ACP American College of Physicians
Leading Internal Medicine, Improving Lives

Nebraska Chapter

2025 Resident

Abstract Competition

October 15, 2025 via Zoom

Resident Abstracts

Categories accepted:

Basic Research

Clinical Research

Clinical Vignette

Quality Improvement/Patient Safety

High Value Cost- Conscious Care

Abstract 1

Category Submitting for:
Clinical Vignette

Abstract Title
It's Not Lupus…Until It Is

Limit the body of the abstract to be 500 words or less. Type single-spaced. For electronic submission, you do not need to stay within the borders. The abstract form does not accept graphs, charts, tables, etc.*
INTRODUCTION: Systemic lupus erythematosus (SLE) is a chronic and complex autoimmune disease that can impact nearly every organ system, resulting in a wide variety of clinical presentations and making diagnosis challenging.

CASE : A 74-year-old African American male was found down at home and brought to the hospital via emergency medical services. History obtained from family reflected recent decline in mental status and acute exacerbation of long-standing generalized weakness. Initial workup was notable for serum creatinine of 9.46 mg/dL, hemoglobin of 9.9 g/dL, and platelet count of 41,000. Urine studies revealed proteinuria and hematuria, concerning for glomerulonephritis. Initial management in the intensive care unit included vasopressor support, intubation, and initiation of kidney replacement therapy. Additional work-up showed low complement, elevated ANA titer (> 1:1280), and a circulating IgA kappa monoclonal protein. He underwent renal biopsy and results were consistent with diffuse, proliferative (Class IV) Lupus Nephritis. Ultimately, in collaboration with nephrology and rheumatology, a diagnosis of SLE with renal, hematologic, musculoskeletal, and neuropsychiatric involvement was rendered. He had remarkable improvement with immunosuppressive therapy, including methylprednisolone, cyclophosphamide, and hydroxychloroquine. He had continued clinical improvement with discontinuation of dialytic therapy, normalization of his renal function, and recovery of mental status.

DISCUSSION: This case illustrates the remarkable variability in the clinical presentation of SLE. While SLE classically presents in young women with mucocutaneous, musculoskeletal, hematologic, and/or renal involvement, this patient was a 74-year-old African American man who presented with altered mental status. Understandably, clinical suspicion for SLE was initially low in this patient. After initial serology was positive, secondary SLE was considered due to the patient's atypical presentation but was found to be unlikely given no new medications or immunologic triggers. Paraprotein related disease was also on the differential, given the presence of circulating monoclonal protein. Fortunately, kidney biopsy is helpful in distinguishing paraprotein related diseases from SLE and in this case, was consistent with SLE nephritis.

It is crucial to consider SLE as a potential etiology of neuropsychiatric symptoms, as neuropsychiatric involvement in SLE is associated with increased mortality (1). Neuropsychiatric manifestations occur frequently (30-50%) in SLE patients, and are thought to arise from ischemic and inflammatory mechanisms (2). Greater awareness is needed regarding these atypical presentations of SLE, and further research is warranted to refine diagnostic criteria for neuropsychiatric SLE.

REFERENCES:
1. Zirkzee EJ, Huizinga TW, Bollen EL, van Buchem MA, Middelkoop HA, van der Wee NJ, le Cessie S, et al. Mortality in neuropsychiatric systemic lupus erythematosus (NPSLE). Lupus. 2014;23(1):31-8. doi: 10.1177/0961203313512540. Epub 2013 Nov 15. PMID: 24243776.

2. Hanly JG, Urowitz MB, Gordon C, Bae SC, Romero-Diaz J, Sanchez-Guerrero J, Bernatsky S, et al. Neuropsychiatric events in systemic lupus erythematosus: a longitudinal analysis of outcomes in an international inception cohort using a multistate model approach. Ann Rheum Dis. 2020 Mar;79(3):356-362. doi: 10.1136/annrheumdis-2019-216150. Epub 2020 Jan 8. PMID: 31915121.

Abstract 2

Category Submitting for:
Quality Improvement-Patient Safety

Abstract Title
Improving the Musculoskeletal Exam and Intra-articular Injection Technique in Internal Medicine Residents

Limit the body of the abstract to be 500 words or less. Type single-spaced. For electronic submission, you do not need to stay within the borders. The abstract form does not accept graphs, charts, tables, etc.*

Background:
Musculoskeletal disorders such as osteoarthritis, bursitis, impingement syndromes, tenosynovitis are commonly encountered in primary care clinics, where intra-articular glucocorticoid injections can provide significant symptomatic relief. Despite the prevalence of these conditions, many primary care physicians report low confidence in performing musculoskeletal exams, identifying joint landmarks, and administering injections 1. Prior surveys indicate that 95% of primary care providers feel inadequately trained in joint injections, and nearly 90% refer patients to specialty clinics 2. This lack of confidence likely stems from insufficient training during medical school and residency, with less than half of surveyed physicians reporting exposure to didactic lectures or hands-on demonstration 2. In the ambulatory setting, musculoskeletal disorders account for approximately 11–13% of office visits, emphasizing the need for targeted education 2. Glucocorticoid injections are recommended for knee, hand, and hip osteoarthritis per 2019 ACR guidelines 3. Intra-articular injections work through suppression of inflammatory pathways to reduce pain and swelling. At our institution, no dedicated curriculum exists for joint injections, and residents primarily acquire skills through clinical rotations, highlighting the importance of structured training prior to patient care.

Methods: A pre-post survey study was conducted to evaluate the impact of a joint injection workshop on internal medicine residents' comfort, confidence, and interest in additional training. The workshop was offered at a single academic institution, with voluntary and anonymous participation. Surveys were completed by 42 residents pre-workshop (21 PGY-1, 16 PGY-2, 5 PGY-3) and 23 residents post-workshop (12 PGY-1, 7 PGY-2, 4 PGY-3). Three domains were assessed using Likert-type scales: comfort with identifying injection landmarks (1–5), confidence in independently performing injections (1–5), and interest in further joint injection training (1–4). Given the ordinal data and unequal group sizes, the Mann-Whitney U test was used for comparisons. Effect sizes were calculated using the rank biserial correlation coefficient (rrb), with interpretations as follows: 0–0.1 very small, 0.1–0.3 small, 0.3–0.5 medium, >0.5 large. Negative rrb values indicate lower median post-workshop responses. All data was analyzed using Jamovi software.

Results: Post-workshop, residents demonstrated significant improvements in both comfort and confidence. Median comfort with locating injection landmarks increased from 3 to 4 ($U = 173$, $p < 0.001$, rrb = 0.642), and median confidence in performing injections independently increased from 3 to 4 ($U = 171$, $p < 0.001$, rrb =

0.646), both representing large effect sizes. Conversely, median interest in additional training decreased from 4 to 3 (U = 377, p = 0.032, rrb = -0.303), reflecting a medium negative effect, suggesting that the workshop sufficiently met residents' educational needs.

Conclusions: A structured joint injection workshop significantly improved internal medicine residents' comfort and confidence in performing intra-articular injections. The decline in desire for further training indicates that a dedicated educational session may meaningfully address gaps in musculoskeletal procedural competency. These findings support the incorporation of hands-on joint injection training into residency curriculum to enhance procedural readiness and potentially reduce the need for specialty referrals.

Abstract 3

Category Submitting for:
Basic Research

Abstract Title
U.S.A. Trends in Intrahepatic and Bile Duct Cancers from 1999-2023

Limit the body of the abstract to be 500 words or less. Type single-spaced. For electronic submission, you do not need to stay within the borders. The abstract form does not accept graphs, charts, tables, etc.*
Liver and intrahepatic bile duct malignancies are an increasing cause of mortality in the United States due unclear reasons over the past 20 years, perhaps proportionately due to overall increase in age of the US population and improvement of diagnostic/ screening strategies. This study utilizing the Centers for Disease Control and Prevention Wide-Ranging Online Data for Epidemiologic Research (CDC WONDER) database, investigated trends of demographic (gender, race, age group) and geographical differences in liver and intrahepatic bile duct cancer related mortality. Average annual percentage changes were assessed using the CDC WONDER data base with respect to age-adjusted mortality rates (AAMR) and annual percentage change (APC). This study used the Joinpoint Regression Program to determine statistical significance of mortality trends between 1999 and 2023. This study supports that at a national level, across multiple demographics, the trends in AAMR for liver and intrahepatic bile duct cancers are on the rise. Significant differences in AAMR were found among gender (male > female), race (decreased AAMR in Asian and Pacific islanders, increased in all other races, white non-Hispanic < all other races), region (AAMR in the South > West > Midwest > Northwest), and that liver and bile duct cancer AAMR is directly proportionate to increasing age group. Focused efforts to decrease AAMR for these cancers need to focus on racial and geographic disparities, taking in to account access to limited health care providers in certain areas, and higher rates of poverty in certain regions. These results serve to inform on demographics that resources should be focused towards to make policy and encourage screening and diagnosing for at risk groups and regions.

Abstract 4

Category Submitting for:
Clinical Vignette

Abstract Title
A case of atrial fibrillation with rapid ventricular response secondary to massive uterine chondrosarcoma

Limit the body of the abstract to be 500 words or less. Type single-spaced. For electronic submission, you do not need to stay within the borders. The abstract form does not accept graphs, charts, tables, etc.*

Uterine chondrosarcoma is a rare and aggressive malignant tumor of cartilaginous tissue within the uterus with isolated case reports in the literature. Uterine sarcomas themselves are rare, accounting for 2-5% of all uterine malignancies. Patients may present with abnormal bleeding or a rapidly enlarging mass. These tumors are aggressive with a high risk of metastasis and poor prognosis. Diagnosis is confirmed by histologic evaluation after surgical removal, as these are otherwise difficult to differentiate from other types of uterine masses. Definitive treatment and systemic therapy remains unclear due to the limited number of reported cases. Failure of timely management can lead to increasingly poor prognosis from potential hematogenous spread or rapid growth leading to compression of surrounding structures.

A 59 year-old female with a history of congestive heart failure, nonischemic cardiomyopathy, atrial fibrillation (AF), and presumed uterine leiomyoma presented to the ER with a one week history of dizziness, fatigue, and orthopnea. She was nonadherent to her medications and follow-up appointments since first being diagnosed with a uterine leiomyoma in 2022. Since that time, the tumor had grown significantly. She was previously offered surgery but refused due to concerns about poor outcomes. In the ER, testing revealed AF with rapid ventricular response (RVR). Imaging showed a large uterine mass measuring 24.5 cm x 26.2 cm x 26.3 cm with a volume of 8.8 L, significantly increased from prior imaging. The mass was severely compressing the aortic bifurcation, lower inferior vena cava, and common iliac vessels, along with the diaphragm and cardiopulmonary structures, contributing to her refractory AF with RVR. She was started on antibiotics, fluids, and a diltiazem infusion. Cardiology and gynecology were consulted, with gynecology recommending a transfer to a facility with gynecology-oncology capabilities, which was completed the following day. An echocardiogram showed an ejection fraction of 40-45% with moderate tricuspid regurgitation, elevated right ventricular systolic pressure, and global left ventricular hypokinesis. Following transfer, she underwent a total abdominal hysterectomy, bilateral salpingo-oopherectomy, omentectomy, and bilateral ureteral stent placement. Postoperatively, the patient developed a pelvic hematoma leading to hemorrhagic shock and AF with RVR, requiring ICU care and vasopressor support. She received 11 units of blood and continuous renal replacement therapy in the setting of alkalemia and respiratory alkalosis, requiring intubation and embolization of the left ovarian artery and bilateral internal iliac arteries. Her AF was managed with metoprolol and digoxin. She was gradually weaned off vasopressors and subsequently extubated.

Uterine sarcomas can be highly aggressive leading to complications secondary to mass effect or tumor metastasis. Delayed diagnosis and care can increase the risk of post-operative complications and mortality. Given the rarity and poor prognosis associated with primary uterine chondrosarcoma, early recognition, timely evaluation, and close follow-up are essential. Patients should be appropriately educated about the aggressive nature of these tumors, particularly the complications associated with delayed care. It is crucial to counsel patients on the importance of available treatment options, expected outcomes, and prompt follow-up to improve prognosis in patients with rare uterine chondrosarcomas.

Abstract 5

Category Submitting for:
Clinical Vignette

Abstract Title
A Case of RCVS: A rare disease with common triggers!

Limit the body of the abstract to be 500 words or less. Type single-spaced. For electronic submission, you do not need to stay within the borders. The abstract form does not accept graphs, charts, tables, etc.*
We present a case of a 29-year-old lady who presented to the emergency room with a thunderclap headache and elevated blood pressure. The headache was acute, unrelenting, holocephalic, and accompanied by nausea and vomiting, without fever or rash. She reported a systolic blood pressure of approximately 189 at home; upon presentation, it was 160/93.
She has a past medical history significant for essential hypertension, obstructive sleep apnea, anxiety with depression, and polysubstance abuse (alcohol, marijuana). The patient admitted to smoking marijuana that week but denied other illicit drug use.
In the ER, her physical exam did not reveal any neurological deficits, meningeal signs, or hyperreflexia. Patient was taken for urgent CT head which showed 2.1 x 1.5 x 1.1 cm hyperdense parenchymal hemorrhage in the paramedian left parietal lobe, along with scattered areas of subarachnoid hemorrhage. No recent trauma or bleeding coagulopathy was identified. She was managed with a nicardipine drip in the ICU. MRA redemonstrated hematoma and some spotty stenosis of several distal arteries. It was followed by DSA (digital subtraction angiography) showing diffuse areas of vessel irregularity (referred to as "skip lesions" and "beading"). Given her stability, she was discharged home to follow-up outpatient.
Further workup including C3, C4, lupus AC, B2GP, Hep C, HIV, SSB, SSA, ESR, CRP, Anti DS DNA, RF, ANCA, ANA, syphilis was all negative. In the context of poorly controlled hypertension, marijuana use, and thunderclap headache, reversible cerebral vasoconstriction was the suspected etiology.
The diagnosis was confirmed by the resolution of hematomas and reversal of vessel occlusions on subsequent CTA. Resources were provided for managing polysubstance abuse along with better blood pressure control.

Discussion:
RCVS is described as a clinical-radiological syndrome. Though rare, it is considered that RCVS is largely underdiagnosed. It is thus important to develop awareness about the disease, especially in the context of risk factors that may precipitate it. It is imperative to remember various differential diagnoses of vasoconstriction before coming to a final diagnosis of RCVS.
RCVS may lead to several complications that may possibly even be life-threatening. It is important to differentiate between RCVS and non-RCVS arteriopathy as management with steroids is recommended for the latter but may worsen outcomes for RCVS.

Conclusions:
This case not only signifies the diagnosis of RCVS but also delineates the course of investigation for a patient presenting with "thunderclap headaches".
It is important to keep RCVS in the differentials and not start steroids right away for suspected autoimmune vasculopathy to avoid complications. If diagnosed early and managed appropriately thunderclap headache attacks as well as vasospasms are fully reversible and >90% of patients are functionally independent at discharge.

Abstract 6

Category Submitting for:
Clinical Vignette

Abstract Title
Spontaneous Coronary Artery Dissection and Gastrointestinal Stromal Tumor, A Potential Correlation

Limit the body of the abstract to be 500 words or less. Type single-spaced. For electronic submission, you do not need to stay within the borders. The abstract form does not accept graphs, charts, tables, etc.*

Background:
Spontaneous coronary artery dissection (SCAD) is a dissection within coronary arteries that is not iatrogenic and not attributed to trauma or atherosclerotic cardiovascular disease. The pathogenesis of SCAD involves myocardial injury due to luminal obstruction of the coronary artery following intimal disruption or intramural hematoma. SCAD is most common among women aged 40 to 60 years, the majority of which lack typical cardiovascular risk factors. The causes of SCAD are unknown, but risk factors include emotional and physical stress, stimulant medications or illicit drugs, and hormonal triggers. There is also an association between SCAD and connective tissue disorders and systemic inflammatory diseases.

Case Presentation:
A 57-year-old woman with a past medical history of hypertension, generalized anxiety disorder, and major depressive disorder presented to the emergency department with left-sided chest pain that resolved spontaneously. Initial workup with labs and electrocardiogram was unremarkable. Four hours later, her chest pain returned in a similar manner. Electrocardiogram again showed normal sinus rhythm, however her serum high-sensitivity troponin was markedly elevated and eventually peaked at 31,555.4 ng/L. She was hypertensive, but vital signs were otherwise normal. A CT angiogram of her chest, abdomen, and pelvis was obtained and was negative for aneurysm, dissection, or significant arterial stenosis. However, it revealed a 4.3 centimeter well-defined mass at the posterior aspect of the gastric fundus. The patient was admitted and treated for non-ST-segment elevation myocardial infarction (NSTEMI). Cardiac catheterization showed proximal abrupt narrowing in the posterior descending artery consistent with SCAD. An MRI of her abdomen was suggestive of gastrointestinal stromal tumor (GIST) in her stomach. She was discharged home after 72 hours of observation on the appropriate cardiac medication regimen. Further outpatient workup with EGD and EUS with biopsy confirmed the gastric mass to be GIST.

Discussion:
Of the known risk factors and associations surrounding SCAD, GIST is not mentioned in the current literature. This case report highlights and explores a possible association between the two pathologies. It also identifies the potential for further research into their association, particularly between SCAD and the genetic syndromes of GIST.

Abstract 7

Category Submitting for:
Clinical Vignette

Abstract Title
Penny Wise, Copper Poor: The Hidden Cost of Supplements

Limit the body of the abstract to be 500 words or less. Type single-spaced. For electronic submission, you do not need to stay within the borders. The abstract form does not accept graphs, charts, tables, etc.*
Nutritional supplements are widely available and often perceived as harmless, yet excessive intake can have significant and unexpected clinical consequences. This case illustrates how routine, over-the-counter supplementation led to severe anemia and emphasizes the need to carefully evaluate supplement use in unexplained cytopenias.

A 66-year-old woman with CKD Stage 4 s/p kidney transplant (baseline Cr ~2.0 mg/dL), COPD with chronic hypoxemia (baseline oxygen requirement of 3 L NC), hypertension, dementia, hypothyroidism, and depression presented with three days of persistent dizziness and lightheadedness. Workup at an outside emergency department revealed Hgb 5.1 g/dL (10.5 g/dL two months earlier) with Cr 2.47 mg/dL. No clinical history of blood loss or bleeding disorders. She denied any recent hematemesis, melena, or hematochezia. She received two units of PRBCs and was transferred to an academic center for further evaluation.

On admission, initial lab workup revealed macrocytic anemia (MCV 102 fL) with reticulocytopenia. Hemolysis was excluded (normal haptoglobin, LDH, and bilirubin), and folate and vitamin B12 levels were within normal limits. Iron studies suggested overload but were confounded by recent transfusions. Peripheral smear showed normocytic anemia with elliptocytes, occasional dacrocytes, and polychromasia. Additionally, it revealed leukopenia with absolute neutropenia and without significant dysplasia. Due to concerns for myelodysplastic syndrome (MDS), hematology was consulted. Additional hematologic testing revealed zinc at the upper limit of normal (116 µg/dL), undetectable copper (<32 µg/dL), and mildly elevated methylmalonic acid (0.53 µmol/L). A further medication review confirmed chronic zinc supplementation with frequent dosing in the setting of dementia. Zinc was discontinued, and copper supplementation was initiated. This patient required one additional PRBC transfusion but subsequently stabilized and was discharged on oral copper, with an improved Hgb level at outpatient follow-up.

Excessive zinc intake can lead to copper deficiency through two mechanisms: the induction of metallothionein synthesis and the competitive inhibition of copper transporters in the jejunum. Metallothionein preferentially binds copper and traps it within cells, leading to its loss during normal cell turnover, ultimately resulting in systemic copper deficiency. Clinically, copper deficiency mimics MDS by manifesting as anemia, neutropenia, hypopigmentation, osteoporosis, generalized fatigue, and neurologic dysfunction (i.e., gait abnormalities, sensory loss, muscle weakness, etc.). If left untreated, copper deficiency may progress to pancytopenia or neurologic injury.

This case underscores zinc-induced copper deficiency as a reversible but easily overlooked cause of cytopenias. Early recognition enables simple zinc withdrawal and copper repletion, resulting in complete hematologic recovery. Additionally, early recognition helps prevent unnecessary workups, including bone marrow biopsy to rule out MDS. This case highlights the importance of accurate history taking, medication

reconciliation, especially in patients with cognitive impairment, and understanding not only nutrient deficiencies but also the toxicities of seemingly benign over-the-counter supplements.

ABSTRACT 8

Declining Acute Myocardial Infarction-related mortality in the Young and middle-aged Adult Population of the United States and the Impact of the COVID-19 Pandemic

Abstract

Background: Acute myocardial infarction (AMI) represents a significant component of cardiovascular disease (CVD) mortality among the young and middle-aged populations of the United States (US).

Research Question: To analyze the long-term trends and the impact of the COVID-19 pandemic on AMI-related mortality among the young and middle-aged populations of the US.

Methods: Data from the Centers for Disease Control and Prevention Wide-ranging Online Data for Epidemiologic Research (CDC WONDER) multiple causes of death database were used to analyze death certificates from 1999 to 2023 for AMI-related deaths among the young and middle-aged population (aged 25-64) of the US. Age-adjusted mortality rates (AAMRs) per 100,000 people and associated annual percent changes (APCs) and average APC (AAPCs) were analyzed using Joinpoint regression analysis. Mortality trends were stratified by sex, race/ethnicity, and census region for comparative analysis.

Results: From 1999 to 2023, there were 970,454 AMI-related deaths among U.S. adults aged 25-64 years. The annual number of AMI-related deaths decreased from 44,040 in 1999 to 31,522 in 2023. The overall AAMR per 100,000 decreased from 31.02 deaths (95% CI, 30.73 to 31.31) in 1999 to 15.29 (95% CI, 15.11 to 15.46) in 2023 (AAPC -2.92%, 95% CI -3.22 to -2.75). The AAMR per 100,000 declined at a faster rate from 31.02 in 1999 to 19.57 in 2010 (1999-2010, APC -4.26), followed by a slower rate from 19.57 in 2010 to 16.67 in 2019 (2010-2019, APC -1.41), The declining trend was disrupted by a transient increase during the COVID-19 pandemic, with a peak AAMR of 19.73 (95% CI, 19.53 to 19.93) in 2021 (2019-2021, APC 8.52). The declining trend resumed from 2021 to 2023, with AAMR decreasing to the lowest levels of 15.29 in 2023 (2021-2023, APC -12.58). Heterogeneity across demographic and regional groups has narrowed during these 25 years. However, they are still prevalent, with men (figure 1), non-Hispanic (NH) Black or African American, NH American Indian or Alaska Native (figure 2), and the residents of the Southern United States (figure 3) having higher mortality rates.

Conclusion: Over the past 25 years, AMI-related mortality has declined in the young and middle-aged population of the US, although rates spiked during the COVID-19 pandemic before resuming their decline in 2022. While disparities among demographic and regional groups have narrowed, they still exist, necessitating comprehensive efforts to improve cardiovascular health outcomes.