

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 01    Category:** Research

**Residency Program:** Ascension Providence

**Presenter:** George Felemegos

**Additional Authors:** George Felemegos, MD, PGY2 Resident; Saif Affas, MD, Faculty; Sachin Patil, MD, Faculty

David Putt

**Disparities And Clinical Associations Related to Portal Vein Thrombosis in Hospitalized Patients With Cirrhosis: A  
Nationwide Analysis From the National Inpatient Sample**

**Background**

Portal vein thrombosis (PVT) is a significant and potentially serious complication observed in patients with liver cirrhosis (LC) during hospitalization. This study is aimed to elucidate discrepancies and clinical associations of PVT in LC patients through analysis of the National Inpatient Sample (NIS).

**Methods**

This study was performed using the 1998-2015 NIS to assess disparities among patients with cirrhosis and concurrent PVT as well as the relationship between PVT and cirrhosis-related outcomes. Admissions with a primary or secondary discharge diagnosis of PVT and cirrhosis were identified from the NIS and correlated with gender, race, in-hospital mortality, hospital bed size, location/teaching status, disposition of patients, and commonly associated diagnoses. Complications of cirrhosis, such as hepatic encephalopathy and abdominal ascites were also identified. Statistical significance was defined as a P value <.05.

**Results**

Of the 7,670,271 patients admitted with PVT in the setting of cirrhosis from the 1998-2015 NIS, the prevalence of PVT was more prominent in males compared to females (P<.001). Caucasian patients had the highest occurrence of PVT with Asian Pacific Islanders having the lowest (P<.001). The in-hospital mortality rate for patients admitted was 9.1%. Large hospitals had the highest reported PVT in patients with cirrhosis compared to medium or small hospitals (P<.001). Urban teaching hospitals were the most common location compared to urban non-teaching and rural hospitals (P<.001). The majority of patient went home from the hospital (P<.001). On univariate analysis, patients who had a diagnosis of both cirrhosis and PVT had higher proportions of hepatic encephalopathy (P<.001) as well as ascites (P<.001; Figure 1). The average age for patients with both cirrhosis and PVT was similar to cirrhotic patients without PVT. Patients with cirrhosis and PVT incurred a greater average length of stay than those without PVT and greater total hospital charges.

**Discussion**

This study leveraged data from the NIS, revealing notable disparities, with males and Caucasians exhibiting a higher prevalence of PVT. The 9.1% in-hospital mortality rate emphasizes the clinical significance of this comorbidity. Large hospitals, particularly urban teaching hospitals, reported higher PVT prevalence, suggesting potential healthcare access and resource influences. Patients with both cirrhosis and PVT experienced increased complications, emphasizing the synergistic impact of these conditions. The influence of gender, race, and hospital size on PVT prevalence may reflect underlying genetic predispositions and healthcare disparities, impacting both disease development and detection. While age at admission did not significantly differ, the observed disparities highlight the need for further exploration of genetic, environmental, and healthcare access factors influencing PVT development in this population. Our findings emphasize the potential independent yet interconnected etiologic processes between cirrhotic complications and PVT. Intervening to address underlying factors leading to PVT holds promise for reducing morbidity and mortality in these patients.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 02    Category:** Research

**Residency Program:** Ascension Providence

**Presenter:** Mohammed Qarmout

**Additional Authors:** Dylon Daoud DO, Rose Atris MD, John-Paul Colombo MD

**Case report of Hemophagocytic lymphohistiocytosis in a patient with Well's syndrome: a rare clinical association and literature review**

Eosinophilic cellulitis (Well's syndrome) is a rare inflammatory disorder characterized by eosinophil infiltration into the dermis. We report a unique case of a 50-year-old female with a history of Well's syndrome who developed hemophagocytic lymphohistiocytosis (HLH) following elective robotic-assisted hysterectomy and bilateral salpingectomy. Initially presenting with postoperative fever, the patient's clinical state rapidly deteriorated to multiorgan failure. HLH was diagnosed based on bone marrow biopsy findings, revealing hemophagocytosis. This is the first reported case of HLH in a patient with a history of Well's syndrome, underscoring the importance of early HLH diagnosis and the severe consequences of delayed recognition. The patient's autoimmune history and recent surgery may have contributed to HLH development. Despite prompt initiation of HLH-94 protocol, the patient succumbed to the illness, highlighting the challenges in timely intervention due to the disorder's rarity and variable presentation. This case emphasizes the need for heightened clinical awareness and swift immunotherapy initiation in HLH to mitigate the risk of multiorgan failure.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 03    Category:** Clinical Vignette

**Residency Program:** Ascension St. John

**Presenter:** Mariem Borcheni

**Additional Authors:** Heather Henderson, MD

**A Silent Helicobacter Pylori Infection Presenting as Anemia Refractory to Erythropoietin in an ESRD Patient**

Introduction:

Refractory or unexplained anemia accounts for about 15% of all cases. Helicobacter pylori (H. Pylori) infection has been identified to be a potential cause of refractory anemia. However, it may not be suspected in routine anemia evaluation particularly in patients with end stage kidney disease (ESRD) as it has been recently demonstrated that these patients have a lower risk of H. Pylori infection compared to the normal population. Such a situation is a diagnostic and treatment challenge for the treating physician. We are presenting a case of a silent H. Pylori infection presenting as refractory anemia in an ESRD patient.

Case presentation:

A 42-year-old male with a past medical history of hypertension and end stage kidney disease secondary to IgA nephropathy on Hemodialysis, has been evaluated for anemia. The hemoglobin level was ranging between 6.5 g/dl and 8 g/dl with normal platelet and white cell counts. He had multiple hospitalizations for symptomatic anemia when he endorsed generalized weakness and exertional dyspnea with no sign of bleeding, gastrointestinal or urinary symptoms. His Vitals were stable. Rectal examination and Guaiac test were normal. Laboratory findings showed normochromic normocytic anemia with MCV of 95fL, MCHC of 33 g/dl, RDW of 18, Ferritin level of 547 ng/ml and Iron saturation of 22 mcg/dL. Hemolysis workup was negative. The patient was placed on Intravenous then Oral Iron therapy along with Intravenous Epogen 12000 units three times per week.

Few months later, despite optimal Erythropoietin and iron therapy, there was no improvement of the anemia. Of note, the patient had a prior upper endoscopy done in the same year which was normal with negative H. pylori histological testing. Despite that, a decision was made to retest for H. pylori using Stool antigen testing which came back positive. The patient completed a course of Lansoprazole, Amoxicillin and Levofloxacin. A month later, hemoglobin level improved to 10. Two months after completion of the treatment, an endoscopic biopsy confirmed the eradication of the infection.

Conclusion:

Failing to test for H. pylori infection could lead to a failure to identify a treatable cause of anemia and could lead to additional and potentially unnecessary investigations.

As per current guidelines, H. pylori testing is not included as part of anemia workup in ESRD patients. Therefore, it must be considered as a differential diagnosis of anemia refractory to Erythropoietin.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 04    Category:** Clinical Vignette

**Residency Program:** Beaumont Health Dearborn

**Presenter:** Mariam Jamil

**Additional Authors:** Antoine Egbe, Khurram Arshad, Yazan Alamro, Essa Kadiri

**Double Trouble Unmasked: Femoral Pseudoaneurysm and Deep Venous Thromboses Following Coronary  
Angiography**

Iatrogenic pseudoaneurysms, while infrequent, represent a formidable complication of interventional cardiac catheterization, particularly in cases involving femoral artery access. This report details a unique case involving a 73-year-old male, receiving warfarin for a mechanical aortic valve, who developed a substantial right groin hematoma attributed to an iatrogenic pseudoaneurysm post-cardiac catheterization, subsequently resulting in concomitant deep venous thromboses (DVTs) in the right leg.

The pathophysiology of DVTs following left heart catheterization typically involves the formation of a sizable pseudoaneurysm, exerting pressure on adjacent veins, leading to blood pooling and subsequent clot formation. Alternatively, the development of large hematomas in the thigh region may cause compression of adjacent veins.

This case posed a clinical dilemma, necessitating a meticulous assessment of the risk-benefit profile associated with reversing the patient's anticoagulation. The patient, managed with warfarin for a mechanical aortic valve, presented with deep venous thrombosis alongside a suspected actively extravasating pseudoaneurysm resulting in a groin hematoma.

A secondary challenge involved determining the optimal approach for managing the pseudoaneurysm, requiring collaboration with a multidisciplinary team comprising vascular surgery, cardiology, and interventional radiology.

In conclusion, despite the infrequent occurrence of major complications following left heart catheterizations, their potential life or limb-threatening nature, coupled with the rising volume of cardiac catheterizations, underscores the critical importance of early recognition of potential complications. Vigilance regarding secondary complications, such as the concurrent deep venous thromboses presented in our case, is imperative for comprehensive patient care. This case adds to the growing body of knowledge guiding clinical practitioners in managing intricate scenarios associated with interventional cardiac procedures.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 05    Category:** Clinical Vignette

**Residency Program:** Central Michigan University

**Presenter:** Mathew Kunz

**Additional Authors:** Shrinivas Kambali Natasa Petreska, MD, Kinga Budnicka, MD, John Jarad, MD, Meshal Alsulami, MD

**Stubborn Patient, Stubborn Effusion: A Case of RA Pleurisy**

Introduction: \_\_\_\_\_

Rheumatoid arthritis is an autoimmune progressive disease that leads to synovitis throughout the body. This extends to the lungs and pleural spaces to manifest as interstitial lung disease and pleural disease.

