were stratified by discharge status (SDD vs inpatient) and surgical era (pre-COVID vs post-COVID, with March 13, 2020 as the cutoff). Ninety-day postoperative outcomes were identified through structured review of complication and return-to-hospital fields. Comparative analyses and multivariable regression modeling were planned.

**Results**: A total of 3,834 primary orthopedic procedures performed between 2013 and 2025 were analyzed. Overall perioperative complications occurred in 562 cases (14.6%). Prior to March 2020, the complication rate was 14.98% across 2,217 procedures, compared with 14.22% across 1,617 procedures performed after the onset of the COVID-19 pandemic. Annual complication rates demonstrated year-to-year variability but remained relatively stable following 2020, fluctuating between approximately 11% and 16%, with no increase compared to pre-pandemic peaks observed in 2015–2016.

**Conclusion**: This study aims to provide community-level evidence regarding the safety of same-day discharge pathways for hip and knee arthroplasty and to clarify how the COVID-19 pandemic influenced discharge practices and postoperative outcomes in a non-academic setting.

**Abstract Topic:** Quality Improvement

**Poster #114**

# Integrating Armed Forces Preventive Medicine, One Health, Microbiome Stewardship, and Rigorous Methods to Effect Good

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**Abstract**

**Introduction**

Global, diverse, and personal health are united. The Armed Forces share the responsibility to secure, defend, and preserve the flow of worldly progress. Military Medicine presents a union for ethical balance resilience and sustainment. Medical Civil-Military Operations offer the opportunity for Military Medicine to synergize with inclusive civilian initiatives. One Health and Microbiome Stewardship represent overlapping initiatives that align with Armed Forces Preventive Medicine. Armed Forces Preventive Medicine must explore convergent multidisciplinary perspectives, utilizing dynamic ecology, rigorous integrated multi-omic biophysics, and global health geopolitics to help engineer designs for better accessible care for all, especially austere, underserved civil and warring environments: Special Operations Forces, freeing oppressed and repressed peoples, and Stability Operations for civilians and Force Health Protection.

**Methods**

A literature review guided by a search mechanism dubbed the Unified Search Manifold recursively drafted with Gemini Flash 3 that provided a net to filter the military, civil, systemic, ecological, socioeconomic, and biophysical substrates by identifying relevant organizations and journals with key PubMed & Google Scholar search terms with results readings chosen for Open Access, access via the CHSU Health Sciences Library, and payless exclusive access options, balanced with statistically and psycholinguistically perceived utility.

**Results**

Multimodal paradigms for identifying, measuring, and changing the environment project convergent solutions, primarily through using the electromagnetic force and ultimately with quantum, semi-classical, and classical mechanics timbre resonance to induce changes in the effective topography of surfaces, membranes, and interfaces, small and large.

**Conclusions**

Diverse methods for guiding truly connected health unite in biophysically estimable or reproducible conclusions.

**Disclaimer:** The views expressed in this abstract are those of the author and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the U.S. Government.

**Abstract Topic:** Literature Review

**Poster #115**

# Effect of stress on brain neuroplasticity: role of miRNAs

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**Abstract**

**Background.** Stress is a physiological and psychological response that occurs when internal or environmental demands exceed an individual's capacity to maintain homeostasis. Chronic stress increases risk for cardiovascular disease, metabolic dysfunction, immune dysregulation, and psychiatric illness12. These effects are mediated partly by activation of the hypothalamic–pituitary–adrenal (HPA) axis, in which corticotropin-releasing hormone (CRH) stimulates adrenocorticotropic hormone (ACTH) release and subsequent cortisol secretion10. Pro-inflammatory cytokines (IL-6, IL-1β, TNF-α) amplify HPA signaling, reinforcing immune–neuroendocrine crosstalk22. MicroRNAs (miRNAs) regulate this response by post-transcriptionally coordinating endocrine, immune, cellular, and neurobiological stress pathways.

**Objective.** We aim to focus on what existing literature reveals regarding the effects of stress on microRNA (miRNA) regulation of the HPA axis and neuroplasticity of the limbic system.

**Methods.** A structured literature review was conducted of studies published within the past 10 years using PubMed and Google Scholar. Searches included keywords related to miRNAs, corticolimbic brain regions, stress hormones, depression, and antidepressant treatment. Studies were screened for relevance to neural plasticity, corticolimbic circuitry, and cortisol signaling.

**Results.** Stress-induced glucocorticoid elevation alters HPA-axis dynamics and limbic neuroplasticity via broad miRNA-mediated regulation. miRNAs finetune adrenal glucocorticoid synthesis1, shape cellular glucocorticoid responses7, and are consistently dysregulated in depression, influencing synaptic and neurobiological pathways13. Chronic corticosterone and cortisol-responsive miRNAs remodel central miRNA expression (including miR-218-5p) and peripheral processes such as macrophage metabolism, antiviral signaling27, cortisol metabolism23, and glucocorticoid responsiveness, integrating endocrine signals with stress adaptation. Together, these studies suggest that microRNAs regulate how the prefrontal cortex, hippocampus, and amygdala develop and respond to stress. While miR-21826 supports healthy maturation of stress and emotional circuits, miR-30a5, miR-135a19, and miR-1619, to name a few, are altered by prenatal or adolescent stress, disrupting signaling, neuroplasticity, and behavior5.

**Conclusion.** miRNAs represent critical epigenetic regulators of stress-related pathways across the limbic system, with emerging evidence suggesting that distinct miRNAs differentially reshape neural networks. Our review advances these ideas and highlights the need for further research into the miRNA signatures of pharmacological interventions, as promise is shown for miRNA-targeted approaches in developing precise interventions that minimize adverse effects for genetically-predisposed populations.

**Abstract Topic:** Basic Science

**Poster #116**

# Tick Bites and Tick-Borne Disease: Prevention, Recognition, and Management

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**Abstract**

**Introduction:** A tick is a parasitic arachnid that uses a host to survive. Tick bites are most common during spring and summer months, finding their hosts through outside exposure or pets. Ticks spread disease through their feeding process. Upon finding a host, ticks grasp onto the skin, using special techniques to keep themselves latched. Ticks may cause non-specific systemic symptoms after feeding. The most distinguishing feature from a tick infection is the rash it manifests.

Lyme Disease has a unique "target" rash called erythema migrans. Erythema migrans appears during the early localized stage of the disease. Multiple erythema migrans will erupt in the early disseminated stage. Facial palsies, meningitis, and carditis may also occur in this second stage. The late disease stage is characterized by monoarticular or oligoarticular arthritis affecting the large joints.

**Prevention and Management:** It is important to immediately shower or bathe after going into areas where there is an increased risk of encountering ticks. Clothes should be washed and dried thoroughly on high heat. Children should be inspected for any ticks, especially on their extremities and scalp. Repellents, long sleeves, and long pants will also help prevent tick bites.

