**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 01**
**Category:** Clinical Vignette
**Medical School:** Central Michigan University College of Medicine
**Presenter:** Yashi Ballal
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## From Immunosuppressant to Immune Attack: A Case of Adalimumab-Associated AIDP

Acute inflammatory demyelinating polyradiculoneuropathy (AIDP), the most common subtype of Guillan-Barre Syndrome, is a rare but serious autoimmune disorder that causes rapid-onset muscle weakness and sensory disturbances. While researchers have not yet fully identified the exact etiology, they have linked AIDP to various triggers, including infections and, in some cases, medications. This case report describes a unique instance of AIDP developing in a young woman with Crohn's Disease shortly after she resumed adalimumab therapy, a tumor necrosis factor-alpha (TNF-α) inhibitor commonly used to treat inflammatory bowel diseases.

A 27-year-old woman with Crohn's Disease, previously treated with balsalazide and later adalimumab, recently restarted adalimumab after self-discontinuing it for a year, believing her condition had improved. She presented with a two-week history of progressive numbness and weakness in all extremities, initially starting as a pins-and-needles sensation and advancing to the point of requiring assistance to walk. Physical exam showed diminished sensation in the ulnar distribution bilaterally, 3/5 strength in the hips, knees, and ankles, and diminished reflexes. She also developed facial and tongue numbness, dysphagia, and dysphonia. Initial imaging (CT head, MRI brain) were unremarkable and a lumbar puncture was inconclusive with elevated protein and cell count. Neurology repeated brain and cervical MRIs, which were unremarkable, but lumbar MRI showed enhanced cauda equina nerve roots and conus, consistent with AIDP. Nerve conduction studies confirmed findings consistent with the early acute phase of AIDP. AntiGM1 antibodies were positive while anti-GM2, GD1A, GD1b and GQ1b were negative. Due to her unstable respiratory status, the patient was transferred to the ICU and received five days of IVIG treatment. Afterward, her VC improved from 1.2L to 2.1L, and oropharyngeal dysphagia resolved. She was then transferred to inpatient rehab, where she improved in strength but still had mobility limitations on discharge that affected her ability to perform Activities of Daily Living. The patient was discharged using a walker for mobility.

AIDP is rare, with an incidence of 1–2 per 100,000 per year, slightly higher in males. Neurologic adverse effects are more commonly associated with adalimumab in rheumatoid and psoriatic arthritis than in Crohn's disease, with onset typically months after initiation. Symptoms range from limb weakness to acute flaccid paralysis and respiratory insufficiency. TNF-α inhibitors are also linked to neuroinflammatory effects such as multiple sclerosis, peripheral neuropathy, and optic neuritis. Adalimumab may contribute to AIDP by reducing TNF-α levels, modifying T-cell

responses, and decreasing autoreactive T-cell apoptosis, potentially enhancing autoimmune responses, reactivating latent infections, and increasing neuropathy risk. Biologics also impair immune defense complexes, heightening infection risk and severity. In immunocompromised patients with reduced cytokine production, these effects may create a favorable environment for AIDP development.

Overall, physicians must thoroughly assess the balance between therapeutic benefits and potential risks on an individual basis. It is essential to monitor for neurologic adverse effects associated with TNF-alpha inhibitors, as these rare events can lead to significant morbidity. Prompt discontinuation of the medication is critical if patients exhibit such symptoms.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 02**
**Category:** Research
**Medical School:** Central Michigan University College of Medicine
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# Efficacy of Group Prenatal Care in Medically Underserved Populations: A Retrospective Study

Introduction: It has been widely demonstrated that, in comparison to standard prenatal care, pregnant women receiving group prenatal care are more engaged in their wellbeing and satisfied with their provider, are less likely to engage in harmful/risky behavior (such as misuse of substances) and have greater engagement in positive health behaviors, all of which can lead to better maternal and infant health outcomes. Pregnant mothers in Saginaw County and surrounding areas are disproportionately affected by reduced access to prenatal healthcare, increasing poor maternal and infant health outcomes. The purpose of the study is to compare maternal and fetal health outcomes in pregnant patients enrolled in group prenatal care (GPNC) to pregnant patients not enrolled in GPNC.

Methods: Retrospective review of pregnant patients receiving prenatal care at Central Michigan University (CMU) located in the mid/central Michigan area focusing on the impact of GPNC on maternal and fetal health outcomes. Data from patient electronic medical records was collected from 117 patients receiving prenatal care at CMU in 2023. 51 patients participated in GPNC, and 66 patients received standard prenatal care.

Results: Preliminary results demonstrated higher mean APGAR scores at 1 and 5 minutes in the GPNC group compared to the control group (8 and 8 compared to 5 and 5). Rates of low birthweight were higher in the control group (21.54%) compared to the GPNC group (13.43%). Rates of primary cesarean section were higher in the GPNC group (34.3%) compared to the control group (21.5%). Rates of breastfeeding were higher in the GPNC group (92.5%) compared to the control group (70.8%). Rates of postpartum depression were higher in the GPNC group (25%) compared to the control group (6%).

Conclusion: Improvement of maternal and fetal health outcomes presents a challenge, severely so in medically underserved and socioeconomically disadvantaged communities. The study highlights the potential benefits of GPNC in improving certain maternal and infant health outcomes, including higher APGAR scores, reduced rates of low birth weight, and increased breastfeeding rates. However, the findings also indicate higher rates of primary cesarean sections and postpartum depression in the GPNC group, underscoring the need for further research to optimize GPNC models and address these challenges. The results emphasize the importance of tailoring prenatal care to improve health outcomes in underserved communities.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 03**
**Category:** Clinical Vignette
**Medical School:** Central Michigan University College of Medicine
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# A Hematologic Disaster A Case of Simultaneous Chronic Lymphocytic Leukemia and Acute Myeloid Leukemia

Introduction: Chronic lymphocytic leukemia (CLL) and acute myeloid leukemia (AML) are distinct hematologic malignancies, and their simultaneous occurrence is exceedingly rare. CLL is a slow-progressing B-cell malignancy that often remains asymptomatic but may occasionally present with B symptoms or lymphocytosis. Conversely, AML is a rapidly progressive clonal disorder of myeloid precursors that commonly leads to marrow failure and systemic symptoms. Risk factors for AML include preexisting myeloproliferative disorders, prior chemotherapy, and toxic exposures. Concurrent diagnoses of AML and CLL represent less than 1% of cases and are associated with poor prognosis. This case underscores the diagnostic complexity posed by coexisting hematologic malignancies and highlights the need for vigilant surveillance in lymphoproliferative disorders.

Case Description: We present the case of a 73-year-old male with a history of CLL who developed AML during routine surveillance. The patient initially presented with acute respiratory failure attributed to a parapneumonic effusion. Despite treatment, his persistent symptoms and leukocytosis prompted a bone marrow biopsy, which revealed concurrent CLL and AML with monocytic differentiation. At diagnosis, his bone marrow blast count was 49%, with 20% CLL involvement. The patient's thoracentesis yielded 450 mL of cloudy amber fluid, demonstrating aberrant cells positive for CD56, necessitating placement of a 10-French catheter for drainage. Radiologic findings showed persistent pulmonary vascular congestion, interstitial pulmonary edema, and basilar atelectatic changes. Shared decision-making led to continued surveillance of CLL while initiating treatment for AML. The patient received a hospital-based cycle of subcutaneous cytarabine and oral prednisone, achieving leukocytosis suppression without adverse effects.

Discussion: The simultaneous emergence of AML and CLL posed unique challenges in this patient's clinical course. Treatment for AML was tailored to the patient's fitness and preferences. Cytarabine, a cornerstone of AML therapy, was administered subcutaneously alongside oral prednisone in a 5-day cycle, with subsequent cycles planned in the outpatient setting. Despite the dual diagnosis, the patient's AML responded favorably to treatment, while his CLL remained under clinical observation. Most commonly, concurrence of AML and CLL arises following treatment for CLL, as therapy increases AML risk. However, in this patient's case, both malignancies developed independently, as no prior treatment for CLL was reported.

Concurrent diagnoses frequently involve older males and often signal poor prognosis due to the aggressive nature of AML. This case highlights the value of a multidisciplinary approach in navigating diagnostic and therapeutic challenges.

Conclusion: This case emphasizes the importance of continued vigilance in patients with lymphoproliferative disorders and the significance of having a broad differential, especially in patients who do not return to baseline status despite appropriate treatment. It highlights the value of personalized care and considering the patient's clinical status, preferences, and comorbidities to optimize outcomes. Further research is essential to elucidate the mechanisms underlying these rare concurrent hematologic malignancies and to refine their management strategies.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 04**
**Category:** Research
**Medical School:** Central Michigan University College of Medicine
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# Optimizing Fall Risk Assessment Training for Primary Care Residents Through Simulation

Introduction
Geriatric care is in high demand due to the growing aging population and increased life expectancy in the United States. Falls are the leading cause of injury among adults aged sixty-five and older. While falls can be costly for both patients and healthcare systems due to increased emergency room visits, surgery, and post-injury care, they are also preventable. Research indicates that combining fall risk assessments with individualized treatment and referrals can reduce falls by 24%. However, these practices remain underutilized, presenting an opportunity to improve the health and well-being of older adults. This study examines whether a fall risk prevention simulation effectively prepares primary care residents to screen for and address fall risks in older adults and identifies areas for improvement in fall risk assessment training.

Methods
Seventeen primary care residents from Saginaw, MI participated in a standardized patient (SP) simulation with pre- and post-assessments. Participants reviewed pre-readings and videos introducing fall risk assessment and prevention two days before the simulation and completed a six-question questionnaire assessing their prior knowledge. The simulation involved three SP encounters: a patient who reported no history of falls but felt unsteady, a high fall-risk patient who had suffered falls previously, and a patient with a recent fall and subsequent pain. Participants were given two days after the simulation to complete a virtual post-assessment, which included the same six questions from the pre-assessment. The post-assessment also inquired about the participants' likelihood of recommending the simulation to colleagues and identified potential barriers to integrating the methods they learned into clinical practice.

Results
Before the simulation, residents scored an average of 63.6% correct on the questionnaire. Following the simulation, the average score increased to 67.6%. The paired t-test yielded a p-value of 0.58. Of the ten residents who completed the evaluations, eight were likely to recommend the simulation while two remained neutral. All respondents strongly agreed that following the simulation they would likely assess fall risk in seniors using structured questions and specific physical exam tests such as Timed Up & Go. 20% of respondents felt that there were no barriers in implementing senior fall risk assessment and counseling in their residency clinic while another 20% regarded time-constraint as a barrier.

## Conclusion

Our results indicate that the majority of residents who completed the Fall Prevention Simulation found it to be a valuable teaching method worth recommending to their peers. While a slight, non-significant increase in scores was observed following the simulation, further refinement of the simulation process could potentially lead to more substantial improvements. Literature suggests that incorporating fall prevention into practice comes with barriers, including lack of time, competing priorities, referral logistics, and training deficiencies. To address time constraints, substituting pre-readings with a one-time crash course focused on quick guidelines for addressing fall risks could foster greater engagement and higher scores. Implementing strategies to address these barriers, starting with providing training to future primary care providers, increases awareness of the importance of fall prevention in patient care.

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**Medical Student Poster # 05**
**Category:** Research
**Medical School:** Central Michigan University College of Medicine
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# Influence of Helicobacter Pylori on Bariatric Surgery Outcomes

Background: Helicobacter pylori (HP) is estimated to be prevalent in up to 50% of the world population and is associated with ulcer formation, gastritis, and gastric malignancy. Despite its high prevalence, its impact on patients undergoing bariatric surgery has not been well-established, and HP management in the setting of bariatric surgery is debated.

Methods: This retrospective study utilized 2016-2020 data from the National Inpatient Sample. Patients with a primary or secondary ICD-10 diagnosis code for bariatric surgery were included as were those with a primary ICD-10 code for ulcers. Patients aged 18 years and over were included, whereas patients with a history of human immunodeficiency virus, pregnant women, and previous organ recipients were excluded. Individual outcomes assessed included ulcers, surgical complications, and abnormal weight loss. Additionally, adjusted multivariate analysis examined the independent association between HP diagnosis and ulcer development.

Results: A total of 442,592 patients were included. Adjusted multivariate analysis found that patients with HP had higher odds of developing ulcers (aOR = 3.832, 95% CI = 3.686-3.983). Univariate analysis found that these patients also had higher odds of surgical complications (aOR = 1.743, 95% CI = 1.536-1.977), and abnormal weight loss (aOR = 2.207, 95% CI = 1.921-2.535). The median hospital length of stay (LOS) was longer for patients with HP diagnosis (4.0 days vs. 3.0 days, $p < 0.001$). After adjusting for all other factors, HP diagnosis was the most important predictor of ulcer development.

Conclusions: HP significantly increased the risk of ulcer development, surgical complications, and abnormal weight loss in patients undergoing bariatric surgery. Additional factors such as hospital LOS were also predictive of ulcer development. This study highlights the need for prompt eradication of HP in the setting of bariatric surgery.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 06**
**Category:** Clinical Vignette
**Medical School:** Central Michigan University College of Medicine
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# Navigating the Rare Waters of Pulmonary Spindle Cell Carcinoma: Endobronchial Case in a Non-Smoker

Introduction: According to the 2015 World Health Organization (WHO) histological classification of lung cancer, pulmonary spindle cell carcinoma (PSCC) is categorized as a sarcomatoid carcinoma. This malignancy is characterized by a nearly pure population of epithelial spindle cells without differentiated carcinomatous elements. Sarcomatoid carcinomas are notably rare, accounting for only 0.1-0.4% of all lung cancer cases, with PSCC constituting approximately 28.7% of these carcinomas. Studies have shown that patients with PSCC often present with advanced disease at diagnosis, resulting in a median survival of less than one year.

Description: A 76-year-old female presented to the office after undergoing a chest CT scan for worsening shortness of breath, which revealed a 2.5*1.6 cm endobronchial mass with post-obstructive mucus plugging, right lower lobe atelectasis, and extraluminal extension. Medical history was significant for hypertension, type 2 diabetes, coronary artery disease, obstructive sleep apnea, and a history of right breast and bladder cancer status post local resection. Family, social, and occupational history were unremarkable except for secondhand smoking exposure. Vitals, physical exam, and lab work were unremarkable. Pulmonary function tests were normal except for a DLCO of 60%. Bronchoscopy with EBUS revealed a mass noted to be neoplastic and hemorrhagic; completely obstructing the right middle and lower lobes. After a forceps biopsy, significant bleeding and mass dislodgement occurred, controlled with epinephrine and tranexamic acid. Broncho-alveolar lavage was negative for pneumocytis jirovecii, CMV, aspergillus spp, and fungal culture. CD4/CD8 was 0.74, and pathology results showed spindle cell neoplasm. Immunostains, lymph node sampling and PET CT scan were negative for malignancy and extra-thoracic disease. The patient was referred to oncology and thoracic surgery and was deemed a candidate for a pneumonectomy.

Discussion: PSCCs occur more in men and smokers and typically arise in the upper lobe of the peripheral lung, making our case unique. While there is no data linking PSCCs with other primary cancers, they are associated with TP53, KRAS, and EGFR mutations, possibly explaining our patient's three primary cancers. Due to its rarity, there are limited reported cases of PSCC, posing challenges in identifying epidemiological risk factors and establishing standardized treatment protocols. PSCCs are resistant to chemotherapy, so treatment involves surgical resection based on staging, and targeted therapies/immunotherapy, but more data is needed, given the poor prognosis of the tumor.

Conclusion: PSCC is an incredibly rare malignancy of the lungs that has been shown here to occupy the right upper lobe of a 76-year-old female patient. Unfortunately, the current literature fails to address potential links to other primary cancers or treatment protocols, highlighting the pressing need for further research in this area.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 07**
**Category:** Research
**Medical School:** Central Michigan University College of Medicine
**Presenter:** Anthony Mufarreh
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# Association of Accelerometer Physical Activity Measures and All-Cause Mortality in the National Health and Nutrition Examination Survey

Background:

The Life Essential 8 from American Heart Association (AHA) focuses on eight steps for ideal cardiovascular health, including healthy diet, avoiding tobacco products such as cigarettes and vapes, 7-9 hours sleep daily, low non-HDL cholesterol (LDL < 190), low fasting blood sugar (FGS < 100), blood pressure below 140/90, and adequate physical activity. However, current studies to assess physical activity rely on quick and inaccurate self-reported questionaries, limiting use of the AHA guidelines. Accelerometer measures are the gold standard in measuring accurate, non-biased, recreational, and non-recreational physical activity. Using objective physical activity measures, validation of the AHA guidelines can be used to assess its effects on all-cause and cause-specific mortality.

Objective:

This study utilizes the National Health and Nutrition Examination Survey (NHANES) accelerometer data linked to all-cause and cause-specific mortality to evaluate relationship between objective physical activity and mortality, in the context of AHA Life Essential 8.

Methods:

Data abstracted from NAHNES study year included subset of participants who wore accelerometers for 9 days, collecting intensity of movement in 3-plane view. Raw frequency converted to Monitor-Independent Movement Summary Units (MIM-units) for analysis. Using linked mortality data, multivariable logistic regression analysis with 95% confidence intervals comparing physical activity quintiles and mortality status were evaluated, controlling for socioeconomic, behavioral, and metabolic variables. Area-Under-the-curve (AUC) analysis was used to elucidate predictability of physical activity on all-cause and cause-specific mortality. Logistic regression comparing AHA Life Essential 8 and all-cause mortality were calculated across physical activity cut-off points.

Results:

NHANES data contained 114.9 million participants 2011-2012 study cycle, with males 56.4 million (49.1%), white 76.5 million (66.6%), college or above 66.9 million (62.5%). Mortality was linked for 9.4 million (8.5%) participants, with a majority due to cardiovascular 1.9 million (20.2%) and 2.4 million (25.5%) malignant neoplasm causes. On logistic regression analysis, higher physical activity quintile was associated with a lower risk of all-cause mortality (OR 0.43, 95% CI: 0.36, 0.52), with attenuation in adjusted models (OR 0.86, 95% CI: 0.43, 1.7). Female sex (OR 0.53 95% CI: 0.3, 0.95) and income ≥75,000 (OR 0.34 95% CI: 0.16, 0.72) were protective, but not statistically significant in adjusted models. AUC analysis showed concordance between physical activity and all-cause mortality of 0.746, but not significant when stratified to cause-specific morality. AHA Life Essential 8 was associated with a lower risk of all-cause mortality at all physical activity cut offs (OR 0.77 95% CI: 0.68, 0.88)

Conclusion:

Objective physical activity measures and AHA Life Essential 8 are strongly associated with protection against all-cause mortality; however, this association is blunted with health behaviors and metabolic factors are controlled for. Physical activity was also predictive of all-cause mortality, but not cause-specific mortality. This study is limited by the translation of MIM-units commonly used physical activity measures such as steps or activity time.

Significance:

Objective physical activity measures are required to elucidate relationships with health outcomes in the context of risk scores such as AHA Life Essential 8. Further analysis is needed using objective measures to evaluate its effects on health.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 08**
**Category:** Research
**Medical School:** Central Michigan University College of Medicine
**Presenter:** Jaimie Van De Burg
**Additional Authors:** Elsa Varughese, Dr. Beth Bailey, PhD

# Maternal Predictors of Neonatal Diagnoses: The Impact of BMI, Mental Health, and Substance Use on Infant Outcomes

Background

Previous research has shown that the diagnosis of infants in the neonatal period can have lifelong impacts on the growth and development of a neonate. Consequently, the factors surrounding the neonatal period such as maternal prenatal complications, maternal substance use, maternal mental health and social determinants of health can influence infant diagnosis in the neonatal period. The aim of the study is to determine significant risk factors related to neonatal outcomes.

Objective

The objective of this study is to evaluate the contribution of maternal factors, including social determinants of health, perinatal complications, and mental health conditions, to the presence and total number of neonatal diagnoses. By identifying key predictors within the mother's health and environment, this study aims to enhance the understanding of infant health outcomes and inform targeted interventions which could mitigate neonatal diagnoses.

Methods

A retrospective chart review was conducted collecting data on maternal demographics, perinatal history, and mental health history. The sample consisted of 264 neonates, with data extracted from January 2022 through December 2023, with the primary focus being the presence of neonatal diagnoses and potential contributing maternal factors. Data was entered into Microsoft Excel and analyzed using SPSS. Bivariate logistic regression was used to evaluate the relationship between maternal factors and neonatal diagnoses, while multivariable linear regression was employed for analyzing continuous outcomes. Descriptive statistics, including frequencies, means, standard deviations, percentages, and cross-tabulations, were used to summarize the data.