Case Description: \_\_\_\_\_

This case presents a 34 year old female with rheumatological history of seropositive rheumatoid arthritis on Rinvoq who presented with shortness of breath and was found to have a large left-sided pleural effusion, which was treated with a chest tube. However, she developed acute respiratory failure as her chest tube was not draining and required a short ICU stay including elective intubation. Pleural fluid analysis performed returned as exudative effusion and resulted in elevated ADA, of which follow-up TB testing was negative. Further imaging and lung biopsy suggested possible organizing pneumonia. Infectious etiology was determined to be unlikely. Laboratory work-up showed a highly elevated anti-CCP. The entire clinical picture suggested RA pleurisy. The patient was found to be non-adherent to Rinvoq, which was resumed on discharge in addition to closer outpatient follow up with rheumatology. Chronic pleural inflammation which is seen in rheumatoid pleurisy can lead to non expansion of the lung due to pleural restriction from the active inflammation of a rheumatoid episode. Patient presentation most commonly involves dyspnea and work-up is similar to other pleural effusions. Rheumatoid effusion fluid analysis typically returns with low white count, low glucose count, and elevated LDH. As there are many causes to pleural effusion, biopsy findings are diagnostic in confirming rheumatoid pleuritis while elevated ADA cannot distinguish RA pleurisy from effusions secondary to TB. Classic biopsy findings that are diagnostic of rheumatoid pleuritis include elongated and giant multinucleated macrophages. Other treatment modalities include thoracentesis and pleurodesis and decortication in refractory effusions where fibrous peels form due to inflammation. NSAIDs and glucocorticoids in cases of rheumatoid pleuritis have been questionable in their effectiveness in rheumatoid pleurisy. In a patient who does not obviously have arthritis or is in an active flare-up of their rheumatoid disease, it may be easy to overlook rheumatoid arthritis as the cause of pleurisy. Additionally, rheumatoid pleuritis is a more frequent occurrence in men than women, while rheumatoid arthritis overall is more common in women than men. Yet another field of exploration in the identification of rheumatoid pleural effusions includes imaging. While CXR as in the patient case described reveals pleural effusion.

Discussion: \_\_\_\_\_

RA pleurisy is a common phenomenon, however, it is not necessarily the most obvious diagnosis at first. This case navigates through the nuances of RA pleurisy that highlights skills fundamental to internal medicine. As pleurisy can be a primary or secondary disease it is important to understand and identify the etiology in order to treat appropriately and efficiently and reduce morbidity and mortality.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
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**Resident Oral Presentation # 06    Category:** Clinical Vignette

**Residency Program:** Corewell Health – Grand Rapids/Michigan State University

**Presenter:** Qasim Alameri

**Additional Authors:** Qasim Alameri, MD, Tajuldeen Al Hasani, MD

**Rare case of papillary thyroid carcinoma within autonomously hyperfunctioning (hot) thyroid nodule**

Introduction

Thyroid carcinoma coexisting with autonomously hyperfunctioning nodule is an uncommon occurrence, as low thyroid-stimulating hormone (TSH) levels can suppress the growth of thyroid carcinoma cells. The majority of autonomously hyperfunctioning “hot thyroid nodules” in patients with low TSH levels are considered to be benign. As such, current guidelines recommend that hot nodules be excluded from further malignancy risk stratification. However, an increasing number of thyroid carcinoma cases are diagnosed in patients with Graves' disease, toxic goiter and autonomously hyperfunctioning thyroid nodules. Since hyperfunctioning papillary thyroid carcinoma (PTC) is rare, little information on its molecular etiology is available. Here, we present a case of a 51 years old female patient with a hyperfunctioning thyroid nodule harboring PTC.

Case presentation

51 years old female complained of occasional palpitations that happened once a week not related to exercise or activity. She denied shortness of breath, and chest pain. Palpitation lasts 40 seconds. She complained of night sweats, denied weight loss, & heat intolerance. She noticed she has difficulties falling asleep which is not her regular pattern. She never had neck radiation of fine-needle aspiration in the past. No neck radiation exposure. No family history of thyroid disorder or thyroid cancer. She never been on methimazole or levothyroxine therapy. On physical examination done in April 2014, she had a palpable right nodule approximated 1.4 cm. Thyroid blood test in September 2014 found TSH level of 0.16 with normal free T4 1.3. Repeated thyroid blood lab February 2017 found TSH level did drop down to 0.04 with free T4 1.4. A thyroid ultrasound in May 2014 showed a 3.5 cm right lobe nodule and 2 sub-centimeter nodules on the left. A thyroid uptake scan (99mTC thyroid scintigraphy) was done and showed a hyperfunctioning hot nodule in the right lobe of the thyroid with suppression of the remainder parenchyma. FNA was performed of the right lobe nodule and was benign on cytology. Patient started propranolol 20 mg twice daily for heart palpitations. Patient had right thyroid lobectomy in July 2017. Pathology revealed nodular hyperplasia with 2 foci of papillary thyroid microcarcinoma. Patient recovered well from her surgery.

Nothing further was needed as far as treatment for her papillary microcarcinomas, as these were incidental findings and must have been adequately addressed by her right lobectomy alone. Appropriate dose of levothyroxine was given and patient followed with US for her small left thyroid nodules.

discussion:

There is overall a reduced malignancy rate in hot nodules; however, the rate was not as low as previously expected. Therefore, the findings in this case and similar cases, prompt us to question the widely adopted recommendation to avoid cytologic evaluation of hot nodules, based on the belief that hot nodules harbour a significantly lower malignancy rate than non-toxic nodules.

Conclusion

Odds of malignancy of hot nodules is reduced compared with non-toxic nodules; however, the incidence of malignancy reported in hot nodules was higher than expected. These findings highlight the need for further studies into the malignancy risk of hot nodules.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
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**Resident Oral Presentation # 07    Category:** Clinical Vignette

**Residency Program:** Corewell Health – Grand Rapids/Michigan State University

**Presenter:** Anastasia Bury

**Additional Authors:** Ryan Crane, MD, Priyanka Hirlekar, MD

**Beneath the Surface: A Case of Bactrim-Triggered Erythrodermic Psoriasis**

Introduction:

Psoriasis is an inflammatory skin condition characterized by erythematous plaques often over extensor surfaces. There are multiple subtypes including the most severe form, erythrodermic psoriasis (EP), which usually presents with systemic pruritis, and pain accompanied by reddened exfoliation of the skin covering 90% or more of the body's total surface area<sup>1</sup>. Complications can be life-threatening including disruption of thermoregulation and metabolic dysfunction<sup>1,2</sup>. There are numerous documented triggers including abrupt changes to steroid regimen or overuse of topical steroids, recent stressors or illnesses, and certain medications<sup>3</sup>. Here we present a case of suspected Bactrim-triggered EP.

Case:

Patient is a 35-year-old male with pertinent past medical history of juvenile rheumatoid arthritis with contractures and psoriasis on oral prednisone. He was diagnosed with MRSA/MSSA bacteremia and was treated with Bactrim. A couple of days later, he presented with neck and axillary pain associated with globally erythematous skin with a positive Nikolsky sign.

Infectious Disease (ID) was consulted for concern of staphylococcal scalded skin syndrome. The differential included possible staphylococcal infection with drainage vs recent use of Bactrim which triggered a severe episode of EP. Bactrim was promptly discontinued. The patient was started on intravenous antibiotics and IV steroids with marked improvement of his erythema and pain.

A diagnosis of EP was confirmed by Dermatology and treatment with methotrexate and folate was initiated. The patient was transitioned to a slow taper of oral steroids with outpatient Dermatology follow up.

Discussion:

Psoriasis is uncommon with an estimated prevalence of up to 5% worldwide and EP is among the rarest subtypes, accounting for less than 3% of these cases<sup>4</sup>. Broadly, the etiology of EP is the result of interactions between the environment, skin, and genetic and immunological data igniting a hyperproliferation of keratinocytes stimulated by T cell activation infiltrated into the skin<sup>1,5</sup>. Here, Bactrim was the environmental trigger in a high-risk patient with known rheumatologic and dermatologic history. There is at least one other documented case of Bactrim-induced EP<sup>6</sup>.

First-line EP treatments vary between facilities, mostly due to availability of agents and limited data but often include cyclosporin, infliximab, or methotrexate and progress to biologics as in our patient's case<sup>1,5,7</sup>. Systemic steroids as treatment are generally not recommended and use in flares remains controversial<sup>8</sup>. However, there is anecdotal evidence which aligns with our patient's clinical trajectory that short courses can be beneficial, particularly when used as combination therapy with immunosuppressants when cyclosporin and biologics cannot be used<sup>8</sup>.

Conclusion:

EP is a rare dermatologic emergency and medication regimens should be scrutinized for possible inciting agents, including Bactrim, in tandem with initiation of treatment.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
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**Resident Oral Presentation # 08    Category:** Clinical Vignette

**Residency Program:** Corewell Health – Grand Rapids/Michigan State University

**Presenter:** Morgan Korn

**Additional Authors:** Elizabeth Jakubowski, MD; Mahrukh Akram, MD; David McNamara, MD

**A Forecast of Embolic Showers: Recurrent Stokes Secondary to Nonbacterial Thrombotic Endocarditis**

**Introduction/Objective**

Nonbacterial thrombotic endocarditis (NBTE), also known as Libman-Sacks endocarditis, is a rare condition characterized by the formation of sterile vegetations on cardiac valves, which can lead to embolic events. While infective endocarditis (IE) is more commonly encountered, NBTE poses diagnostic challenges due to its insidious onset and association with various underlying conditions- specifically those that cause hypercoagulable states such as autoimmune diseases and malignancies. Here, we present a case of recurrent strokes attributed to NBTE in a patient with newly diagnosed underlying malignancy.