If a tick is found on any body part, it should be removed appropriately. The tick must be grasped as close to the surface of the skin as possible, gently pulling away to decrease the risk of any part of the tick being left behind. Leaving even a small portion of the tick imbedded on the skin increases the risk for local inflammation and secondary skin infections. The area should be cleaned with soap and water or rubbing alcohol after removal. In the event of Lyme Disease, individuals must receive antibiotics. Doxycycline or Amoxicillin are commonly used for the treatment of Lyme disease.

**Conclusion:** Ticks spread infection through feeding on human hosts. Infection presents with non-specific systemic symptoms and often a characteristic rash. Lyme Disease, though uncommon, should be considered after an individual presents with a tick bite. Any ticks should be removed quickly and appropriately. Repellents, appropriate outerwear, and antibiotic prophylaxis may all be used to avoid tick-borne disease.

**Abstract Topic:** Public Health

**Poster #117**

# An Unbiased Proteomic Screen of Bronchoalveolar Lavage Fluid in the Sftpc Mouse Identifies Potential Biomarkers for Idiopathic Pulmonary Fibrosis

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**Abstract**

**Rationale:** Current understanding of the molecular pathways underlying Idiopathic Pulmonary Fibrosis (IPF) highlight the essential role of alveolar niche homeostasis in disease development and progression. Our lab recently developed a novel murine model of IPF leveraging expression of clinically relevant mutations in the surfactant protein C gene (Sftpc), a protein made exclusively by the alveolar progenitor cell, the alveolar type 2 cell. In addition to recapitulating histological hallmarks of IPF we also identified proteins in bronchoalveolar lavage fluid (BALF) previously reported as human IPF biomarkers including Osteopontin, MMP-7 and surfactant protein D. The goal of this study was to utilize an unbiased proteomic screen of BALF from the Sftpc mouse for discovery and validation of a library-- of novel biomarker candidates for IPF.

**Methods:** Administration of tamoxifen by oral gavage in SftpcI73T conditional allelic knock-in models induces expression of mutant protein and promotes injury through an inflammatory cascade during the first two weeks of the model followed by fibrotic remodeling. BALF was collected at Day 14 (late inflammation and fibrogenic transition) and Day 28 (fibrotic remodeling) post tamoxifen induction. Total protein in BALF was processed into short length peptides and subjected to unbiased proteomic analysis via Liquid Chromatography Mass Spectroscopy (LCMS). Peptide peaks were annotated and quantified using the Spectronaut software package. Selected validation of differentially expressed proteins was performed using immunoblotting and ELISA.

**Results:** LCMS screening identified 2700 unique proteins in BALF derived from Sftpc mice. At either time point approximately 1400 proteins were differentially expressed in the Sftpc mouse as compared to wild-type controls. In addition to published biomarkers (e.g. MMP7, Tenascin C), and well-described mediators of IPF (gelsolin, periostin, pentraxin-2, semiphorin 7a), we identified a wide range of novel analytes representing extracellular and intracellular proteins including MMP-19, serum amyloid P component, Tgm1, CD74, Bip/GRP78, and multiple cytokeratins. Using MMP-19 as an archetypical protein we validated an increase in this protein throughout the time course of the model.

**Conclusion:** The BALF proteome which emerges during fibrotic lung remodeling in the Sftpc mouse contains a broad repertoire of analytes both previously identified in human IPF and new candidate biomarkers and PF mediators. Future experiments will now focus on translation of candidate biomarkers from the preclinical PF model to human IPF as well as a functional validation of top performing fibrotic mediators in order to further our understanding of disease pathogenesis while creating new tools for assessing IPF outcomes.

**Abstract Topic:** Basic Science

**Poster #118**

# Improving Carbohydrate Knowledge Among Older Adults: A Bilingual Nutrition Intervention for PACE Participants at GVHC

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**Abstract**

**Introduction/Background** – Poor nutritional intake among elderly populations may be attributed to insufficient nutritional knowledge. This can further exacerbate existing chronic conditions. This quality improvement initiative focused on developing a culturally tailored, disease-specific carbohydrate tip sheet designed to strengthen Program of All-Inclusive Care for the Elderly (PACE) participants' nutritional knowledge and self-efficacy in managing dietary and lifestyle modifications. The SMART aim for this project is: By 2026, we will achieve a 50% increase in PACE participants' nutritional knowledge as measured by pre- and post-surveys that assess understanding of carbohydrates, their importance, and their role in managing chronic health conditions.

**Methods** – Pre-surveys were administered to all verbally consenting participants to assess baseline carbohydrate knowledge. The pre-surveys also gathered demographic and chronic health condition data. After the pre-survey, the carbohydrate tip sheet was distributed to participants. PACE staff assisted those who were illiterate. Afterwards, post-surveys were administered to assess knowledge of retention and confidence with the material that was presented in the tip sheet.

**Results** – Ten participants (n=10) completed both the pre- and post-surveys. Ages across participants varied: 50-59 (20%), 60-69 (30%), 70-79 (30%), 80-89 (20%). Half of the participants identified as Hispanic/Latino. 20% of participants identified as being illiterate. Data showed an increase in knowledge scored from 1.6 (pre-survey) to 2.2 (post-survey). A paired t-test showed that the increase in knowledge was not statistically significant (p=0.14).

**Conclusion** – Findings from this study suggest that a brief nutritional education intervention can improve nutritional knowledge in older adults with chronic health conditions.

**Abstract Topic:** Public Health

**Poster #119**

# Evaluating Funding Equity for Community-Based Organizations in California's PATH-CITED Program (2022-2025)

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**Abstract**

**Introduction:** California's Providing Access and Transforming Health (PATH) Capacity and Infrastructure Transition, Expansion, and Development (CITED) program was implemented in 2022 to expand personalized, community-based care provision to Medi-Cal's most vulnerable populations. Across four annual funding rounds, PATH-CITED distributed awards to a diverse range of providers, including hospitals, federally qualified health centers, and community-based organizations (CBOs). Existing literature has found that CBOs faced unique challenges during program implementation, however no study has systematically examined how PATH-CITED's funding distribution reflected, or exacerbated, these disparities. This study assessed CBO participation across all four PATH-CITED rounds, examining trends in overall membership, funding allocation, and equity in financial allocations.

**Methods:** We conducted a repeated cross-sectional analysis of official PATH-CITED awardee summaries from Rounds 1–4, obtained from the California Department of Health Care Services PATH-CITED program website. Data was extracted and analyzed to quantify the total number of awardees and funding per round. Organizations were categorized by type, and we calculated the proportion of CBOs among awardees and their share of total funding relative to other providers.

**Results:** Across all four rounds, PATH-CITED distributed approximately $640 million, with funding declining from over $200 million in Round 1 to $145 million in Round 4. The number of awardees varied modestly across rounds, ranging from 131 to 152 organizations. CBOs consistently comprised at least 50% of funded organizations, peaking at 76% in Round 3. In Round 1, CBOs accounted for only 20% of total funds distributed, but made up 50% of awardees. This share increased to 43% in Round 2, still notably below their 56% representation among awardees. By Rounds 3 and 4, CBO funding shares closely mirrored their representation among awardees (Round 3: 73% of funds, 76% of awardees; Round 4: 62% of funds, 59% of awardees).