Results

Bivariate logistic regression analysis identified significant predictors for the presence of neonatal diagnoses. “Pregnancy BMI” was found to be significantly associated with neonatal diagnosis status ($p = 0.012$), with higher pregnancy BMI increasing the likelihood of neonatal diagnoses. Additionally, a “history of substance use disorder (SUD)” was identified as a potential predictor, with a borderline significance level ($p = 0.049$).

Further multivariable logistic regression analysis revealed that “pregnancy BMI” remained a significant predictor ($p = 0.008$) after controlling for maternal factors. The presence of a “history of depression” also showed a significant relationship with neonatal diagnoses ($p = 0.017$). The Hosmer and Lemeshow test indicated a good model fit, suggesting pregnancy BMI and a history of depression significantly contribute to predicting neonatal outcomes ($p = 0.136$ in Step 1).

Conclusions

Three variables significantly impacted neonatal diagnosis: “pregnancy BMI”, “history of substance use disorder”, and “history of depression”. These results display the importance of maternal mental health and maintaining a healthy BMI during pregnancy.

Significance

Understanding the factors that contribute to neonatal diagnoses is crucial for identifying at-risk pregnancies and implementing early interventions. By recognizing maternal health risks, healthcare providers can better predict and mitigate the risk of adverse infant health outcomes. This research has the potential to enhance prenatal care by guiding targeted interventions that improve maternal and infant health, reduce healthcare costs, and ultimately improve long-term outcomes for both mothers and their children.

Keywords: maternal health, perinatal complications, mental health, neonatal outcomes

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 09**
**Category:** Research
**Medical School:** Central Michigan University College of Medicine
**Presenter:** Elsa Varughese
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# A Proactive Approach to Postpartum Depression: Screening High-Risk Birthing Individuals

Background

While there has been considerable focus and ongoing evolution in diagnosing peripartum depression, research on its prediction and prevention lags significantly behind, resulting in a dearth of available studies in comparison. Thus, a proactive approach is warranted for birthing individuals at high risk of developing Post Partum Depression (PPD). Evidence has shown high efficacy of utilizing scoring systems to identify people who are at risk for a negative health outcome(s) and may indicate when intervention might be needed prior to escalation of the condition. These systems save time and money and may lead to improved outcomes through more timely interventions. Undiagnosed or untreated PPD can have detrimental effects on family dynamics and compromise the mother's ability to provide effective newborn care. A comprehensive literature review on PPD presented strong correlations with social determinants of health and pre-existing conditions identifiable in the antenatal period that could identify those at increased risk of PPD. Identification of those at increased risk may lead to more effective preparatory counseling, increased patient education on PPD, and decreased time to treatment in those affected.

Objective

The goal of this research project is to develop and validate a novel screening tool that will allow clinicians to better predict the risk of developing postpartum depression (PPD) in birthing individuals to improve maternal health outcomes.

Methods

A literature review using well-established criteria from the ACOG and published clinical guidelines was conducted to determine risk factors previously linked with the development of PPD. The risk factors identified from the literature review were quantified based on their occurrence in various literary publications. Subsequently, a data collection sheet was created using information about the selected risk factors. A retrospective chart review was performed and data collected on birthing persons between the ages of 15 and 45, who carried a baby to at least 24 weeks gestational age. The patient population was drawn from a university affiliated pediatric practice in the Midwestern U.S., which assesses mothers for PPD at well child visits up

to age 12 months. Bivariate and multivariate analyses will be used, along with factor analysis, ROC analysis, and reliability analysis.

## Results

Of the mothers evaluated, preliminary results from multivariate and bivariate analyses in three categories yielded the following significant predictors for those with high EPDS score (>9): within social determinants of health, “former smoker” ($p = 0.024$), among pregnancy complications, a diagnosis of gestational diabetes ($p = 0.026$), and for previous mental health concerns, history of PPD ($p = 0.005$).

## Conclusions

In the preliminary analyses, within three categories, former smoking status, gestational diabetes, and a history of PPD emerged as key risk factors associated with the development of PPD. These findings highlight the need for targeted interventions for these high-risk groups to improve maternal mental health outcomes.

## Significance

By quantifying these factors prior to the postpartum period, healthcare providers can assess individuals at risk for developing PPD and offer intervention(s) or guidance that may prevent or mitigate PPD.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 10**
**Category:** Quality Improvement/Patient Safety/High Value Care
**Medical School:** Central Michigan University College of Medicine
**Presenter:** Erin Williams
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# Raising Polypharmacy Awareness in Rural Older Adults: Active Learning Tools Are More Effective than Seminars or Face-to-Face Instruction

## Background

Polypharmacy—the concurrent use of multiple medications—poses significant health risks for older adults, including adverse drug reactions, medication non-adherence, and increased fall risk. These challenges are particularly acute in rural areas within Michigan with limited healthcare access. As the population ages and healthcare delivery becomes more fragmented, addressing polypharmacy risks is increasingly urgent. This project compared two medication management interventions: traditional in-person education sessions and an innovative multi-format information packet designed for enhanced accessibility and engagement.

## Objective

This study aimed to evaluate two education formats for empowering rural older adults to manage multiple medications safely. The interventions focused on enhancing medication knowledge, confidence, and safety practices while prioritizing accessibility and inclusivity.

## Methods

Two groups of rural older adults participated in the interventions. The first group attended in-person sessions, while the second group received a packet containing printed materials, a USB drive, QR codes, and web links. Both interventions utilized the World Health Organization's "5 Moments for Medication Safety" framework and a Drug List Collection Tool. Pre- and post-surveys assessed participants' knowledge, confidence in communicating with healthcare providers, and medication management practices. Data were analyzed to compare changes in outcomes between the two formats.

## Results

Both interventions significantly improved participants' knowledge and confidence in medication management. The in-person group showed improvements in understanding polypharmacy risks (50% to 77.8%) and confidence in discussing medications with providers (77.8% to 83.3%). The

packet-based intervention yielded even better results, with knowledge scores increasing from 94.3% to 100%, and 93.9% of participants reporting increased confidence post-intervention.

A key outcome was participants' intent to apply what they learned. In the in-person group, 83.3% planned to use the strategies discussed, while 100% of the packet-based group intended to implement the strategies. The packet-based intervention was particularly effective in overcoming barriers like transportation and digital literacy challenges, achieving higher participation rates (35 pre-surveys, 33 post-surveys) compared to the in-person group (18 pre- and post-surveys).

These results exceed typical outcomes reported in existing literature. Previous studies found that in-person education improved medication adherence by 10-20%, whereas the packet-based intervention in this study achieved more substantial gains. The multi-format approach—combining printed guides, USB drives, and QR codes—allowed participants to engage at their preferred pace, contrasting favorably with traditional single-mode methods.

## Conclusions

This study's most significant contribution is its development of a scalable, inclusive intervention design. The packet-based intervention effectively addressed accessibility challenges by providing printed materials for those with limited digital literacy while offering online resources for internet-capable participants.

The intervention's foundation in the WHO's "5 Moments for Medication Safety" framework strengthens its potential for broader application. These findings demonstrate the value of accessible, inclusive approaches in addressing polypharmacy challenges among rural older adults. The packet-based format offers superior scalability and engagement, making it a promising model for future interventions targeting rural populations.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 11**
**Category:** Quality Improvement/Patient Safety/High Value Care
**Medical School:** Michigan State University College of Human Medicine
**Presenter:** Tylar Dickson
**Additional Authors:** Lanah Almatroud M2, Sabrina Ford PhD

# Mapping Disparities in Cervical Cancer Screening Across the U.S.

Background

Health disparities have long been analyzed through the lens of regional and urban-rural differences. Revisions to cervical cancer screening (CCS) guidelines have redefined how healthcare providers interpret and apply HPV and Pap tests. This study hypothesizes that geographic factors also significantly influence screening practices. Its objective is to explore the impact of regional and urban-rural designations on the administration of cervical cancer screening.

Methods

This retrospective observational study examines CCS disparities across U.S. regions (Northeast, North Central, South, and West) and geographic classifications (Large Metropolitan, Large Suburban Metropolitan, Medium-Small Metropolitan, and Rural). Utilizing data from the 2019 and 2021 National Health Interview Survey (NHIS), which provides structured insights into healthcare practices and behaviors, including CCS-related variables, the study analyzed differences by region and geographic location. After cleaning and stratifying the data, CCS rates were assessed across regional and urban-rural categories. Chi-square tests were used to identify significant regional differences, while odds ratios were calculated to evaluate associations between CCS practices, region, and year.

Results

The study sample consisted of 25,756 women aged 25–65 years, aligning with CCS guidelines. Urban-rural differences in screening rates were significant, with an overall rate of 83.8%. Rates by geographic designation were as follows: 84.7% in large metro areas, 85.7% in large suburbs, 83.0% in medium-small metro areas, and 82.8% in rural areas. Regionally, among 21,580 participants, the overall CCS rate was 83.8%, with rates varying by region: 81.6% in the Northeast, 86.2% in the North Central, 84.2% in the South, and 84.0% in the West (p=0.04). Comprehensive analyses will include year-by-year comparisons, pre- and post-COVID-19 trends, distinctions between HPV and Pap tests, and a more granular examination of regional differences by urban-rural classifications (e.g., rural South).

## Conclusions

Cervical cancer screening (CCS) rates demonstrated significant geographic disparities, with the lowest rates observed in rural areas and the highest in large metropolitan regions. Regionally, CCS rates were lowest in the Northeast and highest in the North Central U.S. These findings underscore critical regional and geographic disparities in cervical cancer screening, emphasizing the need for targeted interventions to promote equitable screening practices and strengthen early detection efforts across the nation.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 12**
**Category:** Research
**Medical School:** Michigan State University College of Human Medicine
**Presenter:** Monica Hill
**Additional Authors:** Ibukunoluwa Omole, Dr. Christine Vaccaro

# Localization of Urinary Urgency in Women

Background:

Urinary urgency significantly impacts quality of life, yet its origins remain poorly understood. While urgency is traditionally attributed to the urinary bladder or urethra, embryological evidence suggests the bladder, urethra, and vulvar vestibule share a common origin in the urogenital sinus. Additionally, the lower urinary tract is innervated by three peripheral nerve sets (pudendal, lumbar sympathetic, and pelvic parasympathetic), complicating the localization of urgency sensations. Understanding the location of urgency sensations can facilitate targeted treatment strategies by identifying specific tissues, nerves, or muscles involved.

Objective:

This study aims to elucidate the location of urinary urgency sensations by employing a comprehensive urgency symptom survey and interactive body map.

Methods:

A cross-sectional survey will be conducted using the Qualtrics platform, targeting 500 female participants (250 premenopausal, 250 postmenopausal) with bothersome urinary urgency. Inclusion criteria include English proficiency and age >18 years, while males and individuals with known bladder cancer or congenital anomalies will be excluded. Participants will complete validated urinary symptom questionnaires, including the LURN Comprehensive Assessment of Self-Reported Urinary Symptoms (LURN CASUS), the Overactive Bladder Questionnaire, and the ICIQ-FLUTS survey. A novel body map tool will allow participants to pinpoint the location of urgency sensations. Demographic data (age, race, menopausal status, BMI, and hormonal history) and additional reproductive and fluid intake information will also be collected.

Significance:

This research seeks to bridge gaps in the understanding of urinary urgency perception, offering insights into the anatomical and neurological underpinnings of urgency sensations. Although the study is currently underway, the findings could lead to the development of more precise diagnostic and therapeutic interventions, improving patient outcomes and quality of life.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 13**
**Category:** Research
**Medical School:** Michigan State University College of Human Medicine
**Presenter:** Ibukunoluwa Omole
**Additional Authors:** Faheed Shafau

# Utilizing AI for Patient Education in Women's Sexual Health After Cystectomy

Background:

In 2024, more than 83,000 women will undergo radical cystectomy for conditions such as bladder cancer, interstitial cystitis, and endometriosis. Due to the invasive nature of these procedures, they often result in sexual dysfunction, including decreased libido, orgasmic disorders, dyspareunia, and lubrication issues. These significantly impact the quality of life, yet female sexual dysfunction remains underexplored compared to its male counterpart. Counseling patients about sexual changes is critical to managing expectations and offering emotional support. However, traditional in-person counseling is limited by the time, training, and comfort of that clinician in addressing these sensitive issues. Artificial intelligence (AI) and large language models (LLMs), such as Chat GPT, Claude, PaLM 2 (Google Bard), Cohere, and Llama 3.1, have emerged as tools to enhance patient care and potential patient education. These platforms have been proven to have average accuracy as a source of medical knowledge within the field of urology when addressing topics relating to male and female sexual dysfunction. AI has been shown to assist clinicians in analyzing data, but not as a substitute for considerations. These platforms can improve accessibility and supplement clinicians by providing evidence-based information. However, the accuracy, reliability, ethical considerations, and readability of AI-generated content remain under-evaluated, especially regarding potential female sexual function changes after surgery.

Objective:

This study aims to evaluate the quality, readability, and accessibility of information generated by major AI/LLM platforms (ChatGPT-4, Llama 3.1, Cohere, Claude, and PaLM 2) regarding sexual function changes after Radical Cystectomy.

Methods:

A cross-sectional analysis was conducted to assess patient information provided by AI/LLM platforms. The study focused on readability levels using average reading-level consensus metrics and evaluated the quality of patient education through a “demonstration” teaching method. This method involves step-by-step instructions, guided demonstrations, and pairing with supplementary materials such as written guides, visual aids, and audio resources.

Results:

Preliminary evidence suggests that AI/LLM platforms possess potential for enhancing patient education. Machine learning algorithms have demonstrated an 89% accuracy in psychological counseling and similar applications in urology are gaining traction. However, ethical considerations regarding patient safety, efficacy, and accuracy of AI-generated medical content must remain a priority.

Significance:

Although the study is currently underway, the findings will provide critical insights into the feasibility of AI and LLM platforms as tools for patient education, particularly for underrepresented issues like female sexual dysfunction post-cystectomy. By addressing gaps in patient education and counseling accessibility, this research may pave the way for innovative, technology-assisted approaches to improve care and quality of life for affected individuals.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 14**
**Category:** Research
**Medical School:** Michigan State University College of Human Medicine
**Presenter:** Hanna Pickford
**Additional Authors:** Catherine Quon, Dr. Olorunseun O. Ogunwobi

# Understanding the molecular mechanistic link between HIV and cervical carcinogenesis is important to the prevention and treatment of cervical cancer

HIV-positive women have a median 6-fold higher incidence of developing cervical cancer compared to HIV-negative women. However, the mechanism of developing higher rates of cervical cancer in HIV-positive women remains unclear. Understanding the molecular mechanistic link between HIV and cervical cancer is essential to develop and improve treatment outcomes. We reviewed existing literature pertaining to HPV and HIV co-infection mechanisms. Pertinent articles were sourced from PubMed. Our review found several studies that have associated the increased incidence of cervical cancer in women with HIV to chronic inflammation from recurrent low-grade HPV infections. Other studies have found that while antiretroviral therapy (ART) is effective for treating HIV infections, they do not reduce the incidence of developing cervical cancer. Several hypotheses to explain the mechanistic link between HIV and cervical cancer include impaired T-cell functionality post-ART, increased carcinogenesis due to shared replication pathways between HIV and HPV through alternative splicing of mRNA, and upregulation of NF-kB activity by HIV exosomal microRNA 155-5p. The findings of this literature review highlight several potential avenues for further research.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 15**
**Category:** Clinical Vignette
**Medical School:** Michigan State University College of Human Medicine
**Presenter:** Andrea Ramirez
**Additional Authors:** Emily E Hill, Amanda Schoonover, MD, Todd P. Chassee, MD

# EVALI complicated by respiratory compensation for metabolic acidosis in 17-year-old patient: Case Report

The use of electronic cigarettes among young adults and adolescents has continued to increase over the past decade. With a growing body of evidence elucidating the pulmonary and extrapulmonary effects of e-cigarettes and vape products, it is important to gather a thorough social history that includes methods of marijuana, tobacco, and nicotine inhalation. We present here the case of electronic-cigarette/vaping associated lung injury (EVALI) in a 17-year- old female with complications of metabolic acidosis with respiratory compensation further complicated by lack of vaping cessation. This case highlights the challenges in diagnosis and management of EVALI in the adolescent and young adult populations. Improving understanding of the effects of e-cigarettes, solidifying diagnostic techniques, and establishing clear guidelines for management of EVALI and vaping cessation will improve the outcomes of affected patients.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 16**
**Category:** Clinical Vignette
**Medical School:** Michigan State University College of Human Medicine
**Presenter:** Tony Tran
**Additional Authors:** Yetunde Balogun, Otto Leiti

# Recurrent Nontraumatic Acute Compartment Syndrome Induced by Hypothyroid Myxedema

Case Presentation

Acute Compartment Syndrome (ACS) develops when the tissue pressure within a closed compartment exceeds its perfusion pressure, leading to myoneural ischemia. If sustained, this ischemia can result in irreversible muscle necrosis and nerve damage.

We present a case of hypothyroid myxedema leading to recurrent nontraumatic ACS of the lower extremity.

A 42-year-old male with a medical history of iatrogenic hypothyroidism following radioiodine ablation for Graves' disease was hospitalized seven years ago with hypothyroid myxedema due to medication noncompliance, resulting in a right leg ACS treated with fasciotomy.

Two months prior to the current admission, a prolonged grief disorder led to his repeated self-discontinuation of thyroid supplementation. He presented with a 3-day history of worsening left leg pain and swelling below the knee, associated with pretibial paresthesia. On physical examination, the left leg showed non-pitting edema, hypertrophic skin, and severe tenderness and tension in the left anterior compartment. There was decreased pinprick sensation below the left knee, minimally diminished plantar and dorsiflexion of the left foot, and intact circulation.

Biochemical workup was diagnostic for hypothyroidism and rhabdomyolysis, showing: TSH: 61.9 µU/mL ( 0.465–4.680), Free T4: 0.38 ng/dL ( 0.78–2.19), CPK: 24,823 U/L (25–170), AST: 182 U/L (17–59), ALT: 90 U/L ( < 50)

Compartment pressure measurement revealed severe elevation in the left anterior compartment at 195 mmHg and delta pressure (Diastolic Blood Pressure - Compartment Pressure) of -95 mmHg. Limb-saving intervention was promptly implemented, with a left leg four-compartment fasciotomy, which was diagnostic for anterior and lateral compartment muscle ischemia and minimal contractility. He subsequently underwent five incisions and debridement of the fasciotomy wounds. Intravenous then oral thyroid supplementation was initiated. Ultimately he was released home with a wound VAC, viable left leg muscles and referral for interval skin grafting.

## Discussion

Causal correlation between hypothyroidism and ACS has been suggested by few case reports. Our case is the first documented recurrent ACS repeatedly linked to hypothyroidism.

The pathogenesis of ACS in hypothyroidism is not well understood. Contributing factors may include a combination of hypothyroidism-induced muscular, vascular, and connective tissue abnormalities, such as muscle hypertrophy, increased vascular permeability, impaired lymphatic flow, and elevated interstitial glycosaminoglycan content. ACS-induced muscle breakdown can lead to rhabdomyolysis. While slight to moderate elevations in creatine kinase are commonly seen in hypothyroidism, in rare cases, hypothyroidism-related inhibition of glycogen catabolism and mitochondrial dysfunction may cause a cascade of metabolic abnormalities leading to rhabdomyolysis. In our case, rhabdomyolysis was directly attributed to ACS.

## Conclusions

Hypothyroidism may provoke ACS. A high index of suspicion is required to diagnose ACS in hypothyroid myxedema-related extremity swelling and to identify hypothyroidism in idiopathic ACS. Diagnostic testing includes TSH, Free T4, CPK along with compartment pressure measurement in suspected cases. Early surgical compartment decompression is crucial to prevent permanent neuromuscular damage and associated disability.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 17**
**Category:** Clinical Vignette
**Medical School:** Michigan State University College of Human Medicine
**Presenter:** Nathan Campbell
**Additional Authors:** Dr. Richa Tikaria, MD, FACP, Associate Professor, College of Human Medicine, Michigan State University, East Lansing, MI; Aldo Shehaj, Medical Student, College of Human Medicine, Michigan State University, East Lansing, MI

# Medullary Sponge Kidney: A Rare Cause of Recurrent Nephrolithiasis and Obstructive Uropathy.

Medullary Sponge Kidney (MSK) is a congenital abnormality characterized by the dilation and presence of multiple cysts in the collecting ducts, creating a sponge-like appearance of the kidney. MSK is rare, with a prevalence of 1 in 5000 in the United States. Most cases are sporadic, although cases of autosomal dominant inheritance have been reported. MSK typically presents with chronic nephrolithiasis, which generally has a benign course and is self-limiting.

A 36-year-old woman with a long history of recurrent nephrolithiasis and frequent UTIs presented to the emergency room with severe right sided flank pain, chills, and nausea. She first reported having kidney stones at age 18 with multiple ER visits and hospitalizations reported since that time. This patient had been diagnosed with Medullary Sponge Kidney prior to this hospitalization and had undergone numerous procedures in the past on both kidneys including cystoscopy with retrograde pyelogram, stent placements and removals, laser lithotripsy, and ureteroscopy with calculus basket manipulation. A stone removed about 11 months prior to this admission had undergone analysis at the time with a composition of 50% $CaHPO_4$, 40% Hydroxyapatite, and 10% Calcium Oxalate Monohydrate.

At time of this admission, the patient reported her flank pain as consistent with her previous kidney stones and reported amber colored urine with onset of pain. Physical exam clarified severe flank pain starting on her right side and wrapping around to the pubic area. She was evaluated with CT of abdomen and pelvis, findings of which indicated right sided hydronephrosis with a 5 mm calculus in the upper ureter below the ureteropelvic junction. Other findings included non-obstructing nephroliths in both kidneys and calcifications consistent with nephrocalcinosis bilaterally. Urology was consulted and performed a right cystoscopy, right retrograde pyelogram, and right ureteral stent placement. After cannulating the right ureteral orifice, the right retrograde pyelogram revealed a filling defect of the right distal ureter as well as the right renal pelvis along with moderate hydronephrosis. Upon catheter removal, brownish, cloudy, thick, and purulent material drained from the right ureteral orifice leading to the decision to place the ureteral stent. After this procedure and recovery, this patient reported significant relief of her symptoms and was discharged within 24 hours to follow up with urology outpatient.

This case underscores the importance of recognizing MSK as a potential cause of recurrent nephrolithiasis and UTIs, particularly in young female patients. Early diagnosis and appropriate management, including prompt surgical intervention for obstructive complications, can significantly improve patient outcomes. Moreover, this case highlights the role of imaging and urological procedures in addressing the complications associated with MSK, including nephrolithiasis, hydronephrosis, and infection.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 18**
**Category:** Research
**Medical School:** Michigan State University College of Human Medicine
**Presenter:** Elizabeth Shokoya
**Additional Authors:** Cristen Enge, Nebiyat M. Girma, Michaila Paulateer, Mark Trottier PhD

# Evaluating the Effectiveness of Early Exposure to the Medical School Application Process

Background:

Underrepresented minorities (URMs) face significant barriers to medical school admission including financial constraints, mentorship, and stereotype threat. These challenges exacerbate disparities in representation within the medical profession. To address these gaps, targeted interventions such as preparatory workshops at conferences aimed at demystifying the application process and building confidence among aspiring medical students, are essential. This study evaluated the effectiveness of a medical school pathways conference in increasing knowledge, confidence, and preparedness among participants, particularly those identifying as URMs in medicine.

Methods:

A pre and post-survey design was employed to assess participant demographics, perceived barriers to medical school admission, and self-rated knowledge and confidence related to the application process. The pre-survey collected data on participants' familiarity, apprehensions, and barriers faced during the application process. Post-surveys measured changes in these parameters and the impact of conferences on participants' understanding and preparedness. Key workshop topics included personal statement writing, MCAT preparation, and strategies for applicants with low academic metrics. Survey responses were analyzed using descriptive statistics and paired sample t-tests to determine pre- and post-intervention differences.

Results:

Our preliminary findings indicate that 58 participants completed the pre-survey and 52 completed the post-survey. URM identification was higher among post-survey respondents (40.4%) than pre-survey( 37.3%). Before the conference, 25.9% of respondents reported being "somewhat unfamiliar" or "very unfamiliar" with the medical school application process, and 37.9% felt "somewhat unconfident" or "very unconfident" in their preparedness. Post-conference, 73.1% of participants reported improved confidence, with 9.6% indicating they felt "very confident" in navigating the application. Pre-conference reports highlighted barriers such as financial cost (62.1%), lack of mentors (32.8%), and stereotype threat (24.1%), while post-conference feedback emphasized the value of sessions on alternative pathways to medicine

and strategies for applicants with lower academic metrics. We are currently pending results, including descriptive and bivariate analysis, and will report these findings in greater detail.

Conclusion:

The Pathways conference significantly enhanced participants' knowledge, confidence, and preparedness for the medical school application process. Interventions addressing barriers faced by those who are URM is critical for fostering a more diverse and equitable medical workforce. Future initiatives should focus on longitudinal support to ensure successful transitions into medical school.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 19**
**Category:** Clinical Vignette
**Medical School:** Michigan State University College of Human Medicine, East Lansing
**Presenter:** Daniel Bishay
**Additional Authors:** Marian Girgis, M.D.

# Rapidly Aggressive Progression and Therapeutic Challenges in a Young Patient with Metaplastic Breast Carcinoma: A Case Report

Metaplastic Breast Carcinoma (MpBC) is a rare and aggressive form of breast cancer that poses a therapeutic challenge for physicians due to its histological heterogeneity, frequent triple-negative receptor status, and propensity for recurrence and metastasis. MpBC comprises less than one percent of breast cancers and lacks standardized treatment guidelines, therefore treatment follows triple-negative breast cancer (TNBC) protocols with modifications based on histology, molecular features, and patient factors. Additionally, patients diagnosed with MpBC are often diagnosed at an older age as compared with other breast cancer subtypes.

Here, we present a case of metaplastic breast carcinoma in a 28-year-old female who initially presented with a rapidly enlarging left breast mass. The patient underwent computer tomography chest, abdomen, and pelvis (CT CAP) revealing a 13x12 cm mass with thickened skin and axillary and subpectoral lymphadenopathy, without distant metastasis. The patient was later confirmed to have a diagnosis of stage IIIc metaplastic carcinoma of the breast.

The patient underwent neoadjuvant chemotherapy and immunotherapy with Adriamycin and Cyclophosphamide (AC), followed by Paclitaxel, Carboplatin (TC) and pembrolizumab. She initially demonstrated a reduction in tumor size with the AC regimen but eventually had disease progression with enlarging left axillary lymphadenopathy on the TC regimen. The patient was then started on six cycles of Sacituzumab govitecan for her locally advanced disease. She had an initial local response that was lost after her fifth cycle. At that time, there was no evidence of distant metastasis. She opted for palliative left radical mastectomy in hopes of a cure. Final pathology revealed grade 3 MpBC with squamous cell, spindle cell, and matrix-producing components. Following the radical mastectomy, the patient underwent postmastectomy radiotherapy.

Shortly after completion of radiotherapy, the patient developed recurrent biopsy-confirmed grade 3 triple-negative metaplastic carcinoma. Positron emission tomography (PET CT) revealed metastatic disease with progression in the chest well and axilla, left internal mammary lymphadenopathy and multiple bilateral pulmonary and hilar nodules. At this point, magnetic resonance imaging (MRI) of the brain revealed no evidence for metastatic disease.

After multidisciplinary discussion, the patient was restarted on AC with a palliative intent and was supported with cardioprotective therapy Dexrazoxane. Despite treatment efforts, metastatic disease progression was observed after two cycles, and she developed multifocal intracranial lesions with a dominant left cerebellar lesion measuring 2.3 cm associated with vasogenic edema, obstructive hydrocephalus and punctate acute infarcts. Repeat CT CAP demonstrated progressive pulmonary, liver, adrenal, ischial bone, and bilateral chest metastases. The patient underwent suboccipital craniectomy and excision of her cerebellar mass, however later elected to enroll in hospice care.

This case highlights the unique challenges of managing MpBC, particularly in younger patients. The patient's rapidly progressive disease, multisystemic therapy resistance and histological complexity underscore the aggressive nature of MpBC and limited response to treatments conventionally reserved for TNBC. The case further highlights the need for increased awareness of MpBC's behavior, the importance of early diagnosis and multimodal treatment and the need for further research to identify targeted therapies to improve outcomes of this rare and challenging subtype of breast cancer.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 20**
**Category:** Clinical Vignette
**Medical School:** Michigan State University College of Osteopathic Medicine
**Presenter:** Mackenzie Deters
**Additional Authors:** Max Guarda MD, Sangini Tolia MD, Hannah Wang PharmD, Salas Sabnis MD

# Spontaneous Coronary Artery Dissection as the First Manifestation of Early Fibromuscular Dysplasia: A Case Highlighting the Utility of Extra-Coronary Screening

Spontaneous coronary artery dissection (SCAD) is a non-atherosclerotic, non-traumatic cause of acute coronary syndrome, and may precipitate sudden cardiac death. Though idiopathic in many cases, SCAD may be the first manifestation of an underlying systemic arteriopathy. Extra coronary screening through non-invasive cross-sectional imaging is recommended for the purpose of ruling out intracranial and renal aneurysms. However, on detailed review of the imaging, subtle signs of vascular disease in other territories may be identified. We herein present a case that reinforces the utility of CT angiogram in SCAD.

A 51-year-old female with bipolar disorder, asthma, hypertension, rheumatoid arthritis, and tobacco use presented to the ED with crushing chest pain that woke her from her sleep in the early morning. The pain radiated to her left arm and hand but not to her jaw. Family history was significant for her maternal grandmother and sister dying from unexplained heart disease both at the age of 29, and an aunt who had a large brain aneurysm. Her home medications were notable for aspirin 81mg daily; she was not receiving biologic therapy for her rheumatoid arthritis. On arrival to the ED, she was hypertensive, tachycardic, and reporting chest pain. An electrocardiogram was notable for an approximately 0.7 - 0.8 mm ST elevation on aVF, II, and III, alongside aVL depression. Initial troponin was 100 and peaked at 4,335 within 7 hours. She was administered aspirin 324mg and initiated on a heparin infusion. CT angiogram of the chest was negative for pulmonary embolism and aortic dissection. Given concern for an inferior wall non-ST elevation myocardial infarction with a TIMI score of 5, nitroglycerin was not administered. The patient underwent early coronary angiography and heart catheterization, which revealed SCAD in the terminal obtuse marginal artery. A post catheterization transthoracic echocardiography (TTE) showed an ejection fraction of 63% and inferior basilar LV regional wall motion abnormalities. Post catheterization, she was continued on aspirin and initiated on nonselective beta blockers. The following morning, she underwent a pan-CT angiogram. Intracranial and renal aneurysms were ruled out. However, subtle beading at the level of the proximal celiac axis and within the proximal-to-mid superior mesenteric artery was noted, consistent with early fibromuscular dysplasia (FMD).

FMD is a poorly understood non-immune arteriopathy of medium-sized (muscular) arteries that presents as arterial beading, focal or multifocal stenosis, arterial tortuosity, aneurysms, and dissections. Previously described series of patients with FMD have shown that up to 40% present with SCAD at some point throughout their history. Although a pathological assessment is the current diagnostic gold standard, obtaining arterial pathology often poses greater risk than benefit. Thus, FMD is generally diagnosed through cross-sectional imaging. The etiology of FMD remains unknown, and several questions about recurrence, prevention, and therapy outcomes remain with no clear answer. A genetic component has been proposed to be contributory; however, more data is necessary in this area. Current recommendations for SCAD include extra-coronary screening with an initial pan-CT angiogram and follow up TTE three months after discharge to ensure resolution of wall motion abnormalities.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 21**
**Category:** Quality Improvement/Patient Safety/High Value Care
**Medical School:** Michigan State University College of Osteopathic Medicine
**Presenter:** Kairui Sun
**Additional Authors:** Alycia Bellino DO, Rishita Gupta DO, Misha Khan MD, Dhruva Govil DO, Emmanuel Daniel MD, Ola Al-Sous MD.

# Ironing Out Iron Deficiency: Improving IV Iron Replacement in Hospitalized Patients with Heart Failure

## INTRO

IV iron replacement in patients with congestive heart failure (CHF) and iron deficiency (ID) has been shown to improve symptoms, decrease CHF-related hospitalizations, and in certain studies, offer a potential reduction in cardiovascular mortality with a meta analysis demonstrating a 17.5% decrease in composite outcome of cardiovascular mortality and hospitalizations. To help reduce readmission rates and enhance quality of life, the Medical Teaching Service (MTS) teams focused on identifying patients with (ID) and providing subsequent iron replacement.

## METHODS

Baseline data on the percentage of IV iron replacement in patients admitted with CHF, whether in exacerbation or not, was collected from December 2023 through April 2024.

The primary outcome measure was the percentage of patients with CHF who received IV iron replacement during their hospitalization. Bi-weekly EMR-generated reports were reviewed to track this outcome, and the data was plotted on a run chart to allow for real time analysis. Our goal was to increase the median percentage of IV iron replacement from a baseline of 11% to 30% by December 2024 with an overall upward trend of the runchart.

For our first PDSA cycle, the intervention aimed to address barriers for IV iron replacement in this patient population by increasing awareness for iron testing and replacement. A flowchart outlining the IV iron replacement criteria and emphasizing that anemia status was not a requirement, was displayed in each MTS room with associated monthly lectures. These lectures highlighted the importance of this initiative in reducing hospital readmissions, improving quality of life, and likely cardiovascular benefits. Additionally, a smart phrase template was created for residents to document the medications for patients with CHF, regardless of whether the hospitalization was due to a CHF exacerbation and included IV iron replacement. The smart phrase was continuously refined based on real-time feedback from residents.

## RESULTS

Despite consistent interventions, the post-intervention median IV iron replacement rate remained at 12.7%, slightly above the baseline of 11.4%. Improvements were observed during select intervals, with peaks reaching 40%, but results were inconsistent across the study period and the run chart did not demonstrate any sustained upward trend. The variability in outcomes was likely influenced by factors such as inconsistent implementation of the interventions and staff turnover, limiting the sustained impact of the initiative.

## CONCLUSION

While the QI initiative improved awareness and led to transient increases in IV iron replacement rates, the overall impact on the median rate was limited. Achieving sustained improvement will require addressing challenges related to intervention adoption, reinforcing education, and integrating process changes into standard care workflows. Future iterations of this initiative should focus on utilizing automation and engaging leadership and hospital pharmacists to ensure consistent implementation and adherence to best practices.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 22**
**Category:** Clinical Vignette
**Medical School:** Michigan State University College of Osteopathic Medicine
**Presenter:** Eleni Vasilopoulos
**Additional Authors:** Max Guarda MD, Milan Terzic, Chiraag Gupta MD, Mohammed Al-Charakh MD

# Simultaneous septic shock Pneumocystis jirovecii pneumonia, cytomegalovirus viremia relapse, and early development of interstitial lung disease in a patient with a telomere disorder - a case report

Dyskeratosis congenita (DC) is a rare telomere disorder caused by germline mutations. It manifests as bone marrow failure (BMF) with a mucocutaneous triad of nail dysplasia, lacy skin pigmentation, and oral leukoplakia. These patients may have multi-system involvement (pulmonary, cardiovascular, haemato-immunologic, CNS), but these classically do not manifest up until the 5th to 6th decade of life. Pulmonary manifestations include the likes of interstitial lung disease, hepatopulmonary syndrome, pulmonary AVMs, pleuroparenchymal fibroelastosis, and emphysema. If these patients present with both immunologic and pulmonary compromise, a complex interplay of complications may play out. We herein present a case of a patient with a telomere disorder that, through two separate hospitalizations, highlights the array of complications these patients may suffer.

A 38-year-old man, with lifelong hypopigmented lacy skin lesions and nail dystrophy, presented to the ED with a 6-month history of progressive fatigue, night sweats, weight loss, diarrhea, chronic cough, and fever. He had moved to the United States from his home country of Mexico approximately 1 year before developing these symptoms. He had 11 brothers and sisters but none of them had these physical exam traits. He arrived hypoxic, but with clear lungs on physical exam. Initial labs were notable for new-onset pancytopenia with low neutrophils. A CT chest with contrast was unremarkable. In the context of febrile neutropenia with hypoxic respiratory failure, he was hospitalized. On hospital day one, CMV viremia was noted. GI PCR was positive for shigella/EIEC infection, and colonoscopy confirmed CMV colitis, for he was initiated on valganciclovir and antibiotics. He underwent a bone marrow biopsy, which revealed severe hypoplasia with clonal features of myelodysplastic syndrome (U2AF1, BCOR, ASXL1, SAMD9L). Telomere length testing was abnormal, and consistent with a diagnosis of dyskeratosis congenita (DC). With clinical stability and decreasing trend of CMV viremia, he was discharged on oral valganciclovir, which he completed.

Two months later, the patient developed a 5-day course of progressive shortness of breath and fever, for which he re-consulted to the ED. He arrived hypoxic, hypotensive, and markedly fatigued. A pulmonary expiratory squeak was appreciated on physical exam. Initial labs did not show much change from his baseline pancytopenia. CTA revealed diffuse ground glass opacities

consistent with early pulmonary fibrosis, a specific area near the terminal bronchi suspicious for underlying diffuse bronchitis, and diffuse mediastinal and hilar lymphadenopathy. Given marked hypotension, he was initiated on 30cc/kg fluid resuscitation, to which he did not respond. He was initiated on norepinephrine, antibiotics, and admitted to the MICU in the context of septic shock. On MICU day 1, relapsed CMV viremia was noted (236,215 cp/ml), and he was restarted on valganciclovir. This same day he was weaned off all vasopressors. Bronchoscopy with BAL confirmed Pneumocystis jirovecii pneumonia, for which he was initiated on TMP/SMX. He responded favorably and was discharged with close pulmonary follow up, and plan to follow up with genetics.

This case highlights the clinical spectrum of known complications of DC by illustrating the interplay between telomere biology, immunologic compromise, pulmonary complications, and opportunistic infections.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 23**
**Category:** Clinical Vignette
**Medical School:** Oakland University of William Beaumont School of Medicine, Rochester
**Presenter:** Tannoz Norouzi
**Additional Authors:** Dr. Carol Lima and Dr. Sayf Al-Katib

# Pericardial Effusion of Uncommon Origin: A Diagnostic Journey

Tuberculous (TB) pericarditis is a rare yet serious form of extrapulmonary tuberculosis, characterized by a diverse clinical presentation and the potential to occur as an isolated extrapulmonary manifestation. In developed countries, tuberculosis is a rare cause of pericarditis, contributing to less than 5% of pericardial effusion cases and an even smaller percentage of constrictive pericarditis cases. This case describes a 27-year-old male from Mali with no significant medical history presenting with progressive fatigue, shortness of breath, and palpitations over one year. Family history revealed sudden cardiac death in his father in his 30s. Physical examination and initial investigations, including echocardiography, revealed dilated cardiomyopathy with moderate global hypokinesis, a left ventricular ejection fraction of approximately 40%, and fibrinous material in the pericardial space.

Computed tomography (CT) demonstrated tree-in-bud opacities and mediastinal lymphadenopathy with necrosis, suggestive of an infectious process. Cardiac magnetic resonance imaging (MRI) revealed marked pericardial thickening (up to 2.2 cm) with features of active inflammation and constrictive physiology. A definitive diagnosis of tuberculous pericarditis was established following positive cultures for Mycobacterium tuberculosis complex obtained via bronchoscopy. The patient was initiated on a four-drug RIPE regimen: rifampin, isoniazid, pyrazinamide, and ethambutol, along with vitamin B6 supplementation. Tuberculous pericarditis accounts for approximately 1% of all tuberculosis cases and can progress to constrictive pericarditis in 30–60% of treated patients. Early diagnosis, prompt antitubercular therapy, and close monitoring are critical in preventing complications such as cardiac tamponade or chronic constriction.

This case underscores the importance of considering TB in all patients regardless if they are living in endemic areas presenting with unexplained pericardial disease. Advanced imaging modalities such as CT and MRI are invaluable in evaluating atypical pericardial conditions and differentiating between constrictive and non-constrictive processes. Multidisciplinary management and clinician awareness is essential for recognition and optimization of patient outcomes.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 24**
**Category:** Clinical Vignette
**Medical School:** Oakland University William Beaumont School of Medicine
**Presenter:** Wesam Almasri
**Additional Authors:** Imran Bitar, Aagamjit Singh, Yusra Zakria, Dilip Khanal

# Recurrent malignant retroperitoneal solitary fibrous tumour leading to obstructive uropathy and sepsis, a case report.

## Introduction

Solitary Fibrous Tumours (SFT) are rare mesenchymal tumours. Although initially described pleural in origin, they can arise from virtually any site. SFTs of retroperitoneal origin are especially rare, with limited literature on their management. Here we present a unique case of an aggressive recurrent retroperitoneal SFT causing mass effect leading to obstructive uropathy.

## Brief case description

A 47-year-old Hispanic man without past medical history presented to a neighboring hospital with months-long abdominal pain and urinary retention. CT showed a 14x12x12 cm pelvic mass that could not be separated from the prostate, together with right hydroureteronephrosis. He was discharged with a catheter in his urethra and recommended for follow-up in urology. A month later, he presented at our hospital with a dislodged catheter. His vital signs were stable, although his abdomen was found to have a tender mass. Repeat CT showed a similar mass. The catheter was replaced, and the CT-guided biopsy showed a solitary fibrous tumor (SFT) with STAT6 and CD34 expression. Four months after his initial presentation, the patient underwent a radical cystoprostatectomy with ileal conduit and tumor resection. The biopsy confirmed SFT with high malignant potential with deep margins focally invaded by malignant cells.

Nine months after initial presentation, the patient returned complaining of abdominal pain. CT showed a resurgent right mesenteric mass of size 9.7 cm, which on biopsy revealed to be a spindle-cell neoplasm consistent with SFT. Within two weeks, the mass grew to 18x10x14 cm. Chemotherapy with dacarbazine and doxorubicin was started, but there was progressive growth and further chemotherapy was not possible due to lack of insurance.

14 months after presentation, the patient developed obstructive uropathy and urosepsis, for which a nephrostomy tube was placed. Over the next six months, the mesenteric mass grew to 32 cm, compressing the abdomen and pelvis. The patient's condition worsened, which precluded further chemotherapy or surgical intervention. 15 months after the initial presentation, he was hospitalized due to septic shock. After goals-of-care discussions with the

patient and family, the patient transitioned to a hospice service and passed away over the next few days.

Impact/discussion

SFT are tumours of fibroblast differentiation that can be benign or malignant. The retroperitoneum is a very rare site of origin for SFT, and most of these grow to large sizes before diagnosis. This case illustrates the aggressive, rapidly growing nature of these tumours, the challenges of diagnosing and treating them, as well as myriad complications due to mass effect. Based on current literature, most SFT are benign, however, as our case demonstrates, it is essential to assess for high-risk features on biopsy and perform serial imaging and close follow up to adequately manage recurrent disease. Its high recurrence rates and potential for metastatic spread often complicates prognosis and treatment. Due to the tumor's aggressive nature, palliative care, alongside ongoing chemotherapy, is crucial for managing symptoms and improving quality of life. This report underscores the importance of a multidisciplinary approach in managing recurrent spindle cell sarcomas in the pelvis.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 25**
**Category:** Research
**Medical School:** Oakland University William Beaumont School of Medicine
**Presenter:** Corinne Bowditch
**Additional Authors:** Deena Sukhon, Kaithlyn Duong, Tai Metzger, Jessica Eibling, Amy Lin, Cindy Tran, Jackie Kraft, Maya Jaradi, Vicky Lu, Sophie Fisher, Jacob Keeley, Fanny Huang, Virginia Uhley

# Green Prescription: Analyzing and Encouraging Plant-Based Eating for Student Physicians in Four Week Seminar

Background

A whole food, plant-based diet (WFPBD) has been associated with a reduced risk of chronic diseases, including cardiovascular disease, diabetes, and dyslipidemia. Despite these benefits, medical education often lacks sufficient nutrition training to prepare future physicians for counseling patients on dietary interventions. This study evaluates the impact of the Plant Plunge challenge, a four-week initiative designed to increase plant-based nutrition knowledge, on medical students' perceptions of nutrition education and measurable health outcomes.

Methods

Medical students at a single institution were invited to participate in the Plant Plunge challenge, which included four weekly one-hour nutrition seminars, WFPBD lunches, and pre- and post-program health screenings measuring weight, blood pressure, lipid panels, and blood glucose, as well as encouraged to adopt a WFPBD. To facilitate an analysis of individual changes over the program duration, each participant was assigned a unique anonymous identifier, enabling the calculation of change scores for the health metrics. A separate anonymous survey collecting food habits was distributed to all medical students, including students who did not participate in the Plant Plunge, to evaluate attitudes toward plant-based eating and nutrition education and Plunge participants' perceptions of the seminars. Participants were defined as any student who attended at least one lecture session, and non-participants were defined as any student who answered the survey but did not engage in any Plant Plunge events.

Results

48 students completed the survey, including 19 Plant Plunge participants and 29 non-participants. Participants demonstrated a statistically significant increase in plant-based meal consumption during the program and reported greater mindfulness regarding food choices. Many Plant Plunge participants expressed increased confidence in reading nutrition labels and selecting plant-based options that they would not have otherwise considered. Participants

widely agreed that the seminars provided sufficient nutrition education to implement and sustain dietary changes. Although not statistically significant, participants expressed a greater likelihood of continuing a plant-based diet post-program ($p=0.17$). No significant difference in self-reported weekly servings of fats or oils, meat products, fruits, or vegetables was observed between participants and non-participants, however. Both groups of students reported frequently reading calorie content first, followed by the ingredients list.

Additionally, 30 students underwent pre- and post-program health screenings. Weight decreased by a median of 1.2 lbs ($p=0.01$), HDL cholesterol increased by an average of 4.1 mg/dL ($p=0.02$), and systolic blood pressure trended downward by a mean of 4.0 mmHg ($p=0.06$).

## Conclusions

Nutrition plays a fundamental role in preventive medicine, yet there is often minimal formal education in dietary counseling during medical school. The Plant Plunge demonstrated that a brief, structured four-week intervention can effectively enhance medical students' knowledge, dietary habits, and measurable health markers. Participants not only improved their own nutrition but also reported greater confidence in their ability to educate and empower future patients to eat a WFPBD. These findings highlight the potential benefits of incorporating similar short-term nutrition programs into medical education to better prepare future physicians to promote long-term health in their patients.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 26**
**Category:** Clinical Vignette
**Medical School:** Oakland University William Beaumont School of Medicine
**Presenter:** Joseph Dakki
**Additional Authors:** Natalie Dakki, Sant Yadav, Justine Nasr

# A Rare Case of Horner Syndrome Secondary to Perineural Catheter Placement after ORIF of the Right Humeral Shaft

Introduction: Horner Syndrome (HS) is a clinical syndrome characterized by the triad of unilateral ptosis, miosis, and anhidrosis. HS is caused by an interruption of the oculosympathetic nerve pathway, a three-neuron pathway. Common causes of Horner Syndrome include carotid dissection, stroke, trauma, tumors, cluster headaches, inflammation, and medical and surgical procedures. However, many cases of HS are also idiopathic. The standard workup of Horner Syndrome includes MRI of the brain, cervical spine, and upper thoracic spine and CT angiography of the circle of willis, aortic arch, and intracranial arteries. This case report will analyze an instance of Horner Syndrome that presented itself in a 43-year-old male after placement of a perineural catheter in the right neck.

Case Description: The patient was a 43-year old male with a past medical history of GERD, morbid obesity (BMI=49), and a 12-pack-year smoking history. The patient presented with right arm pain after experiencing a fall at work. At the time, an X-ray showed an angulated and displaced right midshaft humeral fracture. Subsequently, open reduction and internal fixation (ORIF) of the right humeral shaft was completed with no surgical complications. To assist with postoperative pain, a perineural catheter was placed in the right neck, providing a low interscalene block. Three days after surgery, the patient presented to the emergency department complaining of blurry vision in his right eye, which was exacerbated when looking downwards. The patient was found to have ptosis and miosis of his right eye with full extraocular movements and no signs of focal cranial nerve deficits. These findings were consistent with right-sided Horner Syndrome. Non-contrast CT of the head and CT scan of the chest showed no acute intracranial processes or apical masses, respectively. CT angiography of the head and neck showed no signs of carotid artery dissection, large vessel occlusion, or flow limiting stenosis. Furthermore, CT angiography was negative for pulmonary embolism. Therefore, the patient was presumed to have right-sided Horner Syndrome due to foreign body placement as a result of the perineural catheter placed a few days prior. The perineural catheter was removed, and the patient's HS completely resolved within twelve hours after the catheter removal.

Discussion: The acute onset of Horner Syndrome indicates disruption of the oculosympathetic pathway. Therefore, a full-workup should be performed on patients with HS to investigate for any underlying or new life-threatening pathologies. Once severe and life-threatening causes of

HS are ruled out, patient history, recent surgical procedures, and implanted foreign bodies should be evaluated as potential causes of Horner Syndrome. Furthermore, eliminating the underlying cause of HS may lead to resolution of symptoms. In this case, removal of the perineural catheter led to resolution of the patient's Horner Syndrome within twelve hours.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 27**
**Category:** Clinical Vignette
**Medical School:** Oakland University William Beaumont School of Medicine
**Presenter:** Haiqi Guo
**Additional Authors:** Karan Chhabra, MD. Atulya Khosla, MD. Florian Bukovec, MD. Dilip Khanal, MD.

# Stroke with PFO, uncovering underlying mutations and malignancy: a case report

Introduction:

Stroke is the leading cause of long-term disability, with most cases being ischemic. In patients aged 18–60 years, patent foramen ovale (PFO) is implicated in 10% of strokes. Pathophysiologies include paradoxical thromboembolism and thrombus formation in the PFO, leading to cerebral or systemic embolism. Cancer is a comorbidity in 5–10% of patients with acute stroke, with mechanisms such as direct tumor effects, coagulopathy, and cancer therapy. Two common inherited thrombophilia predisposing to deep vein thrombosis (DVT) are Factor V Leiden (FVL) and G20210A Prothrombin gene mutation (PTM). FVL results in poor anticoagulant response to activated Protein C, while PTM increases prothrombin mRNA expression, causing hypercoagulation. Genetic testing via PCR is the gold standard for diagnosing these mutations.

Case Report:

A 51-year-old female with a history of DVT, diagnosed one week earlier at another hospital, presented with slurred speech. She was last known well the night before symptom onset and denied chest pain, shortness of breath, or palpitations. She was neither a smoker nor using oral contraceptives. At presentation, her NIHSS score was 2 out of 42. Head CT ruled out intracranial hemorrhage, but tissue plasminogen activator (tPA) was not administered due to a low NIHSS score and presentation beyond 4.5 hours therapeutic window. Given her recent DVT, embolic stroke was suspected, and IV heparin was initiated alongside hypercoagulable workup. Transthoracic echocardiogram revealed a PFO, with an ejection fraction of 60% and no left atrial or ventricular thrombus. Transesophageal echocardiogram confirmed the PFO, and brain MRI revealed acute infarction in bilateral superior frontal, parietal, and occipital lobes, consistent with an embolic source involving multiple vascular territories. The patient was transitioned to apixaban upon discharge after a 5-day IV heparin course. Loading dose of apixaban was given upon discharge and the patient was advised to transition to maintenance dose after 7 days.

Genetic testing revealed heterozygous FVL and G20210A PTM mutations. Post-discharge, she experienced heavy vaginal bleeding requiring repeated hospital admissions for anemia and blood transfusions. Endometrial biopsy concerned hyperplasia. CT abdomen identified a right

adnexal mass, with biopsy confirming high-grade serous carcinoma of the ovary. During this period, she underwent surgical PFO closure and began chemotherapy for ovarian cancer.

Discussion:

Persistent PFO is causally linked to 10% of ischemic strokes in patients aged 18–60 years. In this case, the hypercoagulable state from genetic mutations and malignancy led to an embolic stroke via the PFO. Closure of the PFO was performed to prevent recurrent embolic events. This case emphasizes the importance of evaluating for underlying malignancies in patients with unprovoked DVT and ischemic stroke. The co-occurrence of genetic thrombophilia further complicated the patient's prothrombotic state.

Conclusion:

Approaching an acute ischemic stroke patient, persistent PFO and underlying malignancy must always be kept in the differential diagnosis, even if patients are presenting with genetic mutations that predispose them to hypercoagulable states. Understanding the underlying cause of an ischemic stroke can help providers address stroke prophylaxis, which may include surgical closure of PFO.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 28**
**Category:** Clinical Vignette
**Medical School:** Oakland University William Beaumont School of Medicine
**Presenter:** Silvana Iskandar
**Additional Authors:** Dr. Karan Chhabra, Dr. Omar Jameel, Dr. Tucker Billups

# Severe Digital Necrosis in the Context of Raynaud's Phenomenon, Antiphospholipid Antibody Syndrome, and Vasculitis: A Diagnostic Dilemma

Abstract:

A 73-year-old male with polyarticular gout, hypertension, and rheumatoid arthritis presented with non-healing necrotic wounds on the distal aspect of his upper extremity digits, most severely affecting the left index finger with eschar. His symptoms had been present for the past six weeks. He also had a history of Raynaud's phenomenon, which preceded these symptoms. Examination revealed necrotic wounds on the nail beds of seven fingers bilaterally, with significant left index finger necrosis. Despite the severity of his condition, he remained hemodynamically stable throughout hospitalization.

Laboratory studies showed positive cardiolipin IgM and beta-2 glycoprotein antibodies on two separate occasions, tested 12 weeks apart. Inflammatory markers were elevated, with an ESR of 28 mm/hr and a CRP of 24.2 mg/L. Arterial duplex ultrasound and CT angiography showed no significant arterial disease, ruling out large-vessel vasculitis. A transthoracic and transesophageal echocardiogram ruled out endocarditis or any thrombi. Blood cultures did not reveal any bacterial or fungal growth.

The patient was started on IV heparin and was later transitioned to warfarin with a goal INR of 2–3. He was also administered a pulse dose of Solu-Medrol for three days, followed by a maintenance dose of prednisone. Sildenafil and nifedipine were initiated for Raynaud's. IV cyclophosphamide was added for suspected vasculitis. Autoimmune workup was negative for lupus, Sjögren's, scleroderma, small-vessel vasculitis, and other connective tissue diseases.

Vascular surgery determined that the etiology was more likely microvascular, with no acute surgical intervention indicated. The patient was discharged initially on prednisone, sildenafil, and nifedipine. Despite aggressive treatment, ischemic wounds worsened, with necrosis spreading up the fingers and involving more nail beds. He was re-evaluated in the hospital three weeks later, and his immunosuppression was intensified, with cyclophosphamide transitioning to rituximab.

Discussion:

Upper extremity digit ischemia presents a diagnostic challenge due to a broad differential. An extensive workup is warranted, including echocardiogram, computed tomography angiography, thrombophilia panel, and autoimmune panel. In our patient, an extensive workup revealed positive antiphospholipid antibodies, although the underlying etiology could still not be elucidated. While glucocorticoids and anticoagulation typically improve acute digital ischemia in primary antiphospholipid syndrome, his condition worsened despite anticoagulation, steroids, and cyclophosphamide, suggesting a predominant microvascular etiology. Vascular imaging ruled out large-vessel involvement, reinforcing microvascular dysfunction. With no surgical options, management was focused on medical therapy and supportive care.

Conclusion:

This case highlights the challenges of managing refractory ischemic digital necrosis in autoimmune and hypercoagulable disorders such as antiphospholipid syndrome, emphasizing a multidisciplinary approach. A microvascular etiology must be suspected in ischemic digital necrosis when large-vessel disease is ruled out. Management with anticoagulation and immunosuppression may not always prevent progression, and referral may be warranted for vasodilatory treatment such as intravenous prostaglandins. Multidisciplinary management is crucial for optimizing treatment and monitoring disease progression in these complex vasculopathies.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 29**
**Category:** Clinical Vignette
**Medical School:** Oakland University William Beaumont School of Medicine
**Presenter:** Maya Jaradi
**Additional Authors:** Nicole Marijanovich, MD

# Case of Coxsackie B Perimyocarditis Presenting with Hemoptysis, Respiratory Failure, and New-Onset Heart Failure

Perimyocarditis describes inflammation of the pericardium and myocardium. Most cases are idiopathic, however when infectious causes are present, it is typically due to a virus such as coxsackievirus, adenovirus, herpesvirus, or echovirus amongst others. Clinical features vary from mild, self-limiting symptoms to cardiogenic shock and death. We will discuss a unique case of viral perimyocarditis presenting with hemoptysis, respiratory failure, and new-onset heart failure with severely reduced ejection fraction.

A 59-year-old female with a history of asthma, hypertension, and recently treated pneumonia presented with acute-onset headache, fatigue, and shortness of breath. On admission, she was severely hypertensive in the 200s/90s. Associated symptoms included diffuse numbness, tingling, and weakness. Leukocytes were mildly elevated to 14.9 with other labs and physical exam unremarkable. EKG showed sinus bradycardia without evidence of acute ST changes. The patient's headache was treated with Benadryl and Reglan, after which she began vomiting and became hypoxic to 60% and tachycardic to the 120s. She developed gross hemoptysis with frothy bloody sputum and required oxygen supplementation via high-flow nasal cannula (HFNC). CT angiography with IV contrast showed diffuse ground-glass airspace opacities concerning for infectious or inflammatory pneumonitis but no obvious aberrant vasculature. She was transferred to our hospital for higher levels of critical care.

Initial examination was significant for tachycardia and tachypnea with physical exam notable for hemoptysis and bilateral wheezing. While on heated HFNC, oxygen saturations remained in the low 80s ultimately leading to intubation. Labs were remarkable for high-sensitivity troponin elevated at 2234 (peaked to >6000), elevated ESR and CRP, and arterial blood gas showing respiratory acidosis, hypoxia, and hypercarbia. Respiratory PCR and cultures, urine Legionella, Strep antigen, TB screen, and MRSA nares were all negative. Transthoracic echocardiography showed reduced ejection fraction at 10%, severe global hypokinesis, mildly decreased right ventricular systolic function, mild mitral and tricuspid regurgitation, and no pericardial effusion. She was started on Lasix 40mg BID, low dose carvedilol, and ACE inhibitor. Cardiac catheterization to rule out acute coronary syndrome in the setting of new-onset ST elevation in lead V2 showed non-ischemic cardiomyopathy with normal coronaries and low-normal filling pressures. A repeat echocardiogram days later showed an improved ejection fraction of 40%. Cardiac MRI revealed acute edema in the mid to apical and septal walls with hypokinesis and

trivial pericardial effusion consistent with myocarditis. She continued having episodes of chest pain at night concerning for pericarditis and was started on colchicine and aspirin which relieved her pain. Coxsackie B Antibody Type 4 titers came back positive at 1:320 after discharge.

Coxsackievirus infections usually have a milder disease course in adults, however in cases of pericarditis or myocarditis, severity can range from asymptomatic to fulminant heart failure as seen in this patient. This was a unique presentation with hemoptysis and respiratory failure which highlights how severe some of these cases can potentially get. Although it is a self-limited illness, it is important to consider viral perimyocarditis in differential diagnoses of hemoptysis and respiratory failure, especially in patients with a history of recent illness.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 30**
**Category:** Research
**Medical School:** Oakland University William Beaumont School of Medicine
**Presenter:** Brandon Kim
**Additional Authors:** Deidre Hurse, Abram Brummett

# Survey of Medical Student Attitudes Regarding Uterine Transplant for Cisgender and Transgender Women: an observational study

Purpose: This study wishes to survey medical students' attitudes regarding legality of, funding for, and conscientious objection to uterine transplant (UTx) in cisgender and transgender women.

Methods: Medical students were invited to complete an online anonymous survey from March 18, 2024 to April 1, 2024. Baseline demographics collected, and four-point Likert scales were used on four pairs of questions to evaluate attitudes regarding UTx for cisgender and transgender women. Subject responses to paired questions were analyzed using Fisher's Exact Test. Strength of correlation between the paired questions were analyzed with Spearman's Correlation.

Results: A total of 96 responses were collected and 66 responses answering at least one of questions 5 to 8 were included in a final data. Nineteen (29%) self-identified as male and forty-three (65%) as female. A majority of respondents (72%) believed that a clinician should be able to object conscientiously to UTx regardless of gender identity, but only 14% would personally object to any UTx. A minority of respondents (10%) would object only to UTx for transgender women. Overall, female respondents (Correlation Coefficient average = .939) were more likely to select the same answer to paired questions regardless of gender identity compared to their male counterparts (Correlation Coefficient average = .558).

Conclusions: This study shows some division among medical students regarding their attitudes toward UTx for cisgender and transgender women. For medical students willing to participate in UTx for cisgender but not transgender patients, additional ethical analysis is needed to determine whether these attitudes constitute invidious discrimination.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 32**
**Category:** Research
**Medical School:** Oakland University William Beaumont School of Medicine
**Presenter:** Tai Metzger
**Additional Authors:** Zaheen Hossain, M2 (co-first author); Hashim Aslam, M3; Zeeshan Javed, M2; Shayzal Siddiqui, M2; Zaynab Ketana, M2; Virginia Uhley, PhD; (Affiliations: Oakland University William Beaumont School of Medicine)

# Sources of Health Information Accessed by Low-Income South Asian Patients in Southeast Michigan

Background: South Asian populations in the United States face a disproportionate burden of chronic conditions such as diabetes and cardiovascular disease, driven by racial, cultural, and socioeconomic factors. These challenges are compounded by barriers to health information and healthcare access, including cost, lack of insurance, and language constraints, leading to disparities in preventive care and health outcomes among low socioeconomic status (SES) patients. This study aims to evaluate healthcare information sources and accessibility among low SES South Asian patients in Southeast Michigan.

Methods: A cross-sectional survey was conducted at the Michigan Association of Physicians of Indian Heritage (MAPI) Charitable Clinic and the Muslim Community of Western Suburbs (MCWS) Health Fair. These organizations predominantly serve low SES, uninsured South Asian patients in Southeast Michigan. The survey evaluated demographics, healthcare needs, sources of health information, and questions about use of the internet for health information. Data analysis involved descriptive statistics to identify trends. Respondents were allowed to select multiple answer choices and enter any sources not listed.

Results: There were a total of 90 survey responses, with a mean age of 48 years. 88.8% of respondents had reliable access to the internet for virtual healthcare appointments. Doctors and healthcare providers were most commonly selected as a primary source of healthcare information, with 77% selecting this answer choice. This was followed by “internet search” (42.5%), “family or friends” (39.1%), “health websites” (28.7%), and “social media” (17.2%). Less common sources of healthcare information included “news outlets” (10.3%), “community health centers or organizations” (9.2%), “Pharmacist” (3.4%), and “mobile health apps” (2.3%). The most commonly provided websites that respondents went to for health information included Google (46%), WebMD (35%), Mayo Clinic (11%), Mychart (8%), Chat GPT (5%), and the University of Michigan (5%).

Conclusions: In addition to healthcare professionals and family/friends, the internet, including specific health websites and social media sources, was a major source of healthcare information accessed by low SES South Asian patients. This highlights the importance of

accurate and culturally responsive sources of health information on the internet. By addressing gaps in health knowledge and healthcare access, healthcare organizations can begin to improve preventive care and health outcomes for underserved South Asian populations.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 33**
**Category:** Research
**Medical School:** Oakland University William Beaumont School of Medicine
**Presenter:** Jessica Ngo
**Additional Authors:** Michelle Jankowski, MAS, Matthew Sims, MD PhD, Dwayne Baxa, PhD

# COVID 19 and its widespread effects on autoimmune diseases

COVID-19 has disproportionately affected racial and ethnic minority groups and immunocompromised groups, including those with autoimmune diseases. Studies have shown that African American, Hispanic, and Asian American individuals have higher risk of COVID-19 positivity and ICU admissions. SARS-CoV-2 shares numerous similarities with autoimmune diseases in its symptomology and ability to dysregulate the immune response. This study seeks to investigate differences in COVID-related outcomes between patients with autoimmune diseases and the general population.

Methods

A multi-center retrospective study was conducted with data from the EPIC database at Corewell Health System in Michigan from December 2019 to November 2021.

Variables collected included age, sex, race and ethnicity, and in-hospital outcomes such as mortality, length of stay, ICU stays. Patients were stratified by preexisting autoimmune disease hospitalized for COVID-19 and a control group of COVID-19 patients without preexisting autoimmune diseases. Statistical comparisons were conducted by chi-square tests for categorical variables and t-test for continuous measures.

Results

Among 11,600 COVID-19 hospitalizations, 408 patients had preexisting autoimmune diseases. The autoimmune group was predominantly female (67.6%; $p<0.0001$). Black patients were slightly more represented in the autoimmune cohort (26.5% vs. 24.1%; $p=0.003$) Asians and Arabs/Middle Eastern Descendants were more prevalent in the non-autoimmune cohort ($p=0.001$). The autoimmune cohort had longer hospital stays (mean 9.65 vs. 8.26 days; $p < 0.004$) and a trend of higher ICU utilization (15% vs 12.8%, $p=0.201$) and no significant difference in mortality. Autoimmune conditions included rheumatoid arthritis (26.5%), systemic lupus erythematosus (12.7%), type 1 diabetes (87%), and sarcoidosis (14%), among others.

Conclusion

Autoimmune patients hospitalized with COVID-19 had longer length of hospitalizations and demographic distinctions, reaffirming the propensity for autoimmune disease to affect women and increased comorbidity. Lack of significant difference in ICU metrics and mortality add to the understanding that autoimmune disease may not necessarily increase these risks. In-depth analysis of how different autoimmune diseases fared from one another during the hospital course and the use of chronic immunosuppressants could provide further insight on the relationship between autoimmune diseases and COVID-19 outcomes. Understanding COVID-19 outcomes in this vulnerable population is complex, but necessary in better characterizing risks and improving disease management for those with autoimmune disease in the context of COVID-19.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 34**
**Category:** Research
**Medical School:** Oakland University William Beaumont School of Medicine
**Presenter:** Yu Rim Park
**Additional Authors:** Jamal Kriem, M.D.

# Analysis of myositis development in adults and children with inflammatory bowel disease

Background/Objective

Inflammatory bowel disease (IBD) is an autoimmune disorder that can present with a wide range of clinical manifestations spanning multiple organ systems. Myositis in patients diagnosed with IBD is an uncommon presentation, and the pathophysiology in this population is not well studied. Given the lack of research surrounding the natural history of myositis in IBD patients, we decided to investigate the demographics and medication use that may potentially serve as predictors of symptom development. We hypothesized increased rates of myositis development in patients on TNF-alpha inhibitors given anecdotal evidence in clinical practice and literature review of several clinical vignettes that suggest a potential relationship.

Methods

This is a retrospective study using data from the electronic medical database of a large hospital system. The sample included adults and children diagnosed with IBD, who were divided into groups of myositis, no myositis, and unable to confirm, with the latter excluded from further analysis. Designation of myositis was a complex process including combinations of ICD 9 and 10 codes with presence of largely elevated creatine kinase (CK) and absence of CK-MB. Our variables of interest included demographic information and medication history including aminosalicylates, TNF-inhibitors, immunomodulators, integrin receptor antagonists, interleukin inhibitors (targeting IL-1, IL-4, IL-5, IL-6, IL-12, IL-13, IL-17A, IL-23A), and steroids. Adjusted odds ratios for diagnosis of myositis were calculated using logistic regressions, using our variables of interest.

Results

Our study included 26,040 patients, divided into 117 in the myositis group, 24802 in the no myositis group, and 1121 in the unable to confirm group. Demographics analysis was significant for increased myositis rates in female patients. Aminosalicylate use was an independent predictor against myositis diagnosis (Adjusted OR 0.62, p 0.023), and steroid use was an independent predictor for myositis diagnosis in our IBD population (Adjusted OR 2.86, $p<0.001$). There were no significant associations with myositis presentation seen for the other classes of medications.

## Discussion/Conclusion

Contrary to several anecdotal evidence, our analysis reports no association between taking TNF-inhibitors, immunomodulators, integrin receptor antagonists, or interleukin inhibitors, and developing myositis. However, the myositis incidence was statistically lower in the aminosalicylate group and higher in the steroid group. There was also evidence of interaction between immunomodulators and age, sex, and steroid use which results in increased reports of myositis. Further research is needed to investigate a wider range of risk factors, and consideration must be given for a possible common pathophysiological background between IBD and myositis. The difficulties faced in classifying myositis in our study also points to a need for standardization of myositis diagnosis.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 35**
**Category:** Clinical Vignette
**Medical School:** Oakland University William Beaumont School of Medicine
**Presenter:** Keaton Schmitz
**Additional Authors:** Francisco R Davila Grijalva, MD, Corewell Health; Aagamjit Singh, MBBS, PGY-2, Corewell Health; Jamie Satow, MS4, Kansas City University College of Osteopathic Medicine

# Hypereosinophilic syndrome in a patient with Diffuse large B-cell lymphoma

## Introduction

Hypereosinophilic syndrome (HES) is a rare condition characterized by eosinophil-mediated organ damage and a peripheral eosinophil count >1.5x$10^9$/L, with varied etiologies classified as primary, secondary, idiopathic, or organ-restricted. Cardiac involvement, often termed Loeffler's endocarditis (LE), is a rare but severe manifestation of HES. Neoplastic causes of HES are typically linked to myeloid neoplasms, with limited literature on an association with B-cell lymphomas. We report a unique case of HES and LE in a patient with diffuse large B-cell lymphoma (DLBCL).

## Case description

A 78-year-old female with a past medical history of DLBCL, coronary artery disease, and cryptogenic strokes presented with acute dyspnea and wheezing for 18 hours before arrival. Diagnosed with DLBCL 20 years earlier, she had failed multiple therapies and was on lenalidomide and obinutuzumab at the time of presentation. Her other medications included clopidogrel and apixaban. On arrival, the patient's blood pressure was 98/59 mmHg, heart rate 80 beats per minute, and oxygen saturation 90% on room air. Examination revealed diffuse wheezing, and laboratory studies showed leukocytosis with an absolute eosinophil count of 6.5 × $10^9$/L (0.02–0.52). Imaging ruled out pulmonary embolism but suggested congestive heart failure.

Echocardiography identified a 2.5 × 3.3 cm laminar left ventricular thrombus with an ejection fraction (EF) of 55%. Persistent eosinophilia documented over the past four years raised suspicion for HES with LE. Management included IV methylprednisolone, heparin, and diuresis. Extensive workup for her eosinophilia which included molecular genetics testing was negative. The etiology was attributed to neoplastic HES secondary to DLBCL. Cardiac magnetic resonance imaging confirmed LE.

In addition to steroids, hydroxyurea was started and her eosinophil count decreased to 3 x 10^9/L at discharge on day 16 with significant improvement in symptoms. A week after

discharge (30 days from initial presentation), the patient was re-admitted with heart failure with mildly reduced EF of 45%. This hospitalization was complicated by pancytopenia and septic shock, and the patient's clinical status rapidly deteriorated despite appropriate therapy. Considering her advanced lymphoma and multiple comorbidities, the patient transitioned to comfort care and passed away 43 days after her initial presentation.

## Discussion

The incidence of HES is reported to be 0.03-0.04 per 100,000 person-years. HES is organ damage attributable to persistent peripheral eosinophilia. While almost half of HES etiologies are idiopathic, many primary and secondary causes are attributable to myeloproliferative and lymphocytic variants respectively. The lymphocytic variant of HES typically refers to T-cell lymphomas, with rare case reports of B-cell lymphomas in the literature.

To our knowledge, this is the first case report of HES manifesting as LE in a patient with DLBCL. LE often leads to heart failure from restrictive cardiomyopathy and intra-cardiac thrombi with a high mortality rate. This case underscores the rare association between DLBCL and HES, bringing into focus the presentation, diagnosis, and management of LE. A high index of suspicion with timely initiation of treatment is paramount to improve mortality, with close monitoring of complications.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 36**
**Category:** Research
**Medical School:** Ross University School of Medicine
**Presenter:** Viktoriya Gibatova
**Additional Authors:** Nikhil Vojjala, Rishab Prabhu, Geetha Krishnamoorthy

# Effect of Myeloproliferative Neoplasms on Outcomes in Patients Hospitalized with Pulmonary Hypertension

Background:

Pulmonary hypertension (PH) is a recognized risk factor for increased hospital mortality. While it is known that PH can arise as a complication in patients with myeloproliferative neoplasms (MPNs), the prevalence of MPNs within the overall PH population is not well-defined in the literature, with estimates ranging from 1.5% to 6%. MPNs are also known to accentuate the underlying thrombotic processes. This study seeks to explore the intriguing impact of MPNs on patients hospitalized with PH.

Materials and Methods:

We conducted a retrospective cohort study using the Nationwide Inpatient sample database from 2016 to 2020 to identify PH hospitalizations using the ICD-10-CM (International Classification of Diseases, Tenth Revision, Clinical Modification) procedure codes I27.0, I27.20, I27.21 and I27.24. Descriptive analysis was performed to report patient demographics, hospital characteristics, comorbid conditions, and complications. The presence of MPN was identified using a secondary diagnosis with ICD -10 CM codes (D473, D45, and D7581). The all-cause mortality rate was calculated. The adjusted odds of deep venous thrombosis (DVT), pulmonary embolism (PE), and bleeding events were derived. Final analysis produced national estimates after applying weights, using the methodology provided by the Healthcare Cost and Utilization Project.

Results:

Among 7,498,343 hospitalizations related to PH, MPNs were identified as an underlying condition in 44,990 admissions (0.006%). Essential Thrombocytosis constituted the most common MPN, accounting for 74.9%, followed by Polycythemia Vera (16.6%) and Primary Myelofibrosis (8.5%). The mean age in the MPN group was similar to the non-MPN group (71.21 vs. 71.45 years), with males comprising 59.7%. Dyslipidemia (50.09%), chronic kidney disease (43.5%), and coronary artery disease (43.41%) were the most frequent comorbidities. Primary thrombophilia was present in 0.4% and of those 19.8% had a history of aspirin use and 22.7% used oral anticoagulants.

When adjusted for age, gender, underlying comorbidities, and MPN status, patients with MPN as an underlying condition had significantly higher odds of thrombotic events {DVT:1.34 (95% CI 1.16, 1.54), p= 0.000}, {PE:1.42 (95% CI 1.27, 1.58), P= 0.000} and {other VTE:1.43 (95% CI 1.30, 1.58), p= 0.000}. Surprisingly, these patients demonstrated a significantly higher risk of gastrointestinal bleeding, with an adjusted OR of 1.32 (95% CI: 1.16,1.50, p= 0.000), but not intracranial bleeding with an OR of 0.85 (95% CI: 0.58, 1.23, p= 0.405) or other clinically significantly non-major bleeding with an OR of 1.18 (95% CI: 0.56, 2.46, p= 0.656). There is no significant difference in the mortality rates between MPN and non-MPN groups, OR of 1.09 (95% CI: 0.98, 1.21, p= 0.111).

Conclusions:

Overall, this largest real-world database study highlights that the presence of MPN as an underlying condition in patients hospitalized with pulmonary hypertension is associated with significantly increased risk of thrombosis and gastrointestinal bleeding, resulting in longer hospital stays and utilization metrics. Future prospective studies are warranted to customize the thromboprophylaxis protocols for this specific subgroup.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 37**
**Category:** Clinical Vignette
**Medical School:** Ross University School of Medicine
**Presenter:** Joshua Hermiz
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# Complete Heart Block Induced by Hyperemesis: Integrating the Vagal Score to Guide Management and Avoid Invasive Interventions

Introduction:

Complete heart block (CHB) represents the complete absence of atrioventricular (AV) conduction between the atria and ventricles, preventing the sinoatrial node from regulating heart rate and cardiac output through communication with the AV node. Although standard treatment involves permanent pacemaker implantation, it is crucial to identify reversible causes such as electrolyte imbalances or vagal-mediated mechanisms, as it may allow for alternative, non-invasive management. This case report discusses a rare instance of hyperemesis-induced CHB and utilizes the "vagal score" via ECG-based assessments to determine approach to management, ultimately identifying reversible etiologies and preventing unnecessary invasive interventions.

Case Presentation:

A 43-year-old otherwise healthy woman presented multiple times over one week with severe abdominal pain, nausea, and vomiting. Initial diagnostic evaluations, including laboratory and imaging tests, suggested renal colic. However, persistent symptoms including vomiting, headache and dizziness led to further investigation, revealing hypokalemia (3.1 mmol/L) and ECG findings of sinus bradycardia with intermittent second-degree AV block (Mobitz II). Continuous cardiac monitoring subsequently documented progression to CHB with AV dissociation. By utilizing the vagal score, this patient received an ECG-index of 4, suggesting her CHB is vagal-mediated rather than intrinsic cardiac conduction disease. Therefore, initial management focused on fluid resuscitation, potassium repletion, and antiemetic therapy prior to considering pacemaker implantation. Serial ECGs demonstrated complete resolution of the conduction abnormality following the correction of electrolyte imbalances and volume depletion. Application of the vagal score eliminated the need for permanent pacemaker placement.

Discussion:

This case demonstrates the complicated relationship between hypokalemia, hypovolemia, and vagal activation in the pathogenesis of CHB. Hyperemesis can significantly increase vagal tone and induce hypokalemia, which collectively creates a setting susceptible to bradyarrhythmias. The vagal score is a diagnostic tool proposed by Komatsu et. al, which systematically evaluates clinical and ECG findings to differentiate vagal-mediated CHBs from other intrinsic conduction diseases. Despite its clinical value, this scoring system remains underutilized and there are no case reports published discussing its application or accuracy in clinical practice. In this patient, the application of the vagal score allowed for a targeted, conservative approach to management, avoiding invasive interventions such as pacemaker implantation. The findings are consistent with prior studies on reflex AVB, which emphasize the importance of identifying precipitating factors such as hyperemesis-induced vagal activation.

Conclusion:

Prompt recognition of reversible causes of CHB is crucial to avoid unnecessary invasive procedures, as pacemaker implantation is typically indicated for pacing regardless of the underlying mechanism. Studies have demonstrated vasodepression precedes cardioinhibition by several minutes if vagally-induced, substantially reducing the benefit of pacing. This case outlines the value of incorporating the vagal score into clinical practice to enhance diagnostic accuracy and guide management decisions. Conservative treatment successfully resolved the conduction abnormality in this patient, reinforcing the need for a systematic approach to reversible CHB. Increased awareness and application of the vagal score can streamline patient care, optimize resource allocation, and enhance clinical outcomes. Future studies should focus on a larger sample size to determine whether the clinical utility of a vagal score demonstrates greater statistical significance.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 38**
**Category:** Clinical Vignette
**Medical School:** University of Medicine and Health Sciences Basseterre
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# A Unique Metastatic Pattern of Choriocarcinoma Presenting as Anemia

Educational Objectives:

Recognize the rarity of jejunal metastases in choriocarcinoma.

Describe the role of endoscopy in evaluating jejunal mass bleeding.

Introduction:

Choriocarcinoma is an aggressive variant of testicular cancer that may seed hematogenously. It primarily invades the lungs or brain. In this vignette we investigate an exceedingly rare metastatic pattern in the jejunum resulting in persistent blood loss refractory to blood transfusion.

Case Presentation:

A 23-year-old male with no past medical history presented to the emergency department after experiencing dizziness and near syncope for 3 days. The patient, who immigrated to the United States from Guatemala 2 years ago and lacks an established primary care provider, initially experienced these symptoms at his construction job. He endorsed occasional bouts of painless bloody stools. He denies drinking alcohol or smoking cigarettes. Vital signs on arrival revealed sinus tachycardia. Laboratory evaluation demonstrated significant anemia with a hemoglobin of 5.3 g/dL. An Rh O-negative blood transfusion was initiated, and further hematologic workup was ordered. CT imaging revealed a large right testicular mass and concerning lung metastases, and no active GI bleed. Physical exam confirmed an enlarged right testicle the patient believed was a hernia for 6 months.. The patient was admitted to the ICU with critical care, oncology, and gastroenterology consultations. A urine beta-hCG was elevated at 12,296 mIU/mL and fetoprotein was 146 ng/mL indicative of metastatic mixed germ cell carcinoma. Despite multiple units of packed red blood cells, his hemoglobin remained low. Upper endoscopy biopsies revealed H. pylori but no active bleeding. Colonoscopy showed severe melena which warranted a second upper endoscopy with push enteroscopy and identified an atypical jejunal mass that was actively hemorrhaging and biopsied. Histopathology confirms germ cell

metastasis likely secondary to choriocarcinoma. Immunohistochemistry confirms metastatic germ cell tumor with choriocarcinoma component.

Discussion:

Choriocarcinoma is a nonseminomatous germ cell tumor characterized by its aggressive nature to metastasize and potential to cause fatal hemorrhage. The most implicated sites of distant metastasis include the lungs, brain and liver. There has been one other documented case of jejunal spread of choriocarcinoma with a third of the hcg compared to our patient. Our patient highlights the unpredictable nature of choriocarcinoma metastasis and emphasizes the importance of maintaining a high index of suspicion for unusual metastatic sites in patients with choriocarcinoma, particularly when faced with persistent and unexplained gastrointestinal bleeding. Thorough endoscopic evaluation, including push enteroscopy, may be necessary to identify and address these challenging locations.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 39**
**Category:** Clinical Vignette
**Medical School:** University of Michigan
**Presenter:** Imani Elliott
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# Blistering Truths: Shedding Light on Bullosis Diabeticorum

Long-standing diabetes, and specifically poor glycemic control, are breeding grounds for a rare skin condition, bullosis diabeticorum.

A 78 year old male with a long history of Type 2 diabetes mellitus, diabetic neuropathy, osteomyelitis requiring right toe amputation (2013), right below-the-knee amputation (2019), sigmoid diverticulosis, COPD, HFmREF, coronary artery disease, hypertension, and dementia presented with sloughing skin and blistering wounds on the dorsum of the left foot. One day before admission, the patient noted a novel blister on the dorsum of the foot extending to the left toes and interdigital spaces. The patient's son brought his father to the emergency department for further evaluation. Physical examination revealed a blistering wound of the left dorsal foot extending to the second - fourth toes. Distal pulses were reduced (+1), though motor exam intact—stable vitals without fever or hypotension. Initial laboratory workup revealed increased creatinine levels (1.96 mg/dL), from a baseline of 1.5-1.7mg/dL and hemoglobin a1c of 6.7.

Given concern for infection treatment was initiated with ampicillin/sulbactam in the ED. On admission, antibiotics were broadened to piperacillin/tazobactam and vancomycin given concerns for rapidly progressive skin and soft tissue infection (SSITI). Computed tomography (CT) of the left lower extremity was negative for signs of necrotizing SSTI, or osteomyelitis. CT angiogram showed no evidence of large vessel disease. Echocardiogram was negative for endocarditis and ABI/TBI was within normal limits. Blood cultures collected after initial antibiotic initiation remained no growth. Two days after admission, the patient's toes turned violaceous, concerning for necrosis. Plastic surgery was consulted, who had high concern for necrotic tissue so requested a dermatology consult and began preparations for possible amputation. Due to the growing concern for hemorrhagic bullae, a punch biopsy was taken and revealed mild pseudoepitheliomatous hyperplasia, hypergranulosis and slightly increased collagen deposition. The findings were nonspecific but indicated chronicity given hyperplasia and increased collagen deposition. There was no evidence of an immunovesiculobullous disease, active inflammation, or cellulitis. After daily evaluations by Plastic Surgery and wound care, the violaceous hue in the left toes ceased with unroofing of his blisters, with intact, viable epithelium. The patient was on ten days of broad-spectrum antibiotics that were discontinued after biopsy results. The patient was discharged with follow-up in outpatient wound care clinic.

This case underscores the importance of a broad differential for blistering disorders and prompt biopsy. Bullosis diabeticorum presents as sudden onset, non-inflammatory blisters, typically on lower extremities. However, its etiology is not clearly elucidated which underscores the diagnostic challenge it poses. Histopathologically, characteristic hyalinosis may not be evident in all cases, as initial subepidermal bullae can undergo re-epithelialization and fibrosis, potentially obscuring primary characteristics. While these blisters are often painless and self-resolving (within 2-6 weeks), secondary infections can complicate the condition. While SSTIs are important to treat, an early biopsy was delayed given the patient's slight clinical improvement. Early identification can prevent unnecessary antibiotic use, which can present issues for the patient and overall public health. Effective management involves an interdisciplinary approach towards chronic glycemic control and focused wound care.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 40**
**Category:** Quality Improvement/Patient Safety/High Value Care
**Medical School:** University of Michigan
**Presenter:** Francesca Giacona
**Additional Authors:** Dr. Eric Walford, MD

# Utility of a Patient Portal Messaging Initiative to Increase Penicillin Allergy Delabeling in Primary Care Patients

In the United States, 10% of adults report an allergy to penicillin. The prevalence of true penicillin allergy is far lower, with 90% of penicillin allergic patients able to tolerate penicillin after allergy evaluation. This discrepancy is largely due to allergy extinction with time and the initial reaction not being truly IgE-mediated(3). Practice guidelines support proactive penicillin allergy delabeling as a cost-saving intervention to avoid use of broader spectrum antibiotics that may lead to longer inpatient stays and increased mortality(4). The most common path to delabeling a penicillin allergy is by having the PCP (primary care physician) identify a non-life threatening penicillin allergy and then refer the patient to an allergist. However, less than 10% of penicillin-allergic primary care patients are ever referred for testing, in part due to challenges of busy PCPs who are handling more acute patient needs(1, 5). Recent data demonstrates early success in using patient portal messaging as a low-intensity means of clinical trial recruitment(2). However, portal messaging used to both educate about and refer patients to a preventative intervention, in this case outpatient pencillin allergy delabeling, is largely uninvestigated.

In our project, patients at one outpatient clinic with a documented penicillin allergy were sent a recruitment message via the patient portal. This message explained that they may benefit from penicillin allergy testing and included questions the patient could use to stratify their allergy. A “no” to all three questions indicated that the patient would be appropriate for allergy testing. Patients then indicated if they would be interested in testing, with a response of “I’m interested” triggering a second portal message with allergist referral and scheduling information. Chart review was then conducted to assess response rate, allergy appointment scheduling, and ultimate outcome of allergy testing (either direct oral challenge or skin test/oral challenge based on the allergist’s assessment of risk).

1156 primary care penicillin-allergic patients at one academic medical center outpatient office were identified and sent the initial patient portal recruitment message. 105 (9.1%) of these patients were deemed testing candidates and indicated interest, leading to receipt of the second portal message with scheduling information. 40 (38%) of the patients receiving the scheduling invite message ended up scheduling initial allergy appointments and 8 patients have undergone allergy testing. 100% of the patients who underwent testing had negative penicillin allergy tests and their allergy was removed from their chart.

By successfully employing this low-intensity recruitment approach, we demonstrate the utility of portal recruitment in connecting primary care patients to specialty evaluators without added PCP appointment burden. This en masse recruitment approach to address the country's most common drug allergy looks to magnify the demonstrated health and cost benefits of penicillin allergy delabeling for patients and health systems alike with minimal added provider strain. Limitations include single-site data collection and limited data on cost of the delabeling process borne by the patient. We look next to investigate patient perception of the intervention and to gather outcome data on successful future use of penicillin antibiotics after delabeling.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 41**
**Category:** Research
**Medical School:** University of Michigan
**Presenter:** GEORGE YACOUB
**Additional Authors:** Carol Janney, PhD; Zhaorui Wang, MD; Ramzy Meremikwu, MD; Michelle S Caird, MD; Michael M Kheir, MD

# Patient Demographics are Associated with Patient-reported Scores in Primary Total Hip Arthroplasty.

Purpose:

Disparities in access and outcomes of total hip replacement care persist, particularly among racial minorities and socioeconomically disadvantaged groups. Patient-reported outcome measures (PROMs) have come to be understood as a valuable tool in assessing quality of care in medicine. The Hip dysfunction and Osteoarthritis Outcome Score for Joint Replacement (HOOS JR) is a validated PROM survey to assess function and pain for patients undergoing total hip arthroplasty. Our goal is to examine whether certain patient demographics are associated with preoperative and postoperative HOOS scores.

Methods:

This is a retrospective study of 3,307 THAs at a single large academic institution from 2015-2023. Multivariate linear regression analyses were performed to determine effects of race, sex, marital status, age, and insurance type on length of stay, preop HOOS JR, 6-week postop HOOS JR, 1-year postop HOOS JR, and changes in HOOS JR score over time. Multivariate logistic regression analyses were performed to determine effects on discharge disposition, perioperative and postoperative complications such as operative joint fracture or dislocation, operative joint infection, readmission, ED visit, or DVT/PE within 90 days postoperatively. We controlled for confounders of body mass index, Elixhauser comorbidity index, and surgical approach.

Results:

Longer hospital stay was associated with older age, government payer, unmarried status, black race, and female sex ($p<0.01$). Discharge to a rehabilitation facility was associated with older age, government payer, unmarried status, black race, and female sex ($p<0.05$). No statistically significant associations were found in overall peri/postoperative complication analysis. Subgroup analyses showed operative joint fracture intraoperatively or within 90 days to be associated with older age and female sex ($p<0.05$). Lower preoperative HOOS JR scores were

associated with younger age, government payer, unmarried status, black race, and female sex ($p<0.05$). Lower 6-week postoperative HOOS JR scores were associated with black race ($p<0.01$). Lower 1-year postoperative HOOS scores were associated with black race and unmarried status ($p<0.05$). A decreased improvement from preoperative to 6-week HOOS scores was associated with older age, private payers, unmarried status, and male sex ($p<0.05$). A decreased improvement from preoperative to 1-year HOOS scores was associated with older age ($p<0.01$) and a near statistically significant association found with male sex ($p=0.06$).

Conclusion:

We found that several social determinants of health such as marital status, age, and sex are associated with longer length of stay and increased likelihood of discharge to a rehabilitation facility. While black race was consistently associated with lower absolute HOOS JR scores at all time-points studied, the change in HOOS JR scores did not differ by race, implying a similar amount of improvement from preoperative function after a hip arthroplasty. Further research is warranted into why black patients present with lower HOOS scores preoperatively, and whether these patients receive delayed evaluation or whether they are indicated for surgery later, among other potential reasons.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 42**
**Category:** Quality Improvement/Patient Safety/High Value Care
**Medical School:** Wayne State University School of Medicine
**Presenter:** Kiersten Walsworth
**Additional Authors:** Mihika Sridhar, Neil Garg, Paul Villa, Anne Patterson, Zunaira Imran, Nicole La France, Saachi Mittal, Anna Rowell, Alyssa Rogers, Ciara White, Nicole Hao, Maria Tjilos, Dr. Richard Bryce, Dr. Shaina Shetty

# Doing the Work: Review of Operations and Quality Improvement of a Student-Led Inpatient Consult Service Supporting Detroit's Unhoused Individuals

## Introduction

In 2024, approximately 8,500 persons experiencing homelessness (PEH) lived in Detroit, Michigan. Miyawaki (2020) demonstrates that hospitals experienced in caring for PEH have less readmissions and ED visits post-discharge. Broman (2022) shows that student-led health programs produce favorable patient outcomes. This suggests a student-led inpatient consult service (SLICS) serving PEH can potentially improve health outcomes for PEH. Street Medicine Detroit (SMD) recognized this opportunity and in 2024 established a SLICS at Detroit Medical Center (DMC), a safety-net hospital, to be run by third-year medical students. This type of organization is novel within hospitals and identifying areas for quality improvement will be critical for positive patient outcomes.

## Methods

DMC electronic medical records (EMR) were reviewed and data collected on the number of consults placed each month, which departments placed the consults, time of patient admittance, time of SMD consult, time seen by a consultant, upload of consultant EMR note, and patient discharge. Potential post-discharge follow-up with street medicine teams was also documented. Lastly, each patient's history of ED visits and inpatient admissions up to six months after receiving an SMD inpatient consultation were reviewed.

## Results

From January 2024-2025, 70 hospital consults were placed. 65 consults were for PEH, 60 of which the team was able to see prior to discharge. 0.0% of consults were placed in January, 1.4% in February, 0.0% in March, 10.0% in April, 8.6% in May, 0% in June, 28.6% in July, 10.0% in August, 2.9% in September, 15.7% in October, 10% in November, 10% in December, 0% in January, and 2.9% unknown. Consults came from medicine (55.7%), ER (20%), surgery (15.7%), nursing (2.9%), case management (1.4%), psychiatry (1.4%), OBGYN (1.4%), ICU (1.4%), and pediatrics (1.4%). The median length of stay was 5 days with the median time to SMD consult

being 2 days. On average, consults were seen by SMD within 6.96 hours, and documentation uploaded to the EMR within a subsequent average 2.4 hours. The median time to discharge after an SMD consult was 2 days. After discharge, 41.67% of patients requested follow-up care from street teams,. 12% of requested follow-up care was completed. The median number of ER visits in the 30 days, 3 months and 6 months after discharge was 0, 1 and 1. The median number of hospital readmissions after 30 days, 3 months, and 6 months were all zero.

## Conclusion

SMD's SLICS is efficient, comprehensive, and growing. SMD has been consulted by nearly every department at DMC and increasing monthly consults demonstrates the need for this service and its ability to integrate into a busy urban safety net hospital. However, follow-up care for patients discharged without stable housing is inconsistent, likely due to multifactorial causes, including difficulty contacting many patients after discharge and transient living patterns. SMD patients had low median rates of hospital utilization following discharge, and future research in this direction is strongly warranted.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 43**
**Category:** Research
**Medical School:** Wayne State University School of Medicine, Detroit
**Presenter:** Sarah Bdeir
**Additional Authors:** Dr. James Meza, Kareem Tayeb

# Assessing the State of Nutrition Education in Michigan Medical Schools

Despite the National Academy of Science recommending a minimum of 25 hours of nutrition education, U.S. medical schools dedicate an average of only 19 hours, and 75% lack mandatory clinical nutrition classes[1]. Alarmingly, only 14% of current healthcare providers feel confident discussing nutrition with patients, despite its critical role in disease prevention and management[2]. To address this gap, we surveyed medical students at five of seven Michigan medical schools about their schools' approaches to culinary medicine, self-perceived competence, and recommendations for improving nutrition education curricula. The survey was given to key representatives at each medical school, who distributed the survey to their students.

Quantitatively, a single survey administered after the completion of the culinary medicine program captures students' self-assessments of their knowledge and readiness. The survey includes retrospective pre-program questions, asking students to evaluate how knowledgeable and prepared they felt before starting the program, alongside current post-program assessments of their knowledge and preparedness. These self-ratings are collected using a 1-10 Likert scale, allowing for comparative analysis of perceived growth and the effectiveness of the education program. Qualitatively, students will describe specific areas of improvement and perceived gaps in culinary education at their respective programs.

Our preliminary results include eight responses from five Michigan medical schools. Preliminary findings reveal a significant gap in nutrition education across medical schools, with only 13% (1/8) incorporating the recommended 25 hours of instruction into their curricula, while 87% (⅞) offer no formal nutrition training. One out of the eight students' surveyed that their school offered an optional fourth-year elective. All eight students acknowledged the critical need for robust nutrition education, expressing concerns about their own and their peers' ability to effectively counsel patients on dietary health.

These results, though not generalizable, underscore the need to address disparities in nutrition education. Based on this assessment of medical students' perceptions of their educational needs, we propose to further investigate medical nutritional curricula.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 44**
**Category:** Clinical Vignette
**Medical School:** Wayne State University School of Medicine, Detroit
**Presenter:** Emma Burke
**Additional Authors:** N. Pinto, J.V. Inampudi, N. Thati

# Rastelli Type A Complete Atrioventricular Canal Defect in an Adult with Eisenmenger Syndrome: Is It Too Little, Too Late?

## Introduction

Complete atrioventricular (AV) canal defect is a rare congenital heart anomaly, constituting approximately 3% of all congenital heart defects. It is characterized by a continuous atrial septal defect and ventricular septal defect, accompanied by a single atrioventricular valve that spans both sides of the heart, replacing the separate mitral and tricuspid valves. This defect causes significant left-to-right shunting and AV regurgitation, leading to right ventricular overload. If left unrepaired, it may progress to Eisenmenger syndrome, pulmonary hypertension, and life-threatening complications.

## Case Presentation

A 20-year-old female with Down syndrome was born full-term in Venezuela and diagnosed with a complete AV canal defect, Rastelli Type A. This type involves a divided superior bridging leaflet attached to the crest of the ventricular septum, narrowing the left ventricular outflow tract and widening the right ventricular outflow tract. While it was advised to pursue surgery around six months of age, she was deemed ineligible due to presumed pulmonary hypertension. Therefore, she was started on sildenafil for the medical management of pulmonary hypertension. A cardiac catheterization at age four revealed relatively low pulmonary vascular resistance, raising the possibility of surgical repair. However, the procedure was canceled due to anesthesiology's discomfort in patient stability. Over subsequent years, the patient experienced stable oxygen saturation in the 70s, chronic cyanosis, and nail changes while living at high altitudes in Venezuela and Colombia. After moving to Detroit at a lower altitude, her oxygen saturation improved to the 80s. On presentation, she exhibited perioral cyanosis and digital clubbing. Echocardiography and cardiac catheterization findings confirmed Rastelli type A complete AV canal defect with pulmonary hypertension. Large pulmonary flow: systemic flow ratios (Qp/Qs) demonstrated severe left-to-right shunting consistent with an unrepaired AV canal defect. Chronic pulmonary hypertension was evident through elevated pulmonary vascular resistance and pulmonary artery pressures. Catheterization further revealed chronic effects of long-standing pulmonary hypertension, including increased right ventricular systolic pressure, indicating sustained strain on the right heart. A multidisciplinary cardiology, pulmonology, and cardiovascular surgery conference reviewed the echocardiogram,

catheterization, and current literature to guide management decisions. Given her stable oxygen saturation in the 80s and asymptomatic status, supplemental oxygen was considered but deferred. Aggressive pulmonary hypertension management with Sildenafil 50 mg BID and Sprinolactone 25 mg was prescribed, with close monitoring prioritized to determine the feasibility of future surgical repair.

## Discussion

This case highlights the consequences of delayed surgical intervention in resource-limited settings. Timely repair of complete AV canal defects is essential to prevent irreversible pulmonary vascular disease. The patient's condition reflects a complex interplay of chronic hypoxemia, pulmonary hypertension, and potential progression to Eisenmenger syndrome, necessitating a multidisciplinary approach. Aggressive pulmonary hypertension management can provide temporary stabilization, but surgical correction remains the definitive solution despite significant risks due to pulmonary vascular changes. The case underscores the importance of transitional medicine and collaboration between pediatric and adult specialists to ensure continuity of care for congenital defects into adulthood. A coordinated, multidisciplinary strategy involving cardiology, pulmonology, and cardiovascular surgery is essential to optimize management and improve long-term outcomes.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 45**
**Category:** Clinical Vignette
**Medical School:** Wayne State University School of Medicine, Detroit
**Presenter:** Alyssa Dsouza
**Additional Authors:** Koushik Tuppil, Rasheed Bahar, M.D., Shaun Cardozo, M.D.

# Delayed Mitral Valve Perforation Due to Mitral Valve Aneurysm Secondary to Aortic Valve Endocarditis: A Case Report

Background: Mitral valve aneurysm (MVA) is a very uncommon condition and is associated with aortic valve infective endocarditis. Aortic valve endocarditis and regurgitation can lead to a regurgitant jet that strikes the mitral valve, leading to a secondary site of infection and the formation of an MVA that may progress to perforation, mitral regurgitation, and subsequently pulmonary edema.

Case Presentation: We present a case of a 68-year-old male who developed an MVA with mitral valve regurgitation three months after aortic valve replacement surgery for aortic valve regurgitation due to infective endocarditis. Transthoracic echocardiography (TTE) demonstrated a large aortic valve vegetation measuring 2.0 x 1.0 cm with severe aortic valve regurgitation. The mitral valve appeared structurally normal without regurgitation. The patient underwent aortic valve replacement which revealed endocarditis of all 3 aortic cusps and cultures grew Bartonella quintana. Postoperative transesophageal echocardiogram (TEE) showed normal left ventricular (LV) size and function, no vegetations, and a trivial aortic paravalvular leak. Repeat TEE obtained one month after bioprosthetic aortic valve replacement showed a stable and well-seated prosthesis. However, another repeat TEE obtained three months after the operation demonstrated a perforation of the anterior mitral valve leaflet secondary to a mitral valve aneurysm with mitral regurgitation. Retrospective review of the one month post-operative TEE imaging showed evidence of early formation of an MVA in the early initial stages at the location that the aortic insufficiency (AI) jet struck the mitral valve leaflet. Given that the mitral regurgitation was quantified as moderate and the patient had poor clinical and functional status, no intervention was done at that time.

Discussion: Mitral valve aneurysm developing after infective aortic valve endocarditis represents a rare but potentially life-threatening condition that may have a late presentation even after successful aortic valve replacement. Timely recognition is crucial in optimizing proper patient outcomes and limiting further complications.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 46**
**Category:** Research
**Medical School:** Wayne State University School of Medicine, Detroit
**Presenter:** Carline Dugue
**Additional Authors:** Zunaira Imran BS, William Davie BS, Valerie Abbott MD, Melanie Hanna-Johnson MD, Janaki Patel MD, Anil Aranha PhD

# Post-Stroke Risk Factor Management in Metropolitan Detroit Patients: A Pilot Study

Background and Purpose:

Stroke, a medical emergency caused by either obstruction of blood flow or acute intracranial hemorrhage, was the fifth leading cause of death in the United States in 2021. Major modifiable risk factors for stroke include hypertension (HTN), type 2 diabetes mellitus (TIIDM), hyperlipidemia (HLD), coronary artery disease (CAD), smoking, and obesity. Post-stroke management emphasizes medical and behavioral modifications to address these risk factors. This study aims to explore factors influencing stroke risk profile modification, with a particular focus on the role of social determinants of health.

Methods:

We conducted a retrospective analysis of 13 stroke patients from a primary care clinic in metropolitan Detroit. Patients were contacted for study participation, with exclusion criteria including non-English speakers, a mini mental status exam score below 22, and inability to provide consent. Data collection involved reviewing pre- and post-stroke clinical data, including systolic (SBP) and diastolic blood pressures (DBP), total cholesterol (TC), LDL, HDL, and HbA1c levels, alongside a phone-administered questionnaire assessing behavioral practices. Behavioral factors examined included smoking, alcohol consumption, access to healthy food and green spaces, and reported medication adherence. Data were analyzed using SPSS, with statistical significance set at $p < 0.05$.

Results:

A total of 7 participants (mean age: 61.8 years; 62.5% female) met the inclusion criteria. Neighborhood quality showed a negative association with post-stroke DBP ($p = 0.04$) and a positive association with pre- and post-stroke HbA1c levels ($p = 0.015$). Notably, all participants reported adherence to their medication regimen post-stroke. These findings highlight the impact of social factors on stroke risk management. Despite counseling on dietary modifications, limited access to affordable, nutritious foods and the absence of green spaces pose significant barriers to implementing optimal lifestyle changes. Lack of green spaces

reduced opportunities for physical activity, which is vital for managing HTN, TIIDM, and cardiovascular health.

Discussion and Conclusion:

Our preliminary findings highlight the significant influence of social determinants of health on the ability to manage modifiable stroke risk factors. While post-stroke management emphasizes behavioral modifications and medication adherence, these efforts may be limited by social and environmental barriers. Addressing factors such as access to healthy foods and recreational spaces is essential for improving stroke risk profile and minimize likelihood of recurrence and a multifaceted approach incorporating social determinants of health into clinical care is necessary. Further research is ongoing to confirm these findings and develop targeted interventions.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 47**
**Category:** Clinical Vignette
**Medical School:** Wayne State University School of Medicine, Detroit
**Presenter:** Jackson Ferris
**Additional Authors:** Edidiong Okon-Ben (MD), Amanah Fatima (DO), Lubna Fatiwala (MD)

# GLP-1 Agonists: A Novel Ally in Reducing Nicotine Dependence and Cessation-Associated Weight Gain

## Introduction

Obesity and tobacco use continue to be two of the leading preventable causes of morbidity and mortality in the United States. Additionally, the well-established association between weight gain and smoking cessation inextricably links these two chronic conditions. Due to the overlapping mechanisms of food-related and drug-induced reward processing, studies have shown that 80-90% of both male and female patients gain weight upon smoking reduction and cessation. GLP-1 receptor agonists (GLP-1RAs), originally developed for type 2 diabetes and obesity, have shown promise in mitigating nicotine cravings and withdrawal-induced hyperphagia and weight gain. This has led to off-label use of GLP-1RAs as adjunctive therapy for tobacco cessation.

## Case Description

A 66-year-old woman with a history of hypertension, type 2 diabetes, and tobacco use disorder (20 pack-years) presented for her annual exam. Despite prior cessation attempts, she smoked 6 cigarettes daily. Her HbA1c was 7.3, BMI was 25.4, and waist circumference was 41 inches. After discussing her tobacco use and employing motivational counseling, the patient clearly demonstrated a readiness to implement change. She was started on dulaglutide (0.5 mg weekly) to address weight gain and truncal obesity. Six months after starting dulaglutide, she lost 2 kg, reported reduced cigarette cravings, and had cut down to smoking 1-2 cigarettes daily. Two months later, she maintained this reduction, with a BMI of 24.8. However, after 18 months, the patient's appetite and cigarette cravings increased, her weight plateaued, and her smoking rose to 3-5 cigarettes daily. Her dulaglutide dose was then increased to 1.5 mg weekly, eventually leading to a decreased appetite and nausea but stable tobacco use. After two years on dulaglutide, now titrated down to 0.75 mg weekly, she reduced her smoking to its lowest level since starting while maintaining a BMI of 24.7. She credited dulaglutide with curbing both oral cravings and appetite, allowing her to work toward tobacco abstinence while maintaining a healthy weight.

## Discussion

This case highlights the potential of GLP-1RAs as dual-purpose therapy for nicotine dependence and weight gain - one of the most concerning adverse effects linked to the cessation of nicotine-containing products. By reducing appetite and nicotine cravings through their attenuating effects on the mesolimbic dopamine system, GLP-1RAs address major challenges in cessation efforts. The patient's progress demonstrates the importance of individualized dosing and adjunctive therapies. Beyond nicotine, GLP-1RAs may also have broader applications in managing other addiction-related behaviors, such as alcohol use disorder. While promising, larger trials are needed to confirm their efficacy and refine their future role in addiction treatment.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 48**
**Category:** Clinical Vignette
**Medical School:** Wayne State University School of Medicine, Detroit
**Presenter:** Neil Garg
**Additional Authors:** Jackson Ferris (BS), Cecilia Canale (MD), Sarkis Kouyoumjiyan (MD)

# A Rare Case of Miller-Fisher Syndrome Following Legionella Pneumonia: Expanding the Spectrum of Post-Infectious Neurological Complications

## Introduction

Miller Fisher Syndrome (MFS) is a unique variant of Guillain-Barre Syndrome (GBS) which typically presents with bilateral ophthalmoplegia, severe ataxia, decreased tendon reflexes, facial nerve palsy, sensory deficits and hyposthenia. Most cases of GBS and MFS emerge as a post-infectious neuropathy days to weeks after an upper respiratory tract or gastrointestinal tract infection from a cluster of well-established viral and bacterial pathogens. However, the implication of Legionella pneumophila, a gram-negative rod, as an inciting factor for GBS has only been documented few times in case reports, and to date, occurrence of MFS has never been documented.

## Case Description

We present a case of a 70-year-old man with a history of ankylosing spondylitis and multiple spinal fusions who was admitted to an outside hospital for Legionella pneumonia. He was discharged home after receiving a one-week course of azithromycin. Over the next 9 days following discharge, he developed back pain and progressive worsening of muscle weakness in his upper and lower extremities leading to the inability to walk and re-hospitalization. He complained of paresthesias bilaterally in the fingertips and back pain, both at rest and with movement. On the initial exam, he was hemodynamically stable and afebrile. The neurological exam exhibited hyporeflexia with bilateral weakness in the distal upper extremities and proximal lower extremities. Spinal MRI imaging showed severe anterior cervical spinal cord compression, for which the patient was started on dexamethasone. There was worsening of the neurological exam on day 5 of dexamethasone. Patient developed dysarthria, followed by left-sided ptosis, facial droop, and ophthalmoplegia. With a clinical picture concerning for an autoimmune demyelinating polyneuropathy, an autoimmune panel was sent and lumbar puncture was performed. The autoimmune panel showed an isolated increase in ANA, consistent with ankylosing spondylitis, and the lumbar puncture was significant for albuminocytologic dissociation, consistent with GBS. Dexamethasone was discontinued and treatment was initiated with a 5-day course of intravenous immunoglobulin (IVIG). The patient's symptoms, including his dysarthria, ptosis, ophthalmoplegia, and extremity weakness

began improving with treatment, allowing him to be discharged to an inpatient physical rehabilitation center.

## Discussion

The patient's clinical picture of ataxia, hyporeflexia, ophthalmoplegia, and evidence of albuminocytologic dissociation on lumbar puncture with symptomatic improvement after completion of IVIG treatment is consistent with Miller Fisher syndrome. To our knowledge, this is the first report of MFS seen after an infection with Legionella pneumophila, a bacteria that disproportionately affects elderly and immunocompromised patients. The unique microbial origin of this rare neurologic disease underscores the importance of this case report and the need to consider Legionella pneumophila as a potential infectious etiology of MFS and other post-infectious demyelinating variants of GBS.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 49**
**Category:** Clinical Vignette
**Medical School:** Wayne State University School of Medicine, Detroit
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**Additional Authors:** Jacob Foy MD, James Jeffries MD FHM FACP, Peter Y. Watson MD SFHM FACP

# Superior Mesenteric Artery Syndrome: An Elusive Etiology of Emaciation in the Elderly

## Introduction

Superior mesenteric artery (SMA) syndrome is a rare disorder characterized by compression of the transverse duodenum between the SMA and abdominal aorta with proximal bowel obstruction. This results in weight loss, often with eating disorders, chronic malnutrition, and post-bariatric surgery commonly in younger patients. We present a case of chronic weight loss and abdominal pain in an elderly patient with SMA syndrome.

## Case Description

A 78-year-old female presented to the emergency department (ED) with several weeks of dyspnea, generalized weakness, acute-onset nausea, and non-radiating left lower quadrant abdominal pain with multiple episodes of non-bloody, non-bilious emesis. Further discussion with her family and primary care physician (PCP) noted a progressive 100lb weight loss with early satiety and sparse bowel movements refractory to supplementary protein shakes and appetite stimulation with mirtazapine. She had a history of lupus, rheumatoid arthritis, and severe vascular dementia. Her PCP also indicated she was referred to gastroenterology who recommended endoscopy 5 months prior which had not yet been performed. On exam the patient was cachectic with severe immobility. Nasogastric tube placement revealed 600mL of bright green bile. Computed tomography (CT) imaging demonstrated significant gastric distension with dilated proximal duodenum and collapsed distal bowel with paucity of intra-abdominal fat suspicious for SMA syndrome. She underwent endoscopy which showed extrinsic compression of the second/third portion of the duodenum. Surgical intervention was deferred, and interventional radiology-guided percutaneous gastrojejunostomy (GJ) tube placement was performed. Tube feeding was initiated and was slowly escalated. The patient required treatment for refeeding syndrome and was discharged to a skilled nursing facility on hospital day 12. She was readmitted 8 days later for hypothermia and lethargy with family indicating the patient had progressive cognitive decline and markedly increased work of breathing since initial discharge. The patient's respiratory status improved with nebulizer treatments, but the patient expired on day 5 of the hospital readmission.

## Discussion

This case highlights the importance of early recognition, thorough history-taking, and prompt workup assessing for SMA syndrome when suspected. Establishing a SMA syndrome diagnosis is difficult. Weight loss in the elderly has innumerable etiologies but a clinical picture of documented weight loss, well-localized pain, and acute-onset gastrointestinal disturbance should raise suspicion for SMA syndrome. Although more common in younger women, recent literature suggests underdiagnosis and increasing elderly prevalence. Patients must be closely monitored after interventions for complications and tube feeding tolerance. Our patient required adjustment after GJ tube placement to ensure venting of gastric contents from the new G lumen, delaying the start of nutrition. This case also stresses the impact of refeeding syndrome, an electrolyte derangement caused by initiating feeds in calorie-deprived patients which can precipitate respiratory arrest in severe scenarios. Finally, patients require close follow-up after discharge. This patient had severe weight loss at baseline which complicated recovery. Considering her multiple comorbidities and extent of disease, our interventions for this patient were likely more palliative in nature. This case shows the importance of prompt diagnosis, expedient intervention, surveillance for complications, and close follow-up to facilitate an optimal long-term outcome.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 50**
**Category:** Clinical Vignette
**Medical School:** Wayne State University School of Medicine, Detroit
**Presenter:** Ryan Katz
**Additional Authors:** Umer Nadir

# A Hidden Message: Acquired Ichthyosis Signaling Metastases from Underlying Breast Cancer

Introduction:

Acquired ichthyosis (AI) is a rare dermatological condition associated with underlying systemic pathologies, including infections, medications, and malignancies. Clinically, AI manifests as symmetric, diffuse scaling of the skin, predominantly involving the trunk and extremities. Histologically, it is characterized by hyperkeratosis accompanied by an atrophied granular layer. Diagnosis is primarily clinical and relies on a thorough history, as the condition typically presents in adulthood. Additionally, AI is linked to malignancies, particularly hematologic and solid tumors, often worsened by chemotherapy. It results from impaired keratinocyte differentiation, disrupted epidermal barrier formation, and increased transepidermal water loss, leading to inflammation and heightened skin sensitivity. If left untreated, AI can lead to itching, recurrent infections, and other complications such as hypohidrosis and heat intolerance.

Case Presentation

Here, we report the case of a 67-year-old woman with a history of hypertension and breast cancer diagnosed in 2020, with discovery of recent liver metastases who developed AI. She was undergoing chemotherapy with gemcitabine and cisplatin, having received her most recent dose five days before presenting to the emergency department. The patient presented due to aggravation of lesions in her medial thigh and vulvar areas, which became increasingly more pruritic since her last dose of chemotherapy. On further evaluation, she was found to have pancytopenia, with a white blood cell count of 1.3x10^3mcg, hemoglobin of 7.6g/dL, and platelets of 89x10^3mcg. Urinalysis obtained on admission suggested a urinary tract infection, prompting initiation of ceftriaxone. Due to concerns for a possible pseudomonal infection, her antibiotics were later escalated to intravenous cefepime and vancomycin. Additionally, this patient presented with diffuse xerosis of the skin localized to the bilateral upper extremities and trunk. In the setting of her metastatic breast cancer with concurrent chemotherapy treatment, AI was suspected. Importantly, AI may present similarly to other cutaneous conditions (i.e., eczema and severe xerosis); therefore, a thorough physical examination was performed. On physical exam, symmetric scaling and flaking of the extensor surfaces of the upper extremities and trunk were noted, with no marked edema. Moreover, this patient has no past medical or family history of eczema or ichthyosis, supporting a clinical diagnosis of AI due

to underlying breast malignancy vs. exacerbation by chemotherapy. First-line symptomatic treatments for AI include either topical emollients or retinoids for mild conditions and can escalate to topical corticosteroids for moderate-severe progression. This patient's suspected AI lesions on the upper extremities were treated with topical Vaseline, providing some relief. Medial thigh and vulvar pruritis were diagnosed as pseudomonal pyoderma and treated with topical gentamicin. She was discharged after eight days with instructions to continue Vaseline twice daily for AI and complete her antibiotic course for pyoderma.

## Conclusion

In this instance, this patient's metastatic breast cancer was detected via imaging a few months prior. The appearance of AI supports the need to address dermatologic sequelae in the setting of oncologic complications. This case underscores the potential for AI to emerge as a dermatologic manifestation of metastatic cancer, particularly when exacerbated by chemotherapy or as a downstream consequence of metastatic disease.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 51**
**Category:** Clinical Vignette
**Medical School:** Wayne State University School of Medicine, Detroit
**Presenter:** Izma Khaliq
**Additional Authors:** Omar Sami Abdelhai, Angela Ishaq, Emmanuel Meram, Anointing Onuoha, Ahmed Jabri, William Dillon

# A Storm Within: Anti-NMDA Receptor Encephalitis Mimicking Anxiety in a Young Woman

Case Description:

A 21-year-old female with a history of asthma presented to the emergency department (ED) with restlessness, anxiety, and loss of appetite shortly after returning from a trip to France, where she and her boyfriend ended their relationship. Her initial evaluation, including unremarkable laboratory results, led to the attribution of her symptoms to anxiety from life stressors. She was treated with supportive measures in the ED and prescribed Xanax by her primary care physician at follow-up.

Six days later, the patient returned to the ED with hallucinations and panic attacks. Again, laboratory results were unremarkable, and she was diagnosed with acute psychosis, managed with Ativan and Haldol. She was subsequently transferred to a behavioral health facility but returned to the ED with tachycardia. Further evaluation, including EEG, revealed findings concerning for encephalitis, prompting initiation of acyclovir.

She was transferred to our facility, where long-term electroencephalographic monitoring (LTM EEG) revealed subclinical seizure activity and diffuse background slowing with extreme delta brushes, consistent with anti-NMDA receptor encephalitis. Lumbar puncture demonstrated lymphocytic pleocytosis, supporting the diagnosis. The patient was started on solumedrol for suspected anti-NMDA receptor encephalitis.

A CT scan identified a large left adnexal mass. Surgical intervention, including exploratory laparotomy, left oophorectomy, and right cystectomy, revealed an immature teratoma. Tumor markers were notable for mildly elevated CA-125 and CA 19-9. Postoperatively, the patient underwent six sessions of plasmapheresis, followed by her first dose of rituximab.

She was discharged on an anti-epileptic regimen (Vimpat and Keppra) with follow-up appointments scheduled with an epileptologist, neuroimmunologist, oncologist, and behavioral health provider.

Discussion/Conclusion:

This case highlights the diagnostic challenges and biases often faced by women presenting with complex symptomatology. Initially, the patient's physical exam revealed catatonia and psychosis, findings that were initially misattributed to anxiety secondary to life stressors. This misdiagnosis contributed to delays in the recognition and treatment of anti-NMDA receptor encephalitis. However, with timely intervention including immunotherapy, plasmapheresis, and surgical resection of her immature teratoma, the patient demonstrated significant improvement in her mentation and physical exam, underscoring the reversibility of her condition when appropriately managed.

This case exemplifies the importance of considering organic causes for symptoms that may appear psychological, particularly in women, who are disproportionately affected by diagnostic overshadowing. Prior studies have documented similar disparities; for instance, nearly 50% of women with endometriosis report diagnostic delays, often due to initial misdiagnosis with mental health conditions. This case emphasizes the need for a thorough and unbiased diagnostic approach to avoid overlooking potentially life-threatening conditions. By challenging these biases, medical practitioners can ensure timely and accurate care, ultimately improving patient outcomes.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 52**
**Category:** Research
**Medical School:** Wayne State University School of Medicine, Detroit
**Presenter:** George Kidess
**Additional Authors:** Abdul Rasheed Bahar, Yasemin Bahar, Paawanjot Kaur, Mohamed S. Alrayyashi, Syed M. Ishaq, M. Chadi Alraies

# Racial, Sex-Based, and Socioeconomic Disparities in the Utilization of Mechanical Circulatory Support for Patients with ST-Elevation Myocardial Infarction and Cardiogenic Shock: Insights from a National Database

Introduction:

Cardiogenic shock (CS) is a severe and life threatening condition that can present as a complication of ST-Elevation Myocardial Infarction (STEMI). Recent advances in the treatment of patients with STEMI and CS include interventions such as mechanical circulatory support (MCS), which in some studies have been shown to improve outcomes for patients with STEMI-CS. While promising, various inequities in treatment exist for patients with STEMI-CS, with studies showing different MCS utilization rates based on sex, race, and socioeconomic status; which can correlate with outcomes. This study aims to explore these disparities in treatment utilization for patients presenting with STEMI-CS.

Methods:

We conducted a retrospective cohort analysis using the National Inpatient Sample (2016-2021). Patients with STEMI-CS who received MCS were identified and stratified by sex, racial groups, and socioeconomic status. A two-stage multivariable mixed-effects logistic regression model assessed MCS utilization, with propensity score matching applied to control for confounding.

Results:

Among 140,820 patients admitted with STEMI-CS, female patients were found to have lower odds of receiving MCS than male patients ($p<0.001$). Black and Asian/Pacific Islander patients were also found to have lower odds of receiving MCS than White patients ($p=0.016$, $p<0.001$ respectively). Patients with Medicaid insurance had lower odds of receiving MCS than patients with Medicare ($p=0.039$). When exploring the interactions of sex and race, male patients who were Black and Pacific Islander were found to have lower odds of receiving MCS than White male patients ($p=0.005$, $p<0.001$ respectively), while no significant racial disparity was found among female patients with respect to receiving MCS ($p>0.05$).

Conclusions

The results of our study confirm that significant disparities exist based on sex, race, and socioeconomic status regarding the utilization of MCS in patients with STEMI-CS. We also found that these disparities vary when exploring the intersections of these different factors. This emphasizes the importance of future studies to further understand these disparities and guide clinical and healthcare system interventions, especially as this disease carries significant mortality and morbidity.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 53**
**Category:** Quality Improvement/Patient Safety/High Value Care
**Medical School:** Wayne State University School of Medicine, Detroit
**Presenter:** Soumeeka Koneru
**Additional Authors:** Sofia Howson, Arielle Wenokur, Kathy Lu, Ruth Amoakohene, Rajaa Shoukfeh, Linda Kaljee PhD, Charlalynn Harris, Kristiana Kaufmann MD, Marcus Zervos MD

# Climate Health Initiatives for Medical Education (CHIME): An Analysis of Climate Health Education in a Medical School Curriculum in Michigan

The intersection of climate change and population health is an urgent, complex challenge with significant consequences for healthcare systems and patient outcomes. Climate change exacerbates existing health disparities by impacting global weather patterns, leading to rising global temperatures and extreme weather. These shifting climate patterns have contributed to increased rates of respiratory illnesses, infectious diseases, and heat-related mortality, disproportionately affecting vulnerable populations, exacerbating health inequities, and straining healthcare systems ill-prepared to manage climate-sensitive health outcomes. Medical students, as future clinicians and health leaders, are uniquely positioned to help combat these consequences, yet there remains a critical gap in education that connects climate science with health equity, clinical care, and advocacy. This study aims to assess the climate-focused education within the medical school curriculum at a Michigan institution, seeking to identify gaps in the curriculum and develop targeted educational resources and initiatives.

A survey collecting participant demographics, knowledge of the impact of climate change on health, experience with environmental work, etc. was administered to students attending a medical school in Michigan. The survey consisted of twenty-two yes or no questions to determine if specific topics within the realm of sustainability and planetary health were taught in the curriculum. These questions were adapted from the Planetary Health Report Card.

626 medical school students, 97 first years, 186 second years, 167 third years, and 176 fourth years, completed the survey. The majority of respondents reported that they had not received formal education on various climate change topics and their resulting impacts on health and healthcare. There was a statistically significant greater number of “no” compared to “yes” answers for almost all questions, including the effects of environmental toxins on reproductive health ($p<0.01$) and the impact of climate change on infectious disease patterns ($p<0.01$). The only exception was that more students were aware than not of worsening respiratory health from air pollution ($p=0.055$). When this data was inputted into an adapted version of the Planetary Health Report Card, the institution received a grade of “F.”

Prior research emphasizes the need to equip healthcare professionals with tools to navigate the climate crisis and to include climate change topics in medical education. Climate change has

been linked to disruptions in drug supply chains, delayed diagnoses, and the emergence of new diseases, all of which compromise patient safety and care delivery. Moreover, studies demonstrate that integrating climate literacy into medical education can enhance preparedness and resilience, ensuring that healthcare systems can adapt to future challenges. The survey results and report card demonstrate clear gaps in the curriculum. Ultimately, this initiative strives to create a transformative approach to medical education through the implementation of a climate curriculum. It aims to equip students to lead efforts for a more sustainable and equitable healthcare system while responding effectively to health challenges posed by climate change.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 54**
**Category:** Research
**Medical School:** Wayne State University School of Medicine, Detroit
**Presenter:** John Lloyd
**Additional Authors:** Erin Bybee, Leslie Lin, Brittni Clopton, Lea Monday M.D.

# Beyond Traditional Boundaries: Practice patterns and Feasibility of oral step-down therapy in oncology patients with streptococcal blood stream infection

INTRO:

Data support intravenous (IV) to oral (PO) antibiotic de-escalation in uncomplicated streptococcal bloodstream infections (BSI). However, exclusion criteria in studies are heterogeneous, and there are fewer data in patients with complicated streptococcal BSIs. Furthermore, no data exist examining this practice exclusively in oncology patients, who may be excluded from observational studies due to poor prognosis or other factors that classify their BSIs as complicated. Bacteremia management in oncology patients is variable due to the heterogeneous sources and inability to get definitive source control due to tumor-related invasion or cytopenias, which may limit the ability to obtain source control (SC). Invasive procedures (drainage, surgery, prosthetic removal) may be limited, and procedures to rule out endocarditis (such as TEE) may be too high risk. We sought to assess the rates of PO stepdown therapy in patients with streptococcal BSI in our institution. Additionally, we examined the feasibility of a QI project to increase rates of PO stepdown therapy in patients with uncomplicated BSI.

METHOD:

This was a single-center, retrospective study of patients aged ≥18 years with streptococcus in blood cultures between January 2021-October 2024 at Karmanos Cancer Institute, in Detroit, MI. Patients were excluded for the following reasons: inability to take medications enterally, concomitant Staphylococcus aureus BSI, completion of IV course while hospitalized, death or hospice during admission, or when the organism was deemed a contaminant. Patients with a polymicrobial BSI (other than S. aureus), suspected endocarditis, osteomyelitis, septic arthritis, persistent bacteremia >48 hours, presentation from the community without clear source, or an inability to perform definitive source control (SC) (surgery, drainage, etc.), were considered as complicated BSI and included. All other patients were considered as having uncomplicated BSI. The primary outcome was the rate of PO stepdown therapy in uncomplicated and complicated BSI, respectively. Secondary outcomes included recurrence of bacteremia with a similar organism within 30 days, length of stay(LOS), and development of Clostridioides difficile infection (CDI).

RESULT:

Fifty-five patients had streptococcus in blood during the inclusion period; 28 were excluded. Twenty-seven met inclusion criteria (12 with uncomplicated and 15 with complicated BSI, respectively). All 12 patients with uncomplicated BSI were transitioned to PO therapy at discharge. Seven complicated BSI patients were discharged on IV antibiotics (2 due to bone/joint source, 1 unable to rule out endocarditis, 1 with port infection, 1 with inadequate SC). Surprisingly, 8 patients with complicated BSI were given PO therapy for discharge (7 with inadequate SC, 1 unable to rule out endocarditis). Median LOS was shorter in patients discharged on PO (6 versus 10 days). One patient discharged on oral cephalexin returned with CDI. No patients in either group were readmitted with recurrence of bacteremia.

CONCLUSION:

IV-to-PO step-down therapy for streptococcal BSIs was commonly practiced at our cancer institution even in patients with complicated infections without adequate source control and did not appear to lead to bacteremia recurrence. Given the lack of IV therapy use for uncomplicated BSI, further QI projects to investigate this may be low yield at cancer centers where practices are similar.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 55**
**Category:** Clinical Vignette
**Medical School:** Wayne State University School of Medicine, Detroit
**Presenter:** Sujit Prasad
**Additional Authors:** Ahsun R. Siddiqi, MD, Mehdi B. Swaid, DO, Donald M. Rozzell, MD

# Autoimmune Myelofibrosis as a Rare Lupus Complication: A Case Report

Introduction:

Autoimmune myelofibrosis (AIMF) is a rare, non-malignant bone marrow disorder characterized by immune-mediated fibrosis, often associated with systemic lupus erythematosus (SLE). This association remains underrecognized, with fewer than 50 reported cases in the literature. AIMF typically presents with cytopenias, including anemia and thrombocytopenia, and responds variably to corticosteroid treatment. We present a case of a 32-year-old female with SLE-associated AIMF.

Case Presentation:

A 32-year-old African American female with SLE and lupus nephritis managed with mycophenolic acid and hydroxychloroquine presented with severe fatigue, generalized weakness, anemia, and thrombocytopenia. She was also taking warfarin due to her recent diagnosis of right sigmoid sinus thrombosis. Initial labs showed hemoglobin 7.5 g/dL and platelet count 104 x 10^$^9$/L, dropping to 67x 10^$^9$/L within 3 days. A bone marrow biopsy revealed autoimmune myelofibrosis, and her hemoglobin further dropped to 3.6 g/dL, prompting transfusion of five units of packed red blood cells. Peripheral blood smear showed very rare schistocytes. A Coombs test was positive 2+, anti-IgG 1+ and anti-C3d 1+, suggesting autoimmune hemolysis.

High-dose prednisone (100 mg daily) was initiated, significantly improving hemoglobin levels from 3.6 g/dL to 8.2 g/dL. Warfarin was withheld in the setting of bleeding and a supratherapeutic INR of 5.5. Mycophenolic acid was increased to 720 mg twice daily and Hydroxychloroquine was maintained at 200 mg daily. Platelet recovery was less robust, improving modestly from 67 × $10^9$/L to 79 × $10^9$/L. The patient's condition stabilized, and she was discharged with plans for continued monitoring and management.

Discussion:

AIMF is a rare but significant complication of SLE, involving immune-mediated bone marrow fibrosis and severe cytopenias. This case highlights acute anemia and thrombocytopenia in AIMF, particularly in the context of SLE. The dramatic hemoglobin drop post-biopsy, despite

minimal bleeding, highlights the need to consider AIMF in SLE patients with unexplained cytopenias. It is also important to distinguish between primary myelofibrosis and AIMF. Autoimmune myelofibrosis is typically seen in younger individuals with a median age of 29 years whereas primary myelofibrosis patients have a median age of 66 years. Additionally, AIMF has no association with JAK2 mutations and splenomegaly is less common than primary myelofibrosis. This case is further distinguished by the patient's complex medication adjustments, which balanced management of SLE, lupus nephritis, and venous thrombosis alongside treatment of AIMF. The robust response of anemia to corticosteroids aligns with prior reports of AIMF being highly steroid-responsive. However, the modest platelet recovery underscores the variability in hematological responses and the potential for residual bone marrow dysfunction. Patients who do not receive an early diagnosis may experience a poor response to treatment. For patients who do not respond well to first-line treatment, transformation to acute leukemia may occur.

Early diagnosis and treatment with corticosteroids are critical for reversing cytopenias and preventing further complications. The continuation of immunosuppressive therapy and anticoagulation alongside steroids reflects the importance of individualized treatment plans in AIMF cases with coexisting SLE complications. Further research is needed to better understand the pathophysiology and optimize therapeutic strategies for AIMF associated with SLE.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 56**
**Category:** Research
**Medical School:** Wayne State University School of Medicine, Detroit
**Presenter:** Hariharan Ramakrishnan
**Additional Authors:** Jaewon Sim, Geoffroy Laumet, Chiho Sugimoto, AJ Robison

# Androgen hormones regulate the production on the pain-inducing inflammatory molecule IL-1β in a mouse model of inflammatory pain

Chronic pain prevalence varies between sexes with a higher incidence and duration reported in women compared to men. This disparity suggests that biological factors, such as sexual hormones, may influence pain perception and development. Among the key players in pain mechanisms, interleukin-1 beta (IL-1β), an inflammatory molecule, has been identified to activate neurons involved in pain sensation. This study explores the hypothesis that sexual hormones, particularly androgens, regulate IL-1β production in inflamed tissues, thereby influencing pain responses. To investigate this, we induced inflammatory pain in male and female mice using Complete Freund's Adjuvant (CFA), injected into the hind paw. To assess the effect of sex hormones on the production of IL-1β and pain, we modulated the levels of sex hormones by surgical and pharmacological approaches: ovariectomy, orchidectomy, and administration of flutamide, an androgen receptor antagonist. The analysis of IL-1β levels was conducted through quantitative Polymerase Chain Reaction (QPCR). We measured mechanical pain sensitivity thresholds using the von-Frey method. Our results indicate that injection of CFA drastically increased the levels of IL-1β in the inflamed skin. Blocking IL-1β significantly reduced pain sensitivity. We found decreasing systemic androgen levels, by orchidectomy or flutamide, significantly increase IL-1β expression and pain recovery times. Overall, we found that androgens reduce the levels of IL-1β and facilitate the resolution of pain. These findings underscore the intricate relationship between sexual hormones and inflammatory mediators in the context of chronic pain, suggesting potential avenues for developing sex-specific pain management strategies that target the hormonal regulation of inflammatory pathways.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 57**
**Category:** Clinical Vignette
**Medical School:** Wayne State University School of Medicine, Detroit
**Presenter:** Michael Salloum
**Additional Authors:** Dr. Samuel Gregerson

# Refractory Pemphigus Vulgaris: A Case of Severe Treatment Resistance and Concomitant Infections

Pemphigus vulgaris is a painful, chronic autoimmune condition affecting the skin and mucous membranes. It is caused by autoantibodies targeting desmosome cadherins, resulting in keratinocyte disruption and blistering that typically involves the oral mucosa. Treatment options include corticosteroids, monoclonal antibody therapy with rituximab, intravenous immunoglobulin (IVIG), plasmapheresis, and steroid-sparing immunosuppressive agents. However, patients who fail to respond to these therapies present significant clinical challenges and raise concerns about concomitant pathologies.

An 81-year-old female presented to the emergency department with acute pain and progressively worsening skin ulcerations. She had previously undergone extensive evaluation, including a gingival biopsy that confirmed paraneoplastic pemphigus vulgaris. Various treatments, including prednisone at varying doses, methotrexate, dapsone, IVIG, and topical clobetasol, had yielded limited success. Treatment with rituximab was attempted but caused severe angioedema, requiring emergency care. Desensitization attempts were considered too dangerous, leaving limited therapeutic options. On this admission, the patient reported worsening symptoms. Lesions were extensive and covered 30–40% of her body surface, involving the oral mucosa, esophagus, and anogenital mucosa. Examination revealed large, eroded, ulcerated plaques at various stages of healing, with areas of focal hemorrhage on the posterior neck, upper back, right neck, inframammary folds, groin, left leg and foot, soft palate, and right infraorbital region. Wound cultures revealed methicillin-resistant staphylococcus aureus (MRSA), extended-spectrum beta-lactamase (ESBL)-producing E. coli, and a positive HSV-1 swab with recurrent vesicular lesions. Given her history of treatment failure and rituximab allergy, she was started on high-dose methylprednisolone, intravenous vancomycin and ertapenem, and oral valacyclovir. She remained hospitalized on this regimen for one week. Aggressive treatment of her infections and pemphigus vulgaris resulted in significant improvement, with evidence of well-healing granulation tissue and substantial pain relief. She was discharged with a three-week steroid taper, a peripherally inserted central catheter for home intravenous antibiotics, oral antiviral therapy, and follow-up with infectious disease and dermatology specialists.

This case highlights the challenges of managing refractory pemphigus vulgaris complicated by concomitant skin infections. Allergies and resistance to multiple treatments are rare but

demand alternative management strategies and thorough evaluation of contributing factors. The underlying infections likely contributed to disease relapse, exacerbation, and treatment resistance. Treatment of these concomitant pathologies can significantly improve outcomes in underlying pemphigus vulgaris.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 58**
**Category:** Quality Improvement/Patient Safety/High Value Care
**Medical School:** Wayne State University School of Medicine, Detroit
**Presenter:** Mihika Sridhar
**Additional Authors:** Kiersten Walsworth, Neil Garg, Paul Villa, Anne Patterson, Zunaira Imran, Nicole La France, Saachi Mittal, Anna Rowell, Alyssa Rogers, Ciara White, Nicole Hao, Maria Tjilos, Dr. Richard Bryce, Dr. Shaina Shetty

# Medical, Social, and Demographic Insights of Detroit's Unhoused Population: A Street Medicine Consult Service Review

## Introduction:

In 2022, roughly 8,500 people experienced homelessness (PEH) in Detroit. In 2023, Street Medicine Detroit (SMD) expanded their student-led, in-patient consult service to Detroit Medical Center (DMC), a safety-net hospital. Elsewhere, Wadhera (2019) found PEH to mostly be young, uninsured, and male and linked higher rates of hospitalization to mental illness and substance use disorders. Subedi (2022) found substance use, depression, and hypertension as the most common comorbidities in PEH in Delaware hospitals. Detroit hospitals remain underexplored, prompting SMD to collect consult patient demographic data to characterize Detroit's unhoused population and start a platform to conduct social and medical needs research.

## Methods:

The team interviewed patients and reviewed medical records for each consultation. Data includes: demographics (age, gender, zip code, insurance, cell phone, primary care physician, homelessness history), hospital course (admission duration, invasive procedures, discharge location), and medical history (chronic conditions, substance use, chief complaints).

## Results:

Seventy consults (n=70) were placed from January 2024 to January 2025, with 65 PEH. Of those 70, 60 were seen. Median age was 57.6 years and identification was 74.3% male, 24.3% female, and 1.4%. Average ages of male, female, and transgender patients were 55.6, 53.7, and 37.7, respectively. 36.4% of patients categorized their housing status as rough sleeping, 19.7% couch surfing, 16.7% in shelters, 7.6% as housed, and 19.7% as unknown. Median duration of housing insecurity was 1 year. 84.3% of patients had health insurance. 28.6% of patients had a primary care physician and 27.1% had phone access.

Top chief complaints included lower extremity pain/swelling (22.9%), shortness of breath (22.9%), chest pain (15.7%), and trauma code (8.6%). Common chronic diseases were hypertension (40%), obstructive airway disease (28.6%), psychotic disorders (18.6%), mood disorders (22.9%), heart failure (14.3%), coronary artery disease (7.1%), type 2 diabetes mellitus (11.4%), seizure disorders (8.6%), HIV (12.9%), and viral hepatitis (7.1%). 89.4% of patients use substances currently, subcategories including 63.1% alcohol, 58.5% tobacco, 35.4% marijuana, 23.1% cocaine, and 21.5% opiates. Previously, 38.5% used cocaine, 9.2% used opiates, and similar percentages for other drugs.

Median length of stay was 5 days. 19 patients required invasive surgical procedures during their hospitalization, 25% of which were indicated by an incidental finding and not the chief complaint. Patients were discharged to shelters (24.2%), skilled nursing facilities (24.2%), unstable housing (15.2%), respite care (10.1%), couch surfing (10.6%), and shared living (4.5%); 3% left against medical advice, 1.5% died in the hospital, and 6.1% were unspecified.

Conclusion:

In DMC's Street Medicine Consult Service, many demographic trends in PEH differ from national studies: over four-fifths of patients have health insurance and most are middle-aged and 48% of housing insecure patients consulted are discharged into unstable living conditions. Less than a third have access to a phone. These preliminary conclusions and data lay the groundwork for a variety of investigations into consult and hospital system efficiency, public health, PEH needs assessment, and more.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 59**
**Category:** Research
**Medical School:** Western Michigan University Homer Stryker M.D. School of Medicine
**Presenter:** Marina Cox
**Additional Authors:** Elizabeth Wang, Maria Sheakley, Daniel Goodpaster

# The Role of Grit in Predicting Success in Medical School

Introduction: Medical school admissions committees are increasingly using non-cognitive traits, such as motivation and attitude, rather than intellect alone, to predict which applicants are most likely to succeed in medical school. 'Grit' has been defined as a "predisposition for pursuing long-term, challenging goals with passion and perseverance." It has been associated with academic and professional success independent of IQ in a variety of fields. An objective measure of 'grit' may be helpful in predicting both academic and non-academic achievements in medical school.

Methods: A retrospective review of four medical school classes at a single institution was completed. The experiences section of each student's AMCAS admission application was de-identified and examined for pre-determined objective measures of grit. Seven objective measures of grit were pre-identified to highlight applicant experiences that demonstrate perseverance. Each application was independently reviewed by two reviewers using the same rubric for scoring. In cases of discrepancy, a third reviewer served as a tiebreaker. Students were assigned a grit score of '0' or '1' based on the experiences review. Multiple medical school performance metrics, both academic and non-academic, were obtained for each student and analyzed for correlation with grit.

Results: A total of 2564 experiences from 270 student applications were reviewed and grit scores assigned. Preliminary analysis indicates that students with 'grit' have higher scores in pre-clerkship courses and clerkship shelf exams, fewer professionalism concerns, and higher graduation rates than those without. Analysis of numerous other academic and non-academic metrics is currently underway.

Conclusion/Clinical Significance: Medical school admissions committees are seeking non-cognitive traits that predict success. Grittiness might predict academic and non-academic success in medical students and may have substantive implications for use in the holistic admissions process.

**2025 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day**
**Medical Student Abstract**

**Medical Student Poster # 60**
**Category:** Clinical Vignette
**Medical School:** Western Michigan University Homer Stryker M.D. School of Medicine
**Presenter:** Sarim Syed
**Additional Authors:** Adam Ayoub BS, Ibrahim Zahid MD, Corey Lager MD

# Unveiling Adrenal Histoplasmosis: A Rare Cause of Adrenal Insufficiency in an Immunocompetent Host

Introduction: Histoplasmosis is a fungal infection caused by inhalation of Histoplasma capsulatum spores, commonly found in the Ohio and Mississippi River valleys. Disseminated histoplasmosis often results in individuals with weakened immune systems, such as those with HIV or on immunosuppressive therapy, and involvement of adrenal glands in immunocompetent individuals is very rare. This report aims to describe a unique case of adrenal insufficiency due to bilateral adrenal histoplasmosis in an immunocompetent 62-year-old man.

Case Presentation: A 62-year-old retired machinist was referred to the emergency department by his primary care physician for complaints of fatigue, reduced appetite, and unintentional weight loss over the past year, and a serum sodium level of 124 mEq/L. He also reported nausea and early satiety, but denied any fevers, chills, or night sweats. His medical history included coronary artery disease treated with coronary artery bypass grafting in 2023, hypothyroidism, GERD, Raynaud's disease, and hyperlipidemia.

On physical examination, he appeared pale, with delayed capillary refill and orthostatic hypotension. Imaging with a computed tomography (CT) scan of the abdomen and pelvis showed bilateral adrenal gland thickening (14 mm on the right and 13 mm on the left). Suspicion of primary adrenal insufficiency was confirmed with low serum cortisol, elevated serum ACTH (>600 pg/mL; reference: 10-60 pg/mL), and absent cortisol response (5.7 to 6.2 mcg/dL) on ACTH stimulation test, alluded to possible Addison’s disease.

The patient was started on hydrocortisone and fludrocortisone, leading to improvement in his symptoms and stabilization of sodium levels. Follow-up imaging showed progressive adrenal thickening, leading to a biopsy of the left adrenal gland. The biopsy revealed caseating granulomas with fungal elements consistent with Histoplasma spp., confirming the diagnosis of adrenal histoplasmosis. Serum histoplasma antibody titers were positive.

Further history revealed that the patient lived on a hobby farm in a rural area, with frequent exposure to bat droppings in his barn, providing a possible source of infection. A chest CT demonstrated scattered pulmonary micronodules, consistent with the respiratory route of histoplasmosis acquisition. Given his cardiac history, treatment with isavuconazole was initiated

due to its safer cardiovascular profile. Therapy has been planned for at least one year, with regular follow-up imaging and laboratory monitoring.

Discussion/Conclusion: This case is a rare example of adrenal histoplasmosis in an immunocompetent individual. While histoplasmosis is typically associated with pulmonary symptoms, this patient had no significant respiratory complaints, which complicated the diagnostic process. His adrenal insufficiency symptoms, such as fatigue, weight loss, and nausea, were initially attributed to Addison's disease, but the biopsy findings pointed toward histoplasmosis. The presence of bilateral adrenal thickening and granulomatous inflammation should raise suspicion for infections like histoplasmosis, even in immunocompetent hosts. Prolonged environmental exposure to H. capsulatum spores, such as in this patient's case, likely facilitated the insidious dissemination. This case highlights the need for a broad differential diagnosis in patients with adrenal masses, especially when adrenal insufficiency is present. Adrenal histoplasmosis is rare but should be considered even in immunocompetent individuals, particularly those with significant environmental exposure to H. capsulatum.