**Case Description**

A 66-year-old female with a medical history significant for multiple strokes presented with recurrent episodes of left-sided weakness and slurred speech. Initial imaging findings were consistent with acute infarcts distributed throughout the distal right MCA territory and cerebellar hemisphere. Transthoracic and transesophageal echocardiography revealed multiple vegetations on the atrial aspect of the mitral valve with a component of mobility, suggestive of both IE and NBTE. Infectious work-up was negative and further evaluation identified stage III lung adenocarcinoma. PET imaging was utilized to help differentiate NBTE from IE. Through multidisciplinary collaboration, the most appropriate management plan for the patient was initiated.

**Discussion**

The diagnosis of NBTE in this case was challenging due to its rarity in occurrence and association with malignancy. NBTE should be considered in patients with recurrent embolic events, especially in the absence of infectious symptoms or positive blood cultures. Differential diagnosis between NBTE and IE is crucial, as management strategies differ significantly. Appearance of the vegetation on transthoracic and transesophageal echocardiogram in addition to infectious workup can often differentiate NBTE from IE. However, in less clear cases, positron emission tomography (PET) can aid in distinguishing between sterile and infectious vegetations by detecting metabolic activity. While the specific use of PET in diagnosing NBTE is not as extensively studied as some other imaging modalities, there is emerging evidence demonstrated in reported systematic reviews and meta-analyses as well as case reports that support its utility in this context. In NBTE, PET will typically show a lesser degree of metabolic activity in comparison to IE due to bacterial infection. Incorporating PET imaging into the diagnostic workup can improve accuracy and guide appropriate management decisions in patients with suspected NBTE.

**Conclusion**

This case underscores the importance of considering NBTE in patients presenting with recurrent strokes, especially in patients with underlying malignancies. Multidisciplinary collaboration between neurology, cardiology, oncology, and palliative care is essential in managing these complex cases. Awareness of NBTE as a potential etiology of embolic events and prompt recognition is crucial in preventing thromboembolic complications and optimizing patient outcomes.



**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
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**Resident Oral Presentation # 09    Category:** Clinical Vignette

**Residency Program:** Henry Ford Hospital Detroit

**Presenter:** Mohamad Daklallah

**Additional Authors:** Dr. Junior Uduman (M.D., attending physician in critical care medicine and nephrology)

**Acute Myeloid Leukemia Manifesting as Acute Hypoxic Respiratory Failure Without Leukocytosis**

The clinical presentation of Acute Myeloid Leukemia (AML) is typically recognized by manifestations of pancytopenia and recognized by peripheral smear abnormalities. We present a unique case where a patient presented solely with acute lung injury/acute respiratory distress syndrome (ALI/ARDS) as the initial manifestation of AML.

A 43-year-old physically active male known to have Hashimoto's thyroiditis presented with a week of shortness of breath associated with low-grade fever, night sweats, arthralgia's, and myalgia's. No other symptoms or significant medical history was present. He was noted to be in hypoxic respiratory failure requiring high flow nasal cannula. Physical exam demonstrated no cyanosis, pallor, lymphadenopathy, or hepatosplenomegaly. Cardiac exam was normal with no signs of volume overload. Lung exam revealed increased respiratory effort and use of accessory muscles. Laboratory studies were significant for white blood cell count 4.10 K/cmm, platelet count 35 K/uL (low), and creatinine 1.6 mg/dL (baseline of 1.1 mg/dL). Chest radiograph showed mild pulmonary vascular congestion and patchy hazy airspace opacities in the bilateral mid to lower lungs. CT chest (high resolution without contrast) showed having increased, diffuse groundglass opacities and bilateral lower lobe consolidative opacities, bilaterally, with new multifocal areas of interlobular septal thickening. Extensive infectious and autoimmune studies were negative. This includes: Histoplasma and Blasomyces and Cryptococcal respiratory culture. Autoimmune serologies were negative for rheumatoid factor, Anti-Neutrophil Cytoplasmic Antibody (p-ANCA and c-ANCA), and ANA. In addition, C3/C4 were not below reference range. Other autoimmune labs (Anti-U2 RNP antibody, RNP antibody, SS A/Ro antibody, SS B/La antibody, SM antibody, Scl-70 antibody, Anti-Jo-1 antibody) were all unremarkable. Peripheral smear demonstrated neutrophilia and monocytosis with dysplasia and 12% blasts with promonocyte morphology and thrombocytopenia, all suggestive of high-grade myeloid neoplasm with monocytic differentiation. Bone marrow biopsy showed an acute myeloid leukemia with monocytic differentiation. Cytogenetic evaluation was positive for the KMT2A rearrangement. The decision was made to initiate chemotherapy because there was a high suspicion that the patient's respiratory failure was secondary to leukemic pulmonary infiltration. He was initiated on cytarabine and daunorubicin (7+3). Prior to chemotherapy initiation, the patient was electively intubated in anticipation of significant respiratory decompensation with chemotherapy initiation, since initial decompensation with chemotherapy has been reported in the literature in patients with AML with monocytic differentiation with possible pulmonary infiltration. After initiation of chemotherapy, initially the patient's respiratory status worsened; however, his respiratory failure subsequently improved, and a repeat bone marrow biopsy demonstrated remission.

The patient's ARDS was likely due to leukemic pulmonary infiltration in the setting of AML with monocytic differentiation since this has been reported in the past with this specific disease process. However, this respiratory decompensation is rare without significant peripheral leukocytosis and blasts. Our aim is to highlight the possibility of leukemic pulmonary infiltration being the first manifestation of acute monocytic leukemia. Also, although it is rare, this is to be recognized as a cause of ALI and respiratory decompensation and early therapy can result in a favorable clinical outcome.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
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**Resident Oral Presentation # 10    Category:** Clinical Vignette

**Residency Program:** Henry Ford Hospital Detroit

**Presenter:** Matthew Meranda

**Additional Authors:** Austin Parsons, DO; Muhammad Shahid, DO; Jewad Sheqwara, MD

**Atraumatic Fat Embolism Syndrome and the Daunting Decision of Exchange Transfusion**

A 28-year-old woman with a medical history of sickle cell-beta thalassemia disease presented to the hospital with uncontrolled pain in her extremities. Initial workup was remarkable for hemoglobin 10.4 g/dL, haptoglobin <30.0 mg/dL, LDH 1190 IU/L, absolute reticulocyte count 192.2 K/uL, and platelets 81 K/uL. A CT of the chest demonstrated nonspecific atelectatic changes.

She quickly decompensated with a hemoglobin drop to 7.6 g/dL with associated encephalopathy and hypoxia. She was emergently transfused with one unit of packed red blood cells. A repeat chest x ray demonstrated patchy opacities in the left lung; a CT of the head was unremarkable. A peripheral smear revealed 1-2% schistocytes with scant sickle cells. Meanwhile, hemoglobin electrophoresis revealed 51.6% Hemoglobin S, 35.4% Hemoglobin A1, 9.3% Hemoglobin F, and 3.7% Hemoglobin A2 which was stable from prior analysis. Due to persistent encephalopathy and hypoxia, the decision was made to pursue exchange transfusion.

A subsequent brain MRI revealed multiple punctate foci of signal abnormality in the supratentorial brain and bilateral cerebellar hemispheres. Given the morphology and distribution of these lesions, the mechanism of her acute ischemic strokes was determined to be a combination of micro-thrombotic vaso-occlusive disease along with fat embolism syndrome (FES), though the patient had no history of avascular necrosis nor recent trauma. Further investigation with CT angiography and echocardiography excluded other sources of thromboembolism, and testing for disseminated intravascular coagulation and heparin induced thrombocytopenia were negative.

The patient improved following exchange transfusion, and she was eventually discharged to inpatient rehabilitation for further care.

Atraumatic FES is a rare sequela of hemoglobinopathies such as sickle cell disease and can be seen even in the absence of acute trauma or frank osteonecrosis. It is more frequently reported in otherwise less severe forms of sickle cell disease such as HbSC and HbS-beta thalassemia due to higher baseline hematocrit leading to increased serum viscosity and resultant vaso-occlusion. The diagnosis is ultimately clinical and relies on a combination of laboratory data and advanced imaging.

The manifestations of FES often overlap with those of acute chest syndrome. These include hypoxemia—either due to V/Q mismatch physiology or impaired diffusion—fever, and encephalopathy; however, microhemorrhage is exclusive to FES and is best seen on MRI, with susceptibility-weighted imaging offering greater sensitivity as compared to T2 image sequences.

FES is a medical emergency. The overall mortality among cases published until 2013 was 66%, although data examined between 2014 and 2018 demonstrated a mortality rate closer to 33%. In this latter analysis, mortality was greatly affected by transfusion, with 23%, 59%, and 92% case mortality for patients receiving red cell exchange, simple transfusion, and no transfusion respectively.

These frightening mortality data emphasize the importance of prompt recognition of FES. Though uncommon, FES is a complication of sickle cell syndromes which is manageable with timely intervention. Decisions to transfuse such patients are often fraught with uncertainty. Therefore, one must maintain a high clinical suspicion for FES, especially in patients with otherwise mild sickle cell syndromes and even in the absence of osseous injury.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
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**Resident Oral Presentation # 11**    **Category:** Continuous Quality Improvement/Evidence-based Medicine

**Residency Program:** Garden City Hospital

**Presenter:** Apoorv Tiwari

**Additional Authors:** Aaron Gandhi DO, Apoorv Tiwari MD, Mehwish Zeb MD, Kashif Khan MD, Sujata Kambhatla MD, Amin Pasha MD, Raagino Yedidi

**Quality Improvement: Increasing Antibiotic Stewardship in Community Acquired Pneumonia**

**Introduction:**

Withdrawing antibiotic treatment at the five-day mark in suitable inpatients with community-acquired pneumonia is recommended by the American Thoracic Society and the Infectious Disease Society of America. The goal of our intervention was to increase resident confidence and knowledge regarding algorithmic management of community-acquired pneumonia. Our longer-term goal is for our hospital to meet the state benchmark regarding adherence to optimal duration of therapy.

**Methods:**

A pre-intervention survey was conducted to assess Internal Medicine resident pre-intervention confidence and knowledge regarding management of community-acquired pneumonia (CAP). A laminated flowsheet of preferred antibiotic regimens for uncomplicated CAP was distributed in the Graduate Medical Education resident workspace. A one-hour lecture regarding management of community-acquired pneumonia was held for all Internal Medicine residents. Residents completed a post-intervention survey to determine whether confidence of uncomplicated CAP management had increased and whether resident knowledge of preferred regimen selection and duration of therapy had improved.

**Results:**

Twenty-four Internal Medicine residents were included for the intervention. Completion rate was 58.3% (14 residents) for the pre-intervention survey and 87.5% (21 residents) for the post-intervention survey. Residents rated their comfort level treating uncomplicated CAP from 1 to 5, 1 being uncomfortable and 5 being very comfortable. The average pre-intervention comfort level was 3.79, and the average post-intervention comfort level was 4.52 ( $p=0.0306$ ). Before the intervention, 8 responses of 23 total (34.5%) were incorrectly selected pertaining to 7-day regimens and afterwards 5 of 37 total responses (13.5%) were incorrectly selected pertaining to 7-day regimens. Before the intervention, 84.62% (11) of respondents correctly identified ceftriaxone plus azithromycin/clarithromycin/doxycycline for 5 days and 23.08% (3) correctly identified ampicillin + sulbactam plus azithromycin/clarithromycin/doxycycline for 5 days of treatment as preferred regimens for uncomplicated CAP. Afterwards, 90.48% of respondents (19) correctly identified the first regimen and 47.62% of respondents (10) correctly identified the second.

**Conclusions**

Overall, the intervention appeared successful in increasing resident confidence in treating uncomplicated CAP. The intervention also decreased the incorrect response rate of 7-day regimens for the treatment of uncomplicated CAP, representing increased resident awareness of antibiotic withdrawal at the 5-day mark for uncomplicated CAP. The percentage of residents who successfully identified preferred regimens for uncomplicated CAP increased, but resident awareness of the ampicillin + sulbactam-based regimen was poorer, indicating a future area for growth. One strength of the intervention was that despite scheduling limitations precluding all residents from being able to attend the in-person lecture, circulation of the laminated flowsheets may have helped reach the majority of residents. Significance of the intervention may be under-represented due to selection bias as those who were uncomfortable with treatment of uncomplicated CAP may not have answered the pre-intervention survey, reflected by greater response rates to post-intervention survey. Additional future directions are to evaluate whether increased resident awareness actually improves hospital metrics tracking percentage of patients with uncomplicated CAP treated with 5 days of antibiotics. The longer term goal of meeting Michigan's Hospital Medicines Safety benchmark will be assessed at the end of Q1 of 2024, and again on a quarterly basis.

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**Resident Oral Presentation # 12    Category:** Research

**Residency Program:** McLaren Flint

**Presenter:** Dheeraj Alexander

**Additional Authors:** Bijaya Dunham, Rebecca Pratiti

**Impact of Low Body Mass Index on Delirious Patients Outcomes: A Nation-Wide Analysis**

**Background:**

Delirium is a common serious health problem characterized by abrupt changes in consciousness and cognitive function. It leads to poor prognosis, especially among older adults. Low body mass index (BMI) is an independent risk factor for intensive care unit and postoperative delirium, though the impact of body mass index on the prognosis of delirium has not been well studied. This study aims to examine the correlation of BMI on outcomes of delirium patients.

**Methods:**

This cross-sectional study utilized national inpatient sample (NIS) database to examine the association of low BMI ( $\leq 19$  kg/m<sup>2</sup>) termed underweight with patient outcomes among patients admitted with delirium diagnosis between January 1, 2020, and December 31, 2020. NIS is the largest national publicly accessible all-payer inpatient healthcare database providing inpatient utilization, cost, and outcomes estimates in United States. Unweighted data from seven million hospital stays are included annually and 35 million hospital admissions are estimated based on weighted data.

This study included adult patients (>18 years old) with delirium as primary and underweight (Z68.1) as secondary diagnosis using International Classification of Diseases (ICD) 10 codes. The study variables included sex, age, race, Charlson Comorbidity Index (CCI), insurance, median household income, hospital region, hospital bed size, teaching hospital status and dementia. We compared baseline characteristics and outcomes for delirium hospitalization. Primary outcome was in-hospital mortality. Hospital length of stay (LOS) and total hospital charges were secondary outcomes. Main determinant variable was BMI status (underweight vs non-underweight).

Values were presented as percentages or as mean $\pm$ standard deviations. Recommended discharge and hospital weights were included to construct national estimates for every analysis. Univariate and multivariate regression analyses were used to find adjusted odds ratio and mean differences. Variables with univariate tests with a  $p < 0.20$  were included in multivariable model, along with other variables of known clinical importance. STATA version 18.0 (StataCorp LLC, Texas, USA) was used for statistics, and  $p < 0.05$  was considered statistically significant.

**Results:**

About 130,805 patients were hospitalized with delirium as primary diagnosis with 6,605 (5.1%) being underweight patients. Overall, in-hospital mortality among the delirium hospitalization group was 2.2%. Most underweight delirium patients were females (63.1%), mean age of 74 years, Caucasian (71.0%), with a low median household income (29.4%) and Medicare payer type (81.2%). Hospital characteristics for most of these admissions include large bed size (49.5%), urban teaching hospitals (70.9%) and located in southern part of United States (38.4%). In multivariate regression analysis, underweight delirium patients had statistically significant increased risk of in-hospital mortality (adjusted odds ratio, [AOR] 2.03;  $p < 0.001$ ), higher average LOS (additional 2.28 days;  $p < 0.001$ ) and higher total hospital charges per stay (additional \$10,295.26;  $p = 0.003$ ) when compared to non-underweight patients after controlling for patient and hospital characteristics, CCI and dementia.

**Conclusion:**

Underweight is an independent risk factor for in-hospital mortality, longer LOS, and higher charges among adult delirium patients. This study aims to create awareness about this special subgroup of delirium patients for improving their outcome.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 13    Category:** Clinical Vignette

**Residency Program:** McLaren Greater Lansing

**Presenter:** Caleb Glover

**Additional Authors:** Gisela Ocasio-Cortes, DO, Borys Hrinchenko, MD

**Immune-Mediated Hepatitis: A Single Drug or a Class Effect?**

While the rates of diagnosis and death due to non-small cell lung cancer are decreasing, the five-year relative survival rate remains 20%. Treatment of lung cancer is rapidly evolving, particularly in the metastatic setting. Immunotherapies, most notably PD-1 inhibitors, have drastically changed the landscape of treatment. Immune Hepatitis can, unfortunately, be a reason for discontinuation of the drugs. Immune Hepatitis has been generally thought to be associated with all drugs of a particular class, not specific drug agents.

We present a case of an 84-year-old female with metastatic non-small cell lung cancer with a PD-1 expression of 100%. She was started on single agent Pembrolizumab due to inability to tolerate chemotherapy limiting therapeutic options. Shortly after starting therapy, she developed immune hepatitis requiring steroid therapy and withdrawal of the drug with multiple drug interruptions. Ultimately, the drug was discontinued due to worsening elevation in her liver enzymes with resumption of the drug. Standard of practice in such cases is to avoid all drugs in the PD-1 inhibitor family due to similar toxicity profiles and mechanism of action observed. Given the fact that she did not have any other treatment options, she was started on Nivolumab, a different PD-1 inhibitor. Patient was able to tolerate Nivolumab without elevation of her liver enzymes or development of immune hepatitis. She has been on the drug for approximately 10 months with serial monitoring and no evidence of liver injury has been observed.

While PD-1 inhibitors have revolutionized the treatment of metastatic NSCLC and the drugs are overall well tolerated, a small percentage of patients develop immune mediated liver injury due to reactive cytotoxic T lymphocytes as the reactivated T cells attack other tissues, including the liver. Generally, this has been seen consistently across the entire drug class, not specific to single agents. We present a rare case of immune mediated liver toxicity specific to Pembrolizumab that was subsequently not observed with Nivolumab, despite both drugs having identical mechanisms of actions. Patient has had multiple serial labs and imaging studies showing no progression of her disease, stable on Nivolumab. This case highlights the need for further investigation regarding the mechanism of Immune mediated liver toxicity/injury that may be specific to single agents and not necessarily a drug class.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 14**    **Category:** Continuous Quality Improvement/Evidence-based Medicine

**Residency Program:** Trinity Health Ann Arbor

**Presenter:** Preethika Palani

**Additional Authors:** Ola Al-Sous; Qianzi Zhao; Monika Olejnik; Anna Numi

**Optimizing comprehensive care for the hospitalized hip fracture patients: time to surgery and bone health at discharge.**

**Objective:**

Approximately 300,000 older people ( 65 years and older) are hospitalized yearly for hip fractures, according to the CDC. Hip fracture is considered a life-altering event with increased morbidity and up to 30% mortality. The Clinical Practice Guidelines by the American Academy of Orthopedic Surgeons highlight the importance of an interdisciplinary team approach while caring for these patients and recommend surgery within 24 hours for improved outcomes. Most of these fractures are considered fragility fractures occurring from a simple ground-level fall and, thus, a manifestation of osteoporosis. Yet, only a few patients, 26%, receive osteoporosis treatment within 30 days of surgery, as per a recent study. ACP recommends replenishing Vitamin D and Calcium in all fragility fracture patients, followed by the initiation of bisphosphonates.

At our institution, hip fracture patients used to be admitted to internal medicine or orthopedic services based on their complexity. There was a perceived feeling that those admitted to primarily internal medicine service received less comprehensive care and were likely delayed in getting to the OR given the competing priorities of a sick internal medicine service load. Vitamin D levels were not being checked or replaced despite having it be part of the admission order set used for hip fracture patients.

Our project aimed at improving overall care for hospitalized hip fracture patients.

**Methods:**

Our goal was to increase the percentage of hospitalized hip fracture patients going to the operating room within 24 hours to 85% by the end of 2023. Additional goals were to improve the percentage of checking vitamin D levels and supplementing them at discharge by 25% by the end of 2023.

Our intervention was to build a fragility fracture orthopedic and internal medicine co-management service where hip fracture patients were admitted. We collected outcome, process, and balancing measures, including time to surgery, unnecessary cardiac testing and consultation before surgery, percentage of ordering vitamin-D levels, and vitamin-D supplementation at discharge. Qualitative satisfaction with the process was also included.

Data was collected biweekly from Jan 2023 to Dec 2023. Run chart analysis was utilized for statistical analysis.

**Results:**

Our preliminary results showed that the percentage of patients going to surgery within 24 hours did not differ (median of approximately 80%). Patients rarely got unnecessary cardiac testing or consultations, so we stopped following this measure.

The median of vitamin-D level checking and supplementation at discharge had improved from 45% to 77% and 35% to 53%, respectively, sustaining a shift using run chart analysis rules.

**Conclusion:** Our project shows that establishing a dedicated service for hospitalized fragility hip fractures has improved care for our patients. While time to surgery had not improved, it had been within the reported national average. Time to surgery is being delayed mostly when further medical optimization is required. However, having this service improved bone-focused care with vitamin-D testing and supplementation. The future PDSA cycle will focus on post-discharge osteoporosis management and treatment when appropriate.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 15    Category:** Clinical Vignette

**Residency Program:** Trinity Health Grand Rapids

**Presenter:** Ali Nasir

**Additional Authors:** Nasir Khan, MD

**Diabetic Myonecrosis: An Overlooked Vascular Complication of Diabetes Mellitus**

Introduction

Spontaneous diabetic myonecrosis, or diabetic muscle infarction, is a rare vascular complication associated with both type 1 and type 2 diabetes mellitus. It typically presents as acute or subacute unilateral focal swelling and pain of the thigh or calf in a patient with poorly controlled diabetes. A 2015 systematic review of the literature revealed only 126 unique cases of the condition described since it was first characterized in 1965. Most patients with diabetic myonecrosis have associated microvascular complications, with 47% of the 126 cases having diabetic triopathy with combined retinopathy, neuropathy, and nephropathy. Treatment of diabetic myonecrosis involves strict diabetes control to reduce risk of microvascular complications, initiation of aspirin, and symptomatic management with NSAIDs if not contraindicated.

Case Presentation

A 33-year-old man presented to the hospital with progressive right thigh pain and swelling over the last two weeks. He has a history of type 1 diabetes mellitus with retinopathy, neuropathy, and nephropathy associated with end-stage renal disease on hemodialysis. He denied any trauma, falls, or illicit drug use. He noted exacerbation of pain with walking and standing from a sitting position. On examination, the patient was afebrile and his right thigh was swollen, warm, and mildly erythematous with tenderness to palpation noted over the medial aspect of the right thigh. There was no motor weakness noted. Initial work-up revealed HbA1c 13.8%, normal creatine kinase 116 U/L, elevated sedimentation rate 88 mm/h, elevated C-reactive protein 6.9 mg/dL, and normal thyroid stimulating hormone. Urine drug and HIV screening were negative. MRI of the right thigh demonstrated extensive myositis especially of the medial musculature and the sartorius with relative hypoenhancement of the adductor brevis and longus concerning for necrosis. Right adductor maximus biopsy revealed abundant necrotic fibers with marked perimysial and endomysial thickening and cellularity consistent with diabetic myonecrosis and negative for pyomyositis. Patient was treated with strict glycemic control with plans for close follow-up for diabetes management outpatient. Low-dose aspirin was initiated, and ibuprofen with acetaminophen were utilized for symptom management. He worked with physical therapy outpatient to improve functionality. The patient's pain improved and upon follow-up 6 months later, the patient's HbA1c was 6.9% and his swelling resolved.

Discussion

Diabetic myonecrosis is an underappreciated vascular complication of diabetes mellitus, presenting as a unilateral focal myositis in a patient with long-standing uncontrolled type 1 or type 2 diabetes with associated microvascular complications. It should be considered in patients with unilateral muscle pain and edema along with pyomyositis, necrotizing gangrenous or Clostridial myositis, and neoplasm. This patient's diabetic muscle infarction of the right thigh was confirmed with muscle biopsy, but the condition can be diagnosed clinically with evidence of myositis on imaging. Antiplatelets and NSAIDs are useful in reducing time to resolution. Internal medicine physicians should be familiar with diabetic myonecrosis when encountering diabetic patients with musculoskeletal complaints.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 16**    **Category:** Continuous Quality Improvement/Evidence-based Medicine

**Residency Program:** Trinity Health Livonia

**Presenter:** Khushi Desai

**Additional Authors:** Anukul Karn MBBS, Shreeja Jha MBBS, Fatima Jamshaid MBBS, Preeti Misra MD

**Balancing Act: Unveiling the intricacies of Low-dose IV Hydrocortisone use in Septic Shock**

According to the Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3), Septic shock is clinically defined as a “vasopressor requirement to maintain a mean arterial pressure of 65 mmHg or greater and a serum lactate level greater than 2 mmol/L (>18 mg/dL) in the absence of hypovolemia.” In recent years, there has been a paradigm shift from using high-dose steroids, as immunosuppressants for the reduction of inflammatory organ damage, to low-dose, which addresses the relative adrenal deficit in septic shock. Hydrocortisone, being an endogenous mineralo-glucocorticoid, has been most extensively studied. The current Surviving Sepsis Campaign guidelines (2021) give a weak recommendation with moderate quality of evidence to use low-dose IV hydrocortisone (200mg/day) in septic shock with an ongoing need for vasopressor support. However, there is a lack of consensus on optimal dose, timing of initiation, and duration in the dosing regimen of Randomized Control Trials (RCTs) studied. We did a detailed literature review and critical appraisal of 4 systematic reviews with meta-analyses (A, B, C, and D), from PubMed, with trial sequential analysis done in A, B, and C, over the past 10 years. Twenty-five unique multi-centric RCTs studied the effect of low-dose hydrocortisone versus placebo on short-term mortality, shock reversal, and incidence of adverse effects like gastrointestinal (GI) bleeding, hyperglycemia, and superinfection were analyzed. No significant mortality benefit was reported across all studies. The definition of shock reversal was highly variable across the studies, however, B, C, and D reported significant benefits with low heterogeneity (I<sup>2</sup> in B and D, and moderate (I<sup>2</sup>>56%) in C. Incidence of hyperglycemia was found to be significantly high in A, C, and D. Incidence of GI bleeding was trending towards significance in D. Superinfection had no significant association. Practically pertinent variables such as length of hospital/ICU stay (except C), cost-effectiveness, shock relapse, and steroid induced-myopathy were not considered outcomes. Only some RCTs were based on newer definitions (Sepsis-3 2016). Hence, we recommend further RCTs accounting for all these factors. Appropriate confounding and using adverse events as the primary outcome would help assess the degree of anticipated harm with the intervention. The effect of hydrocortisone/fludrocortisone combination and very low dose hydrocortisone (~75-150 mg/day) versus current recommendations remain potential areas of future investigation.



**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 17**    **Category:** Continuous Quality Improvement/Evidence-based Medicine

**Residency Program:** Trinity Health Livonia

**Presenter:** Renisha Redij

**Additional Authors:** Renisha Redij, Resham Tanna, Vijaya Preethi Jayarajan, Omar Alkhateeb, Preeti Misra

**Use of probiotics in inducing and or maintaining remission in mild to moderate ulcerative colitis: a critical appraisal**

**Background:** With increasing consumption of probiotics for “gut health”, its use has been debated over the past few years for inducing and or maintaining remission in inflammatory bowel disease (IBD), particularly ulcerative colitis (UC). Exact pathogenesis of UC is unknown, but thought to be multifactorial including genetic predisposition, epithelial barrier defects, dysregulated immune responses, and environmental factors. Probiotics are hypothesised to induce clinical remission in IBD by stimulating anti-inflammatory cytokines (eg.,IL-10, TGF  $\beta$ ), suppressing pathological bacterial growth, inducing immune response, improving epithelial barrier function and suppressing T-cell proliferation.

**Objective:** We aim to study the role of probiotics in inducing or maintaining remission in mild to moderate ulcerative colitis when compared to placebo.

**Methods:** We searched the PubMed database using keywords such as probiotics, inflammatory bowel disease, ulcerative colitis, for recent systematic reviews, meta analysis and randomised controlled trials (RCT). Through our literature search, we selected 3 placebo-controlled RCTs with sample size greater than 50 that used a standardised ulcerative colitis disease activity index (UCDAI) for their outcome measurement, to help us reduce the heterogeneity in the patient population and effectively study results.

**Results:** Two of three RCTs studied the use of oral VSL#3 which is a high potency mixture containing strains of lactobacilli, bifidobacteria and streptococcus; whereas one studied efficacy of oral Bifidobacterium longum 536 supplementation. Patients from all studies were on concomitant medications including 5ASA and immunosuppressants at stable doses prior to the start of the disease, baseline characterise of study participants were matched and randomly assigned to test vs placebo group. All studies reported an improvement in UCDAI scores and clinical symptoms in the group receiving probiotics compared to placebo with statistically significant results. Two of three studies reported no statistically significant difference in probiotic supplementation vs placebo in inducing clinical remission. One study reported clinical remission achieved in the VSL#3 group at 12 weeks with statistically significant results ( $p < 0.001$ ). Overall, probiotics were well tolerated with minimal to no adverse symptoms amongst all studies.

**Conclusion:** Probiotics do reduce symptoms and overall severity of disease in mild to moderate UC. However, they have not proven to induce remission yet, highlighting the need for larger well-designed RCTs and meta-analysis to establish its role of probiotics in clinical remission of UC.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 18    Category:** Research

**Residency Program:** Trinity Health Oakland

**Presenter:** Kim Abbegail Tan Aldecoa

**Additional Authors:** Yi Lee, Myroslava Tsukan, Jennifer Orejuela, Asad Mohammad Jani, Garrett Cherry, Fariha Tareen, Victoria Golston, Oluwatosin Cooper, Andrea Briefs-Ferris, Geetha Krishnamoorthy, Amy Kirby, Judie R. Goodman

**Influence of Multidisciplinary Teams (MDT) on Breast Satisfaction and Sexual Well-Being in the Immediate Postoperative Phase Following Breast-Conserving Surgery (BCS)**

**BACKGROUND:**

Despite the recognized significance of multidisciplinary team (MDT) on patient satisfaction post-operatively, limited data exists on its overall impact. This study assessed the impact of satisfaction levels within the MDT, including the surgeon, medical oncologist, and office staff, on patient-reported outcomes on breast satisfaction and sexual well-being among early-stage breast cancer patients. We examine three key time points post-breast conserving surgery (BCS): 2 weeks, 4 weeks, and 3 months. In addition, demographic and socioeconomic factors affecting patient satisfaction were also analyzed.

**METHODS:**

A questionnaire-based survey was conducted via telephone interviews among early-stage breast cancer patients who had BCS at a university-affiliated community hospital from October 2022 to September 2023. Data was collected using BREAST-Q modules. Responses were translated into Rasch scores ranging from 0 (lowest) to 100 (highest). Patient-reported concerns were also collected with open-ended questions. The correlation between variables was measured using Pearson's correlation. A comparison of Rasch scores over time was done with repeated measures of ANOVA. Statistical analysis used SPSS version 28.0, with a p-value<0.05 considered statistically significant.

**RESULTS:**

Of 200 patients assessed, 61 met the study criteria, and 30 participated (mean age 66.3 years±9.9). Most were White (90%), married (55%), with stage 1 cancer (63%) and comorbidities (60%).

At two weeks, the mean breast satisfaction score was 66.8 ± 20.3, which increased to 71.0 ± 13.2 at 4 weeks and 88.1 ± 15.7 at 3 months (p<0.05). No significant change was observed in patients' sexual well-being over the three time periods (69.0 ± 22.3 at 2 weeks, 73.1 ± 20.0 at 4 weeks, and 68.3 ± 22.2 at 3 months, p>0.05). Pain at the surgical site was the most cited concern at two weeks and four weeks (30% and 41%, respectively), while dry skin (25%) was the top concern at three months.

The study found that patients' satisfaction scores with the surgeon (mean 95.5±12.4), medical team (mean 98.3±8.3), and office staff (mean 99.3±2.9) remained high throughout the three time periods (p>0.05). Satisfaction with the surgeon was associated with better breast satisfaction and higher sexual well-being scores at two weeks post-BCS (p<0.05). No other significant correlations were found between the influence of MDT on patient satisfaction at 4 weeks and 3 months. In a univariate analysis, widows reported the highest breast satisfaction at 2 weeks (94.0, p<0.05). White patients had a higher sexual well-being score than Black patients (72.4 vs. 51.5, p<0.05). Additionally, alcohol consumption was found to lower sexual well-being scores at 2 weeks (62.5 vs. 89.8, p<0.05). In a multivariable analysis, only marital status and alcohol consumption remained significant at 2 weeks post-BCS (p<0.05).

**CONCLUSION:**

Patients consistently reported satisfaction with their breasts and sexual well-being within three months post-BCS despite patient-reported concerns. Satisfaction with the surgeon played a crucial role in achieving higher post-BCS satisfaction at 2 weeks. Additionally, the study also highlights important sociodemographic factors that affect patient satisfaction in breast cancer management. These findings underscore the significance of a supportive healthcare team while considering various influencing variables.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 19    Category:** Research

**Residency Program:** Trinity Health Oakland

**Presenter:** Yash Shah

**Additional Authors:** Yash Shah MD, Dushyant Singh Dahiya MD, Manesh Kumar Gangwani MD, Hassam Ali MD, Saurabh Chandan MD, Kelly Parker MD, Jennifer deLongpre MD, Anupam Sule MD, Mones Takriti MD, Sumant Inamdar, Loren G. Rabinowitz MD, Geetha Krishnamoorthy MD, FACP

**Glycemic Control Impacts the Quality of Bowel Preparation in Patients Undergoing Elective Colonoscopy : A  
Multicenter Retrospective Cohort Study**

**Introduction:** Diabetes Mellitus (DM) can slow intestinal transit and delay gastric emptying potentially affecting the quality of bowel preparation (QBP) for colonoscopy. Suboptimal bowel preparation (BP) may lead to missed neoplastic or preneoplastic lesions. This study evaluates glycemic control's impact on QBP in patients undergoing elective colonoscopy.

**Methods:** A retrospective review of patients who underwent elective colonoscopy with HbA1c levels within one year of the procedure across eight hospitals was conducted. QBP was categorized as optimal or suboptimal based on the Boston Bowel Preparation and Ottawa Bowel Preparation Scales. The association between glycemic control, defined as Hba1c < 5.7 or FBS < 100 mg/dL (Non-diabetic); Hba1c: 5.7-6.4% or FBS: 100-125 mg/dL (Pre-diabetes); Hba1c: 6.5-9.5% or FBS: 126 mg/dL-225 mg/dL (Well-controlled diabetes); Hba1c:>9.5% or FBS >225 mg/dL (Poorly controlled diabetes), and QBP was investigated, with other patient demographic and clinical characteristics. Socioeconomic status was decided based on the insurance coverage carried by the patient. Significance was assessed at  $p < 0.05$ .

**Results:** A total of 1458 patients who met the inclusion criteria were included in the analysis. Of these, 6.3% of patients had suboptimal BP. Patients without diabetics, with prediabetes, and with well-controlled diabetes had lower odds (0.28, 0.20, and 0.32 ; $p < 0.001$ ) of having suboptimal BP as compared to patients with poorly-controlled diabetes. Insulin users had higher odds (5.39;  $p < 0.01$ ), non-smokers and former smokers had lower odds (0.54, 0.40;  $p < 0.04$ ), and medicare and commercial insurance holders had lower odds(0.49, 0.28;  $p < 0.001$ ) of suboptimal BP. Gender, body mass index, and the use of glucagon-like peptide-1 (GLP-1) agonists were not shown to impact the quality of BP.

Factors included in the multivariate analysis at the 0.25 cut-off level include sex, smoking status, GLP-1 agonist use, type of insurance, glycemic control, and insulin. On multivariate analysis ( $n=1411$ ), factors significantly associated with sub-optimal BP included insurance type and glycemic control. Patients with Commercial insurance were still ~70% less likely to experience sub-optimal BP than those with Medicaid/self-pay. Patterns for glycemic control were also similar with patients categorized as without diabetes (OR: 0.32; 95% CI: 0.13, 0.82), with pre-diabetes (OR: 0.23; 95% CI: 0.09, 0.58), with well-controlled diabetes (OR: 0.34, 95% CI: 0.14, 0.83) as having significantly decreased odds compared to poorly-controlled diabetes.

**Conclusion:** This study shows that poorly controlled and insulin-dependent diabetics have higher rates of suboptimal QBP, leading to missed lesions and increased colon cancer risk. Limited access to healthcare due to low socioeconomic status indirectly contributes to poorly controlled DM and higher rates of suboptimal QBP. Identifying poor preparation risks allows targeted interventions to enhance QBP in high-risk patients. By prioritizing bowel preparation optimization, we can enhance the overall quality of colonoscopy screening, leading to earlier detection of colorectal malignancies, improved patient outcomes, and a reduction in the burden of colorectal cancer.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 20   Category:** Research

**Residency Program:** University of Michigan

**Presenter:** Namratha Atluri

**Additional Authors:**

**Enhancing Mentorship: A Study to Optimize Support and Career Development for Medical Students in Michigan**

**Introduction:** Mentorship has long been recognized as a cornerstone of medical education and is critical for academic success, professional development, and career satisfaction. To that end, medical schools have implemented formal and informal mentorship programming within their curricula. Despite such initiatives, studies suggest that access to effective mentorship varies widely among medical institutions, with many students reporting inadequate support. Additionally, the transition from medical school to residency presents unique challenges, further underscoring the need for robust mentorship programs to assist students during this crucial period.

**Objective:** Recognizing these disparities, this study seeks to explore the mentorship needs of medical students across Michigan, aiming to identify areas for improvement and optimization with a special focus on the residency application process.

**Methods:** This mixed methods study was carried out in association with the Michigan American College of Physicians Chapter (ACP). Medical students who attended the 2023 Michigan ACP Annual Scientific Meeting were encouraged to complete an electronic survey about mentorship. Leaders of Internal Medicine interest groups at medical schools throughout Michigan were also asked to distribute this survey amongst their student bodies. The 8-item survey consisted of quantitative and qualitative questions regarding participants' career goals, mentorship needs, perceived level of support in medical school, and demographic information. IRB exempt status was provided by the University of Michigan.

**Results:** 58 medical students (7 first-year, 11 second-year, and 40 third-year) from 7 different medical schools completed the survey. In terms of support from their medical schools, 43.1% reported little to no support, 36.2% reported decent level of support, and only 20.7% reported good to excellent level of support. Desired areas of mentorship included advice on clinical rotations (51.7%), VSLO/ away rotations (56.9%), ERAS application (70.7%), residency interview preparation (60.3%), program/ rank-list determination (55.2%), networking (81%), and career development (74.1%). Themes identified from qualitative responses included need for more connection with near peers, individualized relationships/ advice, emotional support, and guidance on broader professional goals.

**Conclusions:** Despite various mentorship programs in place in 7 medical schools throughout Michigan, an overwhelming majority of students report inadequate support. While students desiring more support with the residency application process is not surprising, notably many students desire advice on networking and developing broader career goals, areas not traditionally focused on by many medical school mentorship programs. As expanded upon in the qualitative responses, medical schools should focus on developing one-on-one mentorship programs that address needs beyond completing medical school requirements and promote the emotional and professional well-being of students.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 21**    **Category:** Continuous Quality Improvement/Evidence-based Medicine

**Residency Program:** Wayne State University Detroit Medical Center Sinai Grace

**Presenter:** Zahraa Al Tameemi

**Additional Authors:** Dr. Khalil Kamal MD, Dr. Gulcin Altinok, MD

**Remarkable incidental findings qualifying for S modifier in Lung-RADs standardized reporting.**

Introduction:

In 2014, the American College of Radiology (ACR) created the Lung-RADs as a quality assurance way to regulate the reporting of low-dose CT (LDCT) of the chest for lung cancer screening (LCS) and the recommendation of management to decrease the confusion associated with the interpretation of the reports and to simplify the monitoring of the outcome.

Although the mortality rates from Lung cancer have decreased over the last years, lung cancer is still the superior cause of cancer death in the States, both in men and women. It is also the second most common cancer in incidence in both genders and studies have confirmed the mortality benefit of LCS with LDCT in the high-risk groups. Moreover, LCS with LDCT is cost-effective and covered by most insurance plans and Medicaid, and the benefits outweigh the risks associated with the screening.

Description:

- Emphasize the importance of adding the S modifier to each category when detecting significant or potentially significant incidental imaging findings unrelated to lung cancer that require further workup.
- The importance of communicating the significant or potentially significant findings to the primary care physician (PCP) to ensure appropriate follow-up to improve the outcome of these remarkable but unexpected incidental findings.
- Identify the modifiers that do not require a specific follow-up.
- Low-dose CT scan is used as a screening tool. Nodule measurement should be in the lung window, and to calculate a nodule's mean diameter, measure both the long and short axis. Nodule assessment should include the size of the nodule, features, growth, location, margins, and shape. The most suspicious nodule is taken to assess the Lung-RADS. It is always important to compare the findings with previous studies if available. Growth is considered if a size increase of  $\geq 1.5$  mm within a 12-month interval.
- Remarkable new incidental findings are grouped into thoracic or extrathoracic. Intrathoracic findings included: thyroid nodules more than 1 cm, some of which were with focal calcifications, type 2 aortic dissection with a significantly enlarged dimension of the descending aorta, coronary artery calcifications, and nodular breast lesions. Extrathoracic findings included: enlarging complex kidney lesions, dilated extrahepatic biliary ducts, adrenal nodules, and hiatal hernias.
- Chronic and previously known findings are excluded from this study.

Discussion:

Lung-RADS is an essential tool to facilitate the interpretation and recommendation of lung cancer screening CT. Knowing this system's scores and the explanation behind choosing the specific category is crucial to simplify the monitoring recommendation.

Moreover, special attention should be given to identifying the incidental findings that can be significant or potentially significant in the clinical management of the persons undergoing lung CT screening. This, in turn, improves the outcome of different conditions and the population's general health, not only in decreasing the mortality for Lung cancer.

It is also essential to be aware of the pitfalls to be able to differentiate infectious processes such as pneumonia and septic emboli, which may mimic neoplastic lesions of the lungs, and to utilize category 0 (incomplete, needs further evaluation).

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 22**    **Category:** Continuous Quality Improvement/Evidence-based Medicine

**Residency Program:** Wayne State University Detroit Medical Center Sinai Grace

**Presenter:** Yousef Alsmairat

**Additional Authors:** Yousef Alsmairat, MD, Malitha Hettiarachchi MD, FACP

**Effect of IV Iron-Carbohydrate Supplement on Morbidity and Mortality in Patients with Heart Failure**

**Objectives:** To study the effect of intravenous iron on morbidity and mortality in hospitalized patients with heart failure with reduced ejection fraction. The current European Society of Cardiology's 2021 heart failure guidelines recommend the consideration of Ferric Carboxymaltose in symptomatic patients with a left ventricular ejection fraction < 45%.

**Methods and results:** We conducted a systematic review using articles published in PubMed and EMBASE databases. The number of records first identified was 263. The study only reviewed Randomized Clinical Trials (RCTs) published in the years 2013-2023 and removed all the duplicates and irrelevant articles using Rayyan.ai tool. The final number of qualified articles that met the study's inclusion criteria was 3, with a total of 2,279 participants. The inclusion criteria for the study included: Age > 18, and heart failure (HF) with left ventricular ejection fraction (LVEF) < 50%. The study showed that intravenous iron supplementation in patients with heart failure and iron deficiency has been proven to reduce the symptoms of heart failure, improve quality of life, increase exercise capacity and skeletal muscle strength. IV iron-carbohydrate therapy significantly reduced hospitalization for worsening heart failure, but did not significantly impact all-cause mortality, compared to control.

**Conclusion:** IV iron-carbohydrate therapy significantly reduced hospitalization for worsening heart failure, but did not significantly impact all-cause mortality, compared to control. Based on the study review, we recommend IV iron therapy for patients with systolic dysfunction heart failure associated with iron deficiency anemia.

**Key words:** "Intravenous iron", "Morbidity", "Heart Failure"

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 23    Category:** Research

**Residency Program:** Wayne State University Detroit Medical Center Sinai Grace

**Presenter:** Sumit Gami

**Additional Authors:** Rakesh Shah, MD; Malitha Hettiarachchi MD FACP

**Has colon cancer screening guidelines reduced mortality associated with colon cancer?**

Introduction

Colorectal cancer (CRC) is a major public health concern worldwide, with high incidence and mortality rates. Globally, CRC is the third most commonly diagnosed cancer in males and the second in females, according to the World Health Organization GLOBOCAN database. The primary goal of CRC screening is to prevent mortality and morbidity from the disease. USPSTF screening recommendations for colorectal cancer, May 18, 2021: Screen all adults 45 to 75 years of age. Recommended screening strategies include: High-sensitivity guaiac fecal occult blood test (HSgFOBT) or fecal immunochemical test (FIT) every year or Stool DNA-FIT every 1 to 3 years Or Computed tomography colonography every 5 years or Flexible sigmoidoscopy every 5 years or Flexible sigmoidoscopy every 10 years + annual FIT or Colonoscopy screening every 10 years. Additionally, selectively screen adults aged 76 to 85 years for colorectal cancer, considering the patient's overall health, prior screening history, and patient's preferences.

Methods

The search was conducted in PubMed, Medline, and Cochrane Library databases using keywords related to colon cancer screening, mortality, and colon cancer. After initial screening and excluding duplicates, 11 articles were reviewed. Further review with inclusion criteria and excluding 4 ongoing RCTs resulted in 5 studies being included.

Result: A systematic review found that early screening and timely diagnosis and treatment effectively reduce disease burden. NordICC trial (M. Bretthauer, M. Løberg E. tal) showed a significant reduction in the risk of colorectal cancer (CRC) with colonoscopy screening but there was no statistical difference in the risk of death from CRC. Likewise, the PLCO trial (Eric A Miller, Paul F Pinsky E. tal) showed a long-term reduction in colorectal cancer incidence and mortality with flexible sigmoidoscopy. Similarly, the Minnesota Colon Cancer Control Study (Aasma Shaukat, Timothy R. Church E. tal) observed reduced CRC mortality with annual or biennial screening with fecal occult blood testing. Moreover, the ongoing, Colonoscopy versus FIT in Colorectal-Cancer Screening (Enrique Quintero E. tal) showed the number of colorectal cancer detected was similar in the two study groups, but more adenomas were detected in the colonoscopy group. The comparative effectiveness of FIT and colonoscopy for preventing death from colorectal cancer will be assessed after this 10-year trial.

Conclusions:

Based on this Systematic review, I would suggest recommending colon cancer screening regardless of methods. It has shown a decrease in the incidence of CRC and has mortality benefits too. But it has some limitations too like a homogenous study population, randomization preceded by informed consent, ongoing trial, and a retrospective study.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 24**    **Category:** Continuous Quality Improvement/Evidence-based Medicine

**Residency Program:** Wayne State University Detroit Medical Center Sinai Grace

**Presenter:** Alec Swartz

**Additional Authors:** Malitha Hettiarachchi, M.D. FACP

**NSAIDs Role in Triggering IBD Exacerbations; Reality or Misunderstanding? A Systematic Review**

Introduction:

Initial studies seemed to show that NSAID use was associated with increased risk of IBD exacerbation. Supported by known role of COX-1/2 isoenzymes (specifically their prostaglandin [PG] products) in maintaining GI mucosal barrier and mediating inflammation. Combination of early research findings and COX prostaglandin knowledge resulted in NSAID avoidance in IBD patients. Recent data seemingly contradicts prior research, and NSAID use is predicted to not play a role in IBD exacerbation.

Methods:

We conducted a systematic review of the literature using PubMed and American Journal of Gastroenterology. Of the thousands of results, we narrowed our results to 4 recent studies using inclusion criteria of IBD and NSAID association, non-pediatric sample, and publication date between 2000-2023.

Results:

3 out of the 4 included studies overtly found no association between NSAID use and IBD exacerbation.

The other initially found an association using traditional study methods. However, due to a suspicion for bias interference, they ran a follow up study that showed similar exacerbation rates prior to and after NSAID exposure (except in 0-2 weeks post-exposure which they attributed to reverse causality confounding).

Conclusion:

Although recent data refutes the association between NSAIDs and IBD exacerbation, the evidence is not conclusive.

Continued investigation should occur before deciding whether NSAIDs have any role in IBD therapy.

It is especially important in situations with IBD patients that have concurrent inflammatory disorders, of which NSAIDs are a primary therapy.



**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 25    Category:** Research

**Residency Program:** Wayne State University Providence Rochester Hospital

**Presenter:** Ali Ahmed

**Additional Authors:** Evangelos Bistas MD, Nour Aldaoud MD, Ayushi Garg MD, Ala Taha MD , Abdullah Yesilyaprak MD, Joseph Vercellone MD, Zain Kulairi MD.

**Revisiting the Obesity Paradox: Insights from Pulmonary Embolism Patient Outcomes**

Background:

Obesity is an epidemic in the US and has been associated with increased incidence and severity of cardiovascular disease and increased risk for pulmonary embolism (PE). However, the evidence of its effect on outcomes in PE patients remains equivocal. We aimed to investigate the impact of obesity on adverse in-hospital outcomes in PE.

Methods:

This study conducted a comprehensive analysis of the National Inpatient Sample (NIS) database, focusing on adult patients (aged  $\geq 18$  years) with a discharge diagnosis of PE (ICD-10 code: I26) from 2016 to 2020. We specifically identified obese patients using the Elixhauser comorbidity measure within NIS and compared them to non-obese patients in terms of adverse in-hospital outcomes.

Results:

Between 2016 and 2020, there were 1,940,294 discharges for PE, with 436,505 patients (22%) identified as obese. A rising trend of obesity among PE patients was observed, increasing from 21.5% in 2016 to 24.3% in 2020. Obese patients, when compared to their non-obese counterparts, were more female (57.4% vs 49.1%,  $p < 0.001$ ), younger (mean age  $58.4 \pm 15.1$  years vs  $64.0 \pm 17.1$  years,  $p < 0.001$ ), and African American (21.2% vs 17.5%,  $p < 0.001$ ). They also had higher rates of comorbid conditions like CHF (25.1% vs 21.2%,  $p < 0.001$ ), hypertension (70.6% vs 58.2%,  $p < 0.001$ ), diabetes (37.2% vs 21.5%,  $p < 0.001$ ), and renal failure (16.2% vs 14.7%,  $p < 0.001$ ). Obese patients were more likely to receive systemic thrombolytics (3.80% vs. 2.31%,  $p < 0.001$ ), undergo surgical thrombectomy or embolectomy (0.24% vs. 0.16%,  $p < 0.001$ ), and receive catheter-directed thrombectomy or thrombolysis (3.04% vs. 1.37%,  $p < 0.001$ ). Paradoxically, despite these comorbidities and complications, obese patients demonstrated lower mortality rates (4.58% vs 7.60%,  $p < 0.001$ ), mechanical intubation (7.71% vs 8.90%,  $p < 0.001$ ), and shock requiring pressor support (1.73% vs 2.14%,  $p < 0.001$ ). After adjusting for demographic factors, all comorbidities, and reperfusion therapies, the analysis consistently showed a reduced adjusted odds ratio for in-hospital mortality among obese patients (OR 0.63, 95% CI 0.61-0.65,  $p < 0.001$ ).

Conclusion:

Analyzing nearly two million inpatient cases of PE, our study revealed an intriguing association between obesity and reduced in-hospital mortality rates in PE patients. Notably, despite a higher prevalence of comorbidities and more frequent need for reperfusion interventions, obese patients exhibited lower mortality rates and fewer complications, such as the need for mechanical intubation and shock. This survival advantage in obese individuals persisted even after adjusting for potential confounders. These findings align with a similar study conducted on the German nationwide inpatient database and reflect the broader concept of the 'obesity paradox,' previously observed in cardiovascular diseases and chronic obstructive pulmonary diseases. However, whether these results indicate a true protective effect of obesity, a 'lean paradox,' or are due to unidentified confounders remains a subject for further investigation.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 26**    **Category:** Continuous Quality Improvement/Evidence-based Medicine

**Residency Program:** Wayne State University Providence Rochester Hospital

**Presenter:** Evangelos Bistas

**Additional Authors:** Vesna Tegeltija, Sarwan Kumar, Ripanjit Singh, Palpasa Bhui

**STANDARDIZING TREATMENT FOR PNEUMONIA - A QI INITIATIVE**

**Introduction:** Community-acquired pneumonia (CAP) is one of the leading causes of death worldwide. Several studies and healthcare systems have reported improvement in overall mortality, length of stay, and significant savings after implementing standardized evidence-based care for patients admitted with pneumonia. Standardizing care allows for earlier recognition of overall patient stability and rapid escalation of treatment when required. This project aims to design a standardized treatment plan for patients with pneumonia to improve the total length of stay and overall mortality rate.

**Method:** Our community hospital data revealed concerning results reporting higher than average pneumonia mortality rates. Root cause analysis was performed to uncover contributors to the outcomes. A lack of standardized risk stratification and inconsistent implementation of EMR pneumonia management order sets were discovered. We plan to utilize a multidisciplinary team including IT, pharmacy, ED, and residents to implement a risk stratification tool in the EMR system to properly admit pneumonia patients in the indicated units and follow recommended standardized order sets. PDSA cycles will be utilized to test change.

**Results:** Our team conducted a retrospective chart review of 18 patients with adverse outcomes being treated for pneumonia. The data revealed that 78% of patients were diagnosed with bacterial pneumonia vs 22% with viral pneumonia. Out of the individuals diagnosed with bacterial pneumonia 71% of individuals were administered IV antibiotics within 4 hours of making the diagnosis of bacterial pneumonia. 64% of individuals had sputum cultures done before antibiotic initiation and 79% had blood cultures drawn before starting IV antibiotics. All the 18 patients reviewed had died due to the complexity of their illnesses. Out of the 18 patients, 12 (66.66%) of the patients died due to cardiopulmonary arrest. These results were communicated to the quality department and an EMR change is to be initiated to add a risk stratification tool to the pneumonia management order set. By risk stratifying patients, we can place them in appropriate units, and educate staff about standardized order set compliance, such as antibiotic initiation, to adhere to standard guidelines and thus decrease overall mortality.

**Discussion:** There is a lack of risk stratification to classify pneumonia patients and where to place them in terms of the level of care within a hospital that needs to be put into place to improve mortality rates. Moving forward, the implementation of a risk stratification tool, the Pneumonia Severity Index Calculator, will determine placement within the hospital to meet the appropriate level of care needed. Compared with the CURB-65 score, the PSI score has a higher sensitivity in predicting ICU admissions, while also considering patients having sepsis if a higher score is found. The investigative team plans to use this tool in all patients admitted for pneumonia to study pneumonia mortality for the following year at our community hospital. Based on the data collected, specific actions will be taken to improve mortality.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 27   Category:** Continuous Quality Improvement/Evidence-based Medicine

**Residency Program:** Wayne State University Providence Rochester Hospital

**Presenter:** David Bock

**Additional Authors:** Anthony Calabrese, Alaa Taha, Vesna Tegeltija

**Improving Sepsis Care in a Community Hospital: A QI Initiative**

Introduction: Sepsis is one of the leading causes of hospitalizations and death worldwide. Sepsis treatment protocols have been developed to standardize care. The Surviving Sepsis Campaign is a global initiative to help reduce mortality from sepsis. This campaign utilizes a multidisciplinary approach to implement protocols that have been shown to improve outcomes in sepsis. Time-specific bundles call for providers to complete different tasks based on lapsed time since the recognition of sepsis. The three-hour sepsis bundle includes measuring lactate levels, obtaining blood cultures, administering antibiotics, and administering fluids if the patient is hypotensive or has an elevated lactate level of more than 4 mmol/L. Our community hospital data revealed a lack of adherence to standardized care. In our hospital, we noticed that the sepsis bundle order set is being utilized in less than 3% of sepsis cases.

AIM: The aim of this project is to improve compliance with sepsis bundle orders by 20% in six months to improve adherence to sepsis protocol.

Methods: Using the IHI Model, a quality improvement project was initiated. A multidisciplinary sepsis team was created including the ER physician, IM residents, nurses, pharmacists, and EMR representatives. The team had monthly sepsis meetings which