**Conclusion:** These findings suggest a mismatch between CBO participation and funding allocation in early PATH-CITED rounds, followed by a shift toward more proportionate distribution in later rounds. While this trend indicates progress, early disparities may have limited CBO capacity during critical implementation phases.

**Abstract Topic:** Public Health

**Poster #120**

# Exercise-Induced Irisin Signaling in Hippocampal Ischemic Stroke: Mechanisms of Neuroplasticity and Cognitive Recovery

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**Abstract**

Ischemic stroke, most commonly caused by arterial thromboembolism, results from interruption of cerebral blood flow leading to central nervous system injury.1 Reduced perfusion causes a necrotic core surrounded by an ischemic penumbra, with ongoing ischemia triggering excitotoxicity, oxidative stress, neuroinflammation, and blood-brain barrier disruption.(2,3) Specifically, hippocampal injury is strongly associated with post-stroke cognitive dysfunction, emphasizing the need for targeted rehabilitation strategies, with exercise emerging as a key intervention to enhance neurocognitive recovery.4 Exercise is a structured therapeutic intervention widely used in post-stroke rehabilitation to improve cardiovascular, functional, and cognitive outcomes.5 In stroke populations, rehabilitation programs commonly incorporate aerobic, resistance, and multimodal exercise strategies, with aerobic training serving as the primary driver behind neurocognitive improvement.(6,7) Evidence indicates that moderate-intensity aerobic exercise performed regularly over several weeks produces the most consistent cognitive benefits, especially when initiated early after stroke.(8,9) While the clinical role of exercise in cognitive recovery post-stroke is established, increasing attention has been directed toward understanding the mechanisms driving these effects. In particular, the musculoskeletal system exerts an endocrine effect on the central nervous system by secreting growth factors, cytokines, metabolites, and other signaling molecules that directly or indirectly communicate to the brain.10 One such myokine, irisin, is cleaved from fibronectin type III domain-containing protein 5 (FNDC5) in myelin sheaths within skeletal muscle during exercise.11 Its most important effect is on the brain, as it plays many roles in neuroprotection. Studies have shown that irisin inhibits secretion of COX-2, NF-$\kappa$B, TNF-$\alpha$, and IL-6 – ultimately preventing neuroinflammation, neuronal injury, and even brain infarction.12 Other studies have shown that irisin plays a direct role in inhibiting neurodegeneration through the increase of brain-derived neurotrophic factor (BDNF) in the hippocampus and prefrontal cortex, increasing neurogenesis, synaptic regeneration, and neuronal survival.13 Mechanistically, exercise enhances circulating irisin levels, which promotes brain-derived neurotrophic factor (BDNF) expression and supports post-stroke neuroplasticity and cognitive recovery.14

**Poster #121**

# Progression of Pre-Existing Right Heart Dysfunction to Early Right Heart Failure Following LVAD Implantation

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**Abstract**

**Background**

Right heart failure (RHF) is a major complication following left ventricular assist device (LVAD) implantation and is associated with significant morbidity and mortality. Pre-existing right ventricular (RV) dysfunction is a key predictor, though risk stratification remains challenging.

**Case Presentation**

We present a 47-year-old male with chronic nonischemic dilated cardiomyopathy (LVEF <20%) who presented with acute on chronic heart failure and cardiogenic shock. His course was complicated by cardiorenal syndrome and congestive hepatopathy. Preoperative evaluation demonstrated evidence of right heart dysfunction, including elevated right atrial pressure (18 mmHg), elevated pulmonary capillary wedge pressure (30 mmHg), reduced cardiac index (1.56 L/min/$m^2$), borderline pulmonary artery pulsatility index (PAPi 1.67), and moderate right ventricular dilation on echocardiography.

The patient underwent HeartMate 3 LVAD implantation as bridge-to-transplant therapy following Impella support. Postoperatively, he developed worsening early RHF requiring high-dose inotropes, vasopressors, inhaled nitric oxide, and open chest management with delayed closure. Hemodynamics on postoperative day 1 demonstrated persistent RV dysfunction (PAPi 1.2, CVP 10), accompanied by worsening hepatic function (total bilirubin 5.8 mg/dL).

**Discussion**

This case highlights the progression of pre-existing RV dysfunction following LVAD implantation. Despite only moderate RV dilation and borderline PAPi, the patient developed significant RHF requiring aggressive support. These findings underscore the limitations of current predictive markers and suggest that even mild-to-moderate RV dysfunction in the setting of chronic shock and multiorgan involvement may confer substantial risk.

**Conclusion**

Pre-existing right heart dysfunction is a critical determinant of outcomes following LVAD implantation. Borderline hemodynamic and echocardiographic findings may underestimate risk, warranting heightened vigilance and early implementation of RV support strategies.

**Abstract Topic:** Case Report

**Poster #122**

# Characterization of Isolate #8: A Potential Antibiotic Producer of the Genus Aeromonas

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**Abstract**

**Introduction and Background:** Antibiotic resistance is a major global issue where bacteria acquire the ability to bypass the effect of antibiotics, thus proliferating and promoting the spread of infectious diseases. Mutations and horizontal gene transfer contribute to the development of resistance mechanisms such as drug inactivation and target modification. Due to this, it becomes challenging to acquire effective treatments to combat the effects of deadly microorganisms like the ESKAPE pathogens (Enterococcus faecium, Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter baumannii, Pseudomonas aeruginosa, and Enterobacter species). For example, K. pneumoniae renders first-line antibiotics like penicillin ineffective because it produces beta-lactamases, consequently contributing to nosocomial infections like pneumonia. To address this public concern, here we show that soil can contain antibiotic-producing bacteria that can inhibit the safe relatives of the ESKAPE pathogens.

**Methods:** Soil samples were collected near a rosemary plant in Turlock, CA and serially diluted before plating and screening against Escherichia coli, the safe relative of K. pneumoniae. As no isolates demonstrated antibiotic-producing abilities, Isolate #8 was selected for further study based on its distinct morphology. It was characterized by gram-staining, the Kirby-Bauer Diffusion Susceptibility Test, and several biochemical tests. Isolate #8's 16s rRNA gene sequence was then amplified by Polymerase Chain Reaction and sequenced by Basic Local Alignment Search Tool.

**Results and Conclusion:** Isolate #8 displayed a yellow, circular, and convex morphology and was identified as a gram-negative, streptobacillus organism. The Susceptibility Test revealed resistance to penicillin and sensitivity to rifampicin. Biochemical testing indicated the isolate performed denitrification, had catalase and oxidase activity, and was a facultative anaerobe. The BLAST analysis of the 16s rRNA gene sequence showed a 99% identity similarity between the isolate and a partial strain of genu Aeromonas. These collective findings draw a parallel between Aeromonas and K. pneumoniae because they both are not susceptible to penicillin. Aeromonas appears to be a reservoir for resistance genes, so further research can be conducted to characterize and manipulate similar resistance mechanisms of the ESKAPE pathogens. This would combat the antibiotic crisis and the spread of deadly infections.

**Abstract Topic:** Basic Science

**Poster #123**

# Forensic Autopsy Case Vignettes as a Supplemental Tool for Anatomy and Pathophysiology Education in a Cadaver-Free Medical Curriculum

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**Abstract**

**Introduction and Background:** Many medical schools have moved away from cadaveric dissection due to ethical concerns, health risks associated with formaldehyde exposure, and financial constraints. At CHSU-COM, anatomy is taught exclusively through HoloAnatomy, a mixed-reality platform, with no cadaver lab in the curriculum. Prior studies demonstrate that forensic autopsies serve as valuable supplemental tools for bridging anatomical and pathophysiological knowledge in clinical practice. However, minimal research exists on the use of forensic images combined with clinical vignettes for students without any cadaveric exposure. We hypothesize that participating in weekly forensic autopsy case challenges will increase students' excitement, knowledge, and confidence in anatomy and pathophysiology.

**Materials and Methods:** This longitudinal study uses a repeated pre- and post-survey design administered over six monthly four-week cycles. Participants include CHSU-COM, CHSU Master's, and Fresno State students recruited via QR codes and campus presentations. Each week, participants receive a forensic clinical vignette with accompanying images sourced from the National Association of Medical Examiners (NAME) "Case of the Week," delivered through a GroupMe channel. Surveys use a 5-point Likert scale and 9 multiple-choice questions to assess perceived confidence, knowledge, and interest. Data will be analyzed using a Linear Mixed-Effects model and a paired-sample t-test to measure changes over time.

**Results and Conclusion:** This study is currently in the planning phase. We anticipate that repeated exposure to forensic case vignettes with cadaveric images will significantly improve students' perceived confidence, knowledge, and excitement toward anatomy and pathophysiology, as measured by pre- and post-survey comparisons across six cycles. Findings may support the integration of forensic case-based learning as a scalable, ethically sound supplement in cadaver-free medical curricula.

**Abstract Topic:** Basic Science

**Poster #124**

# Utility of Novel Measurements in Chest X-Rays in Evaluating Cardiac Anatomy

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**Abstract**

**Introduction/Background:** Almost any patient presenting with acute dyspnea will receive a chest x-ray, resources permitting. In the United States alone, over 70 million chest x-rays are performed each year as an initial step in working up a plethora of pathologies. Almost as old as the chest x-ray is the cardiothoracic ratio (CTR), a commonly reported finding associated with abnormal heart pathology, especially heart failure. The purpose of this paper is to determine the true utility of CTR in analyzing a patient's heart structure and compare it with other measurements, specifically the Transverse Cardiac Diameter (TCD) and BSI (Body Surface Index). Through this investigation we hope to glean greater diagnostic utility from a widely available resource as well as better understand its limitations.

**Objective:** To evaluate and compare the diagnostic performance of CTR, TCD, and BSI in evaluating heart structure, and to determine if combined usage of these measurements provide greater value in patient care.

**Methods:** This retrospective observational imaging study utilized the CheXchoNet dataset, which pairs chest radiographs with structured echocardiographic labels. The study cohort consisted of 2000 patients (1000 male, 1000 female). Binary outcomes included severe left ventricular hypertrophy (SLVH), defined by increased interventricular septal and posterior wall thickness, and dilated left ventricle (DLV), defined by increased left ventricular internal diameter in diastole. Radiographic metrics were extracted using an automated deep learning segmentation pipeline (CXAS; UNet-ResNet50 architecture) to generate cardiac and lung masks. TCD was defined as the maximal horizontal span of the cardiac silhouette, CTR as the ratio of TCD to maximal thoracic width, and CTAR as the ratio of cardiac silhouette area to total lung area multiplied by 100. Diagnostic performance was assessed using receiver operating characteristic (ROC) curve analysis, with area under the curve (AUC), sensitivity, specificity, and optimal cutpoints reported. The incremental value of combined measurements beyond CTR alone was evaluated using multivariable logistic regression modeling.

**Expected Results:** All three radiographic metrics are expected to demonstrate measurable discriminative ability for detecting SLVH and DLV. Given its two-dimensional formulation, BSI is hypothesized to provide improved sensitivity to structural remodeling and to offer incremental diagnostic value beyond CTR alone. It is also expected that combined measurements will provide greater accuracy than any singular measurement alone.

**Significance:** Automated radiographic cardiac metrics derived from routine chest radiographs may serve as scalable, low-cost screening tools for structural heart disease, particularly in settings where echocardiography is not readily available. By establishing dataset-specific performance benchmarks and evaluating the added value of area-based metrics, this study contributes to the development of clinically actionable, AI-assisted approaches to cardiovascular risk stratification.

**Abstract Topic:** Basic Science

**Poster #125**

# Enhancing UHC Huron Prenatal Care Engagement Through Inclusive and Bilingual Educational Materials

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**Abstract**

**Introduction/Background:** Prenatal care attendance at UHC Huron is influenced by language barriers, limited health literacy, and cultural discordance amongst their patient population. Prior cohort analysis identified marital status, age, and language proficiency as significant predictors of appointment attendance, highlighting persistent communication gaps and insufficiency of culturally responsive education. This QI project focused on developing evidence-based educational materials addressing language, literacy, and social barriers. Two materials were prioritized based on clinic needs and stakeholder input, resulting in culturally and linguistically resources tailored for the UHC Huron. Stakeholder feedback will guide refinement and future implementation by May 2026.

**Methods:** A structured literature review identified evidence-based strategies to improve language access, health literacy, cultural concordance, and social support in prenatal care. These themes were integrated with barriers previously identified at UHC Huron, and each barrier was paired with educational strategies shown to enhance comprehension, trust, and patient engagement. Because this phase focused solely on material development, no patient contact, data collection, or implementation activities occurred.

**Results:** The literature review identified prenatal education materials successfully implemented in comparable settings, which were presented to UHC Huron for selection based on clinic-specific needs. For language access, recommended materials included bilingual illustrated handouts, audio guided-script for low-literacy learners, and visual clinic navigation posters. To address health literacy, a bilingual pregnancy timeline and visual symptom-response guide were proposed to simplify complex information and reduce overload. To address marital status stigma and social support gaps, an affirming poster normalizing diverse family structures was recommended. After stakeholder review, a bilingual visual timeline poster and a stigma-reducing education poster were selected and synthesized.

**Conclusion:** Language barriers, limited health literacy, and marital status related stigma continue to affect prenatal care engagement at UHC Huron. This initiative addresses those challenges by identifying evidence-based educational strategies and translating them into two materials tailored to the clinic's patient population. By aligning these tools with clinic priorities, this project established a foundation for addressing communication and stigma-related barriers in a culturally responsive way. Future work will focus on refining these materials and implementing them with the goal of improving consistent prenatal care attendance.

**Abstract Topic:** Quality Improvement

**Poster #126**

# Exploring High-Frequency Ultrasound as an Adjunct for Standardized Longitudinal Assessment of Vulvar Lichen Sclerosus

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**Abstract**

**Introduction:** Vulvar Lichen Sclerosus (VLS) is a chronic inflammatory dermatosis characterized by pruritus, pain, and variable skin-surface and histopathological changes. Diagnosis relies on clinical examination, symptom reporting, and selective biopsy, but lacks standardization and a validated severity scale. Longitudinal assessment remains challenging and may underestimate tissue-level disease. The 3–5% lifetime risk of malignant transformation to vulvar squamous cell carcinoma further reinforces the need for consistent long-term assessment. High-frequency ultrasound (HFUS) is a noninvasive imaging modality potentially capable of visualizing dermal architecture and may offer a more standardized approach for evaluation. The goal of this review is to evaluate how HFUS may contribute to a more consistent, objective framework for clinical evaluation and longitudinal monitoring in VLS.

**Methodology:** A structured literature search was conducted to identify studies addressing clinical scoring systems, histopathological assessment, clinicopathologic correlation, and HFUS use in VLS. Due to heterogeneity in HFUS methodology and small sample sizes, a qualitative synthesis approach was used to identify recurring themes across clinical, histological, and sonographic domains.

**Results**: Current clinical scoring systems consistently capture symptoms and surface findings, but vary in domains, complexity, interrater reliability, and lack tissue-level information. Histopathologic studies demonstrate moderate correlation with clinical severity, yet no longitudinal biopsy-based studies were identified. Several studies analyzing HFUS in VLS have demonstrated consistent findings of a subepidermal hypoechoic dermal band in 100% of lesions, with significant correlation between band thickness and histopathological depth. Broader dermatologic ultrasound literature supports the ability of ultrasound to detect dermal thickness changes, altered echogenicity, and vascular changes in inflammatory skin conditions, although these findings are not specific to VLS. Despite this, HFUS studies remain limited by small cohorts, heterogeneous protocols, and lack of standardized interpretation criteria.

**Conclusion:** Clinical scoring, histopathology, and HFUS each provide complementary, yet incomplete information about VLS. Integrating validated clinical scales with reproducible HFUS markers may support a more objective and reliable framework for longitudinal monitoring. Further validation and standardized imaging protocols are needed to establish HFUS as an adjunct in VLS assessment.

**Abstract Topic:** Imaging Methods Review/Evidence Synthesis

**Poster #127**

# To Give or Not to Give: A Critical Review of Calcium Administration in Cardiac Arrest

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**Abstract**
The American Heart Association (AHA) recommends against the routine administration of calcium during cardiac arrest, except in specific cases (i.e. hyperkalemia, hypocalcemia, or calcium channel blocker overdose). Despite these recommendations, calcium is still frequently administered during cardiac arrest events because it is theorized to increase contractility, hemodynamic stability, and rates of return of spontaneous circulation (ROSC). However, supra-therapeutic intracardiac calcium levels following medication administration may cause cardiac hypercontraction, impaired contractility, and reduced cardiac output ("stone heart"). This review summarizes studies evaluating calcium administration during cardiac arrest so providers may refer to it when managing their patients.

We performed a PubMed search from 2000 to 2025 using "calcium" and "resuscitation" in the title, focusing on RCTs and retrospective studies evaluating calcium administration during cardiac arrest. We ultimately included 10 studies including one RCT with 2 corresponding substudies, and three pediatric studies and found no improvement, and in some cases lower rates of ROSC, survival, or favorable neurological outcomes among patients who received calcium during cardiac arrest.

Calcium administration was not associated with increased rates of ROSC, survival, or favorable neurological outcomes. An imbalance in baseline characteristics needs to be taken into account, as the calcium groups often included higher numbers of critically-ill patients. These findings are partly limited by temporal bias, as some studies are non-randomized and calcium is often administered later in prolonged arrests, and we have not yet clearly identified populations in whom it may be most beneficial or harmful. Data suggest an association, not a causation. Nonetheless, this synthesis provides a clear, evidence-based summary to support guideline-aligned resuscitation decisions.

**Abstract Topic:** Literature Review, Critical Care

**Poster #128**

# Developing a Community Health Worker Model in Fresno County

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**Abstract**

**Introduction**: In California's Central Valley, Latino and Asian communities face disproportionately high rates of Type II diabetes and obesity, driven by complex social determinants and behavioral risk factors. Community Health Workers (CHWs), also known as promotoras in the Latino community, could serve as a vital cultural bridge between communities and health care agencies to address population-specific disparities through education and advocacy.

**Objective:** This project outlines an implementation framework for a standardized CHW training model designed to improve health behaviors, establish systemic trust, and provide consistent, high-quality support for underserved Latino and Asian populations in Fresno County.

**Methodology:** This quality improvement (QI) project utilized the Plan-Do-Study-Act (PDSA) framework to develop a feasible training protocol for Community Health Workers aimed at reducing health disparities in health literacy and improving preventive care. This project involved a literature review of current community health worker (CHW) program models and local healthcare infrastructure to identify community barriers to care such as insurance gaps, cost, mistrust of healthcare systems, and difficulty navigating services. Based on these findings, a CHW training protocol was designed using the Promotora Model to define roles, recruitment strategies, supervision, and integration pathways within the community.

Training modules were also adapted from existing programs developed by Fresno County HOPE Pathways Community HUB (HOPE PCH) and the California Partners in Care Foundation. The curriculum includes online modules addressing cultural expectations, family dynamics, adult education strategies, food security, medication adherence, safety, and preventive health screening. Knowledge assessment quizzes and a satisfaction survey were developed following each module to evaluate trainee comprehension and satisfaction.

**Next Steps:** Institutional Review Board approval has been obtained. Once approval is obtained, eligible participants will be recruited, and implementation of the training model will be done.

**Conclusion**: By strengthening and investing in a skilled CHW workforce, we aim to enhance initiatives geared towards addressing disparities in diabetes and hypertension rates among Latino and Asian communities in Fresno County. The next phase entails evaluating CHW training outcomes to determine preparedness for program integration across Fresno County.

**Abstract Topic:** Quality Improvement

**Poster #129**

# Psychiatric Manifestations of Systemic Lupus Erythematosus: A Literature Review

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**Abstract**

**Introduction/Background:**

Systemic lupus erythematosus (SLE) is a multisystem autoimmune disease with a multifactorial etiology. Neuropsychiatric SLE (NPSLE) encompasses a spectrum of 19 syndromes, defined by the American College of Rheumatology, that involve both the central and peripheral nervous systems. NPSLE is highly heterogeneous, with manifestations ranging from subtle cognitive dysfunction to severe neuropsychiatric conditions such as psychosis and seizures. Neuropsychiatric involvement is common, with meta-analytic estimates suggesting a prevalence of approximately 30% among SLE patients. Diagnosis remains challenging due to non-specific symptoms, overlap with non-SLE conditions, and lack of reliable biomarkers.

**Methods:**

A comprehensive literature review was conducted using PubMed, focusing on studies published between 2014 and 2025. Search terms included “systemic lupus erythematosus,” “neuropsychiatric lupus,” and related terms encompassing psychiatric manifestations, prevalence, and pathophysiology. The included sources comprised clinical studies, cohort studies, meta-analyses, and review articles that focused on psychiatric manifestations and the underlying mechanisms of NPSLE.

**Results:**

Neuropsychiatric involvement in SLE presents with a wide spectrum of psychiatric symptoms. Based on pooled estimates from multiple meta-analyses, cognitive impairment (38%), anxiety (37%), and depression (24%) are the most common psychiatric symptoms, while suicidality (2.9%) and psychosis (1.53%) are less frequent. The pathophysiology is multifactorial and includes immune-mediated neuroinflammation, blood–brain barrier disruption, and autoantibody activity. Distinct neuropsychiatric manifestations have been associated with specific biomarkers, supporting heterogeneous underlying mechanisms. Additional contributing factors include disease activity, corticosteroid use, and psychosocial stressors.

**Conclusion:**

Psychiatric manifestations of SLE are common, heterogeneous, and associated with worse clinical outcomes, including increased disease burden, reduced quality of life, and higher mortality. Early recognition remains difficult due to diagnostic complexity and limited biomarkers, often leading to underdiagnosis or delayed treatment. Greater awareness, multidisciplinary evaluation, and continued research are essential for improving outcomes in patients with NPSLE.

**Abstract Topic:** Literature Review

**Poster #130**

# From ECG to Apnea Detection: A Transparent Machine Learning Framework for Medical Education

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**Abstract**

**Background:** Artificial intelligence is increasingly discussed in health professions education, yet learners often encounter model outputs without seeing the analytic pathway behind them. This limits understanding of how preprocessing, feature engineering, split design, and evaluation influence performance and interpretation. We designed an educational innovation using ECG-based apnea detection to create a transparent, reproducible, and critique-ready machine learning workflow for medical education.

**Methods:** We used the PhysioNet Apnea-ECG database, which contains 70 overnight ECG recordings organized in a historical learning/test structure. For the primary framework, records c05 and c06 were excluded because of possible overlap, leaving 68 records, 33,518 minute windows, and 16,111 labeled rows, split into 23 training, 10 validation, and 35 test records. The workflow included ECG indexing, provenance review, preprocessing with detrending, filtering, optional normalization, and 1-minute segmentation. Two heartbeat-identification strategies were implemented using either provided .qrs annotations or regenerated ECG-based R-peak detection. Interpretable physiologic features were extracted, including RR interval statistics, heart-rate variability measures, ECG amplitude features, noise proxies, and ECG-derived respiration surrogates. Models were trained with record-level leakage prevention and compared across logistic regression, random forest, and gradient boosting.

**Results:** The primary benchmark, logistic regression with provided QRS annotations, achieved moderate minute-level discrimination, with AUROC 0.8013, AUPRC 0.7742, accuracy 0.7103, and record-level AUROC 0.8800. Sensitivity analyses showed that both QRS strategy and model family materially affected performance. Logistic regression with detected QRS improved minute-level AUROC to 0.8330 and AUPRC to 0.8186. Tree-based models performed substantially better, with random forest reaching minute-level AUROC 0.9978 and gradient boosting 0.9620.

**Conclusions:** ECG-based apnea detection was feasible in this educational benchmark. Although tree-based models achieved higher discrimination, logistic regression remained the primary benchmark because interpretability was the central educational objective. Beyond apnea detection, this framework serves as a critique-ready platform for teaching physiology, feature engineering, leakage prevention, benchmark interpretation, and responsible medical AI evaluation. Future work should develop structured teaching modules, test additional signal-processing strategies, evaluate cross-dataset generalizability, and examine effects on learner understanding.

**Keywords:** sleep apnea; electrocardiography; machine learning; medical education; artificial intelligence; interpretability; reproducibility; health professions education; physiologic signal analysis; responsible AI.

**Abstract Topic:** Quantitative Observational Data-Science Study

**Poster #131**

# Tracheoinnominate Fistula Complicated by Bilateral Pneumothoraces and Diffuse Subcutaneous Emphysema - Case Report

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**Abstract**

**INTRODUCTION:**

Tracheo-innominate fistula (TIF) is rare, occurring in 0.1% to 1% of patients with tracheostomy, but it carries a mortality rate exceeding 70% despite aggressive management. Typically occurring within the first 3 weeks after a tracheostomy with the classic presentation of a "sentinel bleed," serving as a critical warning sign which may precede catastrophic exsanguination by hours to days. Immediate recognition and temporizing maneuvers such as cuff hyperinflation or digital compression are essential to bridge patients to definitive surgical repair.

**CASE DESCRIPTION:**

A 70-year-old female with tracheostomy dependence for thyroid cancer who presented with acute hemoptysis through her tracheostomy and oropharynx. The patient reported mild pain around her tracheostomy site, nausea, and chronic lower abdominal pain attributed to her chemotherapy. Initially stable, she rapidly deteriorated with massive hemoptysis and hematemesis, developing hypotension and bradycardia. Her fenestrated tracheostomy tube was exchanged for a cuffed tube, achieving partial tamponade. Despite tranexamic acid, atropine, sedation, paralytics, and transfusion of 5 units of packed red blood cells, ventilation remained difficult. Direct laryngoscopy revealed multiple clots in the oropharynx without active bleeding distal to the vocal cords. CT angiography revealed bilateral pneumothoraces, extensive pneumomediastinum, diffuse subcutaneous emphysema, pneumoperitoneum, and findings consistent with TIF. Bilateral chest tubes were placed, and the patient was transferred for cardiothoracic intervention. On arrival, she suffered recurrent massive hemorrhage with cardiovascular collapse, and despite aggressive resuscitation, she expired.

**DISCUSSION:**

This case highlights the fulminant nature of tracheo-innominate fistula (TIF) and reinforces its status as a true airway and vascular emergency. It also illustrates several important teaching points: early recognition of sentinel bleeding in tracheostomy patients, prompt cuff inflation or tube exchange for temporary tamponade, and immediate surgical consultation are critical. In addition, concomitant thoracic complications may further complicate ventilation and resuscitation, underscoring the need for rapid, coordinated multidisciplinary management.

**Abstract Topic:** Case Report

**Poster #132**

# Enhancing Hospice Care Familiarity: A Quality Improvement Initiative for Staff Insights and Patient Education

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**Abstract**

The role of hospice care is to ensure a good quality of life for people who suffer from incurable diseases. Patients and their relatives often have misconceptions about what hospice means and how things are expected to work. Together with Compassionate Care Hospice, we sought to address our perceived lack of awareness about hospice among patients and their families. We aimed at improving staff perception of patients' and caregivers' understanding of the process and achieving a 20% rise in this score. To perform a quality improvement project, we conducted a study prior to implementing an intervention. We designed and administered a 20-item survey to licensed hospice nurses and hospice aides. Questions were developed based on experience in working with hospice patients daily and had a rating ranging from 0 to 5 according to the topics included in four domains. In all, 37 staff members responded to the pretest questionnaire. The highest-rated topics are staff competency in explaining the hospice process (82.2%), comprehension of comfort care-based goals (80.6%), the understanding that hospice focuses on quality of life (80.6%), and appropriate contacts (80.6%). Among the least confident topics are understanding end-of-life physiological and psychological changes (69.8%), recognizing the need for emergency care (70.2%), availability of counseling and spiritual services (71.4%), and access to resources. In general, the test scores are unexpectedly high. It should be noted that the topics related to lower confidence levels pertain to changes at the end of life, emergency decision-making, and resource availability. Nevertheless, the overall level of knowledge among the staff is high; this can be due to respondents' biased views as they tend to underestimate patients' and family members' comprehension of the information provided. Baseline findings suggest potential gaps in key areas of hospice understanding but are limited by possible staff bias. To identify actual areas of concern, further research should involve patients and family members who would be asked about their understanding of the issues related to hospice care. Additionally, comparing the results between the surveys will help develop an effective strategy to implement a FAQ-based intervention program.

**Abstract Topic:** Quality Improvement

**Poster #133**

# Disseminated Coccidioidal Meningitis in a Previously Healthy Adult Complicated by Hydrocephalus Requiring Ventriculoperitoneal Shunt Placement: A Case Report

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[3]Kaiser Permanente Fresno Medical Center

**Abstract**
Coccidioidomycosis, colloquially known as “Valley fever”, is a fungal infection caused by Coccidioides immitis or Coccidioides posadasii. Exposure typically occurs through inhalation of airborne spores from disturbed soil or dust in endemic regions of the southwestern United States. The disease most commonly presents as a self-limited flu-like illness or community-acquired pneumonia. However, it may also manifest with extrapulmonary involvement, including meningitis, erythema nodosum, arthralgias, and osteolytic bone lesions. We report a case of disseminated coccidioidomycosis in a young, previously healthy patient, with osteolysis in the vertebral column with suspected hematogenous spread to the central nervous system (CNS) causing meningitis, further complicated by treatment-resistant hydrocephalus.

**Abstract Topic:** Case Report

**Poster #134**

# Mapping the Drivers of Rising 5150 Holds: The Role of 988 in Clovis, CA

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**Abstract**
Involuntary psychiatric holds (5150 holds) play a critical role in the management of patients experiencing severe mental health crises or otherwise present a danger to themselves or others. Recently, major changes have been made to the pipeline that manages these patients. In particular, the launch of the 988 Suicide and Crisis Lifeline played a major role in consolidating efforts of identifying individuals in distress and dispatching appropriate resources. We hypothesize that the implementation of the 988 Suicide & Crisis Lifeline is associated with a statistically significant increase in the monthly volume of 5150 involuntary psychiatric holds in Clovis, CA, independent of confounding variables such as rates of homelessness, substance use disorder, amongst others.

This study will utilize a retrospective cross-sectional design to analyze the frequency of 5150 involuntary psychiatric holds before and after the implementation of the 988 Suicide & Crisis Lifeline. The study will compare aggregated monthly case volumes to identify temporal trends and correlations associated with launch of 988 on July 16, 2022. Data will be obtained from the Clovis Police Department to compare trends in the number of individuals who were subject to a 5150 involuntary hold pre-implementation (July 16, 2019-July 15, 2022) and post-implementation (July 16, 2022-July 15, 2025). Multiple covariates, including housing status, demographics, and substance use, will also be tracked to control for confounding variables.

Existing literature indicates that while 988 was a major step forwards in improving resource management in patient care, challenges remain due to variation in services offered across different jurisdictions, lack of dedicated response teams, and challenges in obtaining data regarding 5150 holds that hinder further analysis. This project aims to be a pilot study that indicates the effect that the 988 rollout has on a smaller, more local scale, with the hopes of offering a framework for more research to improve patient outcomes nationwide.

**Abstract Topic:** Literature Review

# Selected Podium Presentations for 2026 Research Day

(10 min Talks, 2 min for Questions)

## Does TI-RADS Deliver? Variability and Malignancy Prediction in Thyroid Nodules

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[3] Community Health System

**Abstract**

**Background**

Thyroid nodule evaluation follows a diagnostic pathway in which ultrasound risk stratification using the Thyroid Imaging Reporting and Data System (TI-RADS) guides fine needle aspiration and Bethesda cytology informs surgical management. However, TI-RADS criteria are inconsistently reported on thyroid ultrasound, potentially leading to missed biopsies and undiagnosed malignancy. We evaluated concordance between TI-RADS classification and Bethesda cytology in a safety-net cohort from California's Central Valley.

**Methods**

We performed a retrospective study of 31 patients who underwent thyroid surgery after ultrasound evaluation, fine needle aspiration cytology, and Afirma molecular testing at an urban safety-net hospital in Fresno, California. The surgical cohort included patients with Bethesda V or VI nodules. TI-RADS scores were grouped as TR3–4 and TR5. Concordance between TI-RADS category and cytology was assessed using Fisher exact test.

**Results**

Thirty-one patients had 33 unique nodules with complete TI-RADS and Bethesda data. Overall, 22/33 (67%) nodules were TR5. Bethesda VI cytology occurred in 13/22 (59%) TR5 nodules compared with 6/11 (55%) TR3–4 nodules (RR = 1.08, p = 1.00). TI-RADS scoring was assigned by radiologists at time of diagnostic ultrasound in only 25/33 (76%) cases.

**Conclusion**

In this safety-net surgical cohort, TI-RADS classification showed only modest association with malignant cytology. The similar rates of Bethesda VI cytology between TR3–4 and TR5 nodules highlight the importance of accurate ultrasound interpretation when selecting nodules for biopsy. The lack of uniform TI-RADS application in our cohort underscores the need for standardized risk stratification to prevent missed malignancies.

**Abstract Topic:** Clinical Research

# Fentanyl's Youngest Victims: Hospital Encounter Outcomes Related to Fentanyl Use in Patients 18 and Under

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**Abstract**
While there is an abundance of data characterizing opioid-related hospital encounters in adults, there is minimal data in patients 18 years of age and younger. We examined the frequency and outcomes of fentanyl-related hospitalizations among patients aged 18 and younger in an IRB-approved retrospective study at two institutions within a Central Valley health care system. Patients 18 years of age and younger with a urinary drug screen positive for fentanyl were included in the study. Patients that received fentanyl prior to the urinary drug screen being collected were excluded. All charts from September 2023 to August 2025 with a urinary drug screen positive for fentanyl were reviewed for inclusion. Of the 172 charts reviewed, 157 were excluded for having received fentanyl prior to collecting the urinary drug screen. Of the 15 patients included, the median age was 16 years (15-17). English was the primary language in 13 (87%) patients and Spanish in 2 (13%) patients. The majority of patients were Hispanic (73%). Two (13%) patients presented to the emergency department in cardiac arrest, 3 (20%) following trauma, 4 (27%) with gastrointestinal/flu-like symptoms, and 6 (40%) after receiving out-of-hospital naloxone. Of the patients who received out-of-hospital naloxone, 3 exclusively received naloxone by a friend/family member and 2 exclusively received naloxone by paramedics. One patient received naloxone by both a friend/family member and paramedics. Unintentional ingestion of fentanyl was reported by 6 (40%) patients, of whom 3 (20%) reported they had taken Percocet and 3 (20%) Xanax. Seven (47%) patients' urinary drug screen was co-positive for cannabis, 3 (20%) for cocaine, and 3 (20%) for benzodiazepines. 3 (20%) patients were intubated, of which 2 (13%) were intubated for pulmonary edema following naloxone administration and 1 (7%) for cardiac arrest. The rise in pediatric substance use underscores the urgent need for healthcare providers to better recognize, refer, and treat these cases. Emergency department presentations involving fentanyl-laced pills, including counterfeit Percocet and Xanax, are a significant part of this emerging crisis. Increasing public access to naloxone is a crucial step in preventing these opioid overdoses from becoming fatal.

**Abstract Topic:** Public Health

# Plasma-Activated Media Combined with Chemotherapeutics: Impact on Viability of Normal and Malignant Breast and Prostate Cells

Lavanya Sankaran[1], Jakob Doster[2], Chuanling Xu[2], Nathalie Gonce[2], Valentyne Thomas[3], Katherine Sofia Sierra[2], Komal Vig[4], Vijay Rangarari[3], Satyanarayana Pondugula[2], Amit Morey[2]
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**Abstract**
**Purpose of Study:** Chemotherapy used for cancer treatment results in debilitating side effects for patients. Despite decades of research, enhancing drug sensitivity and minimizing toxicity remains a major challenge. Cold atmospheric plasma (CAP) offers a novel, non-thermal strategy to address this gap. CAP can alter biological processes at the cellular level to amplify the effects of existing chemotherapeutics. However, the comparative impact of plasma-treated media on normal tissues remains poorly understood and represents a critical barrier to clinical translation. Therefore, the goal was to determine the effect of the plasma-treated media, alone or in combination with chemotherapeutics, on the viability of normal and malignant human breast and prostate cells.

**Methods Used:** We conducted a series of cell viability experiments using malignant breast (MCF-7, MDA-MB-231) and prostate (PC3, LNCaP) cell lines, along with their corresponding epithelial cell lines (MCF-10A and RWPE-1, respectively). Media were exposed to dielectric barrier discharge (DBD) air plasma for 5, 10, or 20 minutes before adding to the cells. For combination treatment, plasma-treated media were combined with a panel of chemotherapeutic agents. Agents for breast cell lines included paclitaxel, docetaxel, doxorubicin, cisplatin, carboplatin, 5-fluorouracil, and gemcitabine. Agents for prostate cell lines included docetaxel, cabazitaxel, and mitoxantrone.

**Summary of Results:** Both breast and prostate cancer cell lines exhibited limited and variable sensitivity to plasma-treated media, whereas epithelial cells were consistently more susceptible. Neither MCF-7, MDA-MB-231, nor LNCaP cells displayed significant viability changes following 5-minute plasma exposure, with modest reductions at 10- and 20-minute exposures. PC3 cells showed clear reductions particularly at 10- and 20-minute treatments. MCF-10A and RWPE-1 cells displayed heightened sensitivity both alone and combined with chemotherapeutics, exhibiting approximately 2x greater loss of viability than corresponding malignant lines under comparable conditions.

**Conclusions:** These findings indicate that the current DBD air plasma parameters impose a disproportionately harmful burden on breast and prostate epithelial cells without uniformly enhancing chemotherapeutic cytotoxicity in the malignant cell lines tested. Future studies will evaluate alternative plasma modalities, alone or in combination with chemotherapeutics, on both normal and malignant cell lines, and will investigate the underlying mechanisms of differential responses.

**Abstract Topic:** Basic Science

# Prehospital Transport Mode and Mortality in Firearm Injuries: NTDS Analysis (2015-2023)

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California Health and Science University College of Osteopathic Medicine[1],Rocky Vista University[2], Idaho College of Osteopathic Medicine[3], Duquesne University Nasuti College of Osteopathic Medicine[4], Texas College of Osteopathic Medicine[5]

**Abstract**

**Introduction**

Firearm injuries remain a major source of trauma-related morbidity and mortality in the United States. Prehospital transport modality may influence outcomes through differences in triage, transport time, and access to care; however, national longitudinal data in firearm injury populations remain limited. We evaluated the association between transport mode and outcomes among patients with gunshot wounds using the National Trauma Data Standard (NTDS).

**Methods**

We performed a retrospective cohort study of NTDS/NTDB Participant Use Files from 2015–2023. Firearm injuries were identified using ICD-10 external cause codes. Transport was categorized as ground ambulance, helicopter, fixed-wing, police, or private/public vehicle or walk-in; cases with unknown transport were excluded. The primary outcome was in-hospital mortality. Secondary outcomes included hospital length of stay (LOS) and resource utilization. Multivariable logistic regression adjusted for age, Injury Severity Score (ISS), and sex, using private vehicle transport as the reference.

**Results**

A total of 350,043 patients met inclusion criteria. Ground ambulance was the most common transport mode (74.4%), followed by private vehicle (16.2%), helicopter (7.3%), police (1.9%), and fixed-wing (0.2%). Injury severity differed significantly across groups, with the highest ISS observed in police (16.34 ± 17.41) and helicopter transports (13.92 ± 11.25), and the lowest in private vehicle patients (7.53 ± 8.89).

Unadjusted mortality was highest among police (8.30%) and helicopter (7.69%) and lowest among private vehicle patients (1.54%) ($p<0.001$). After adjustment, all transport modes remained associated with higher odds of mortality compared with private vehicle transport. Resource utilization paralleled injury severity, with helicopter and police cohorts demonstrating longer LOS and increased need for critical care resources. Sensitivity analysis restricted to ISS ≥15 and annual trend analysis demonstrated consistent findings.

**Conclusion**

Prehospital transport modality is strongly associated with injury severity, mortality, and resource utilization in firearm-related trauma. Observed differences likely reflect case mix and triage patterns rather than a direct transport effect. Further studies incorporating physiologic variables and prehospital time metrics are needed to better define optimal transport strategies.

**Abstract Topic:** Clinical Research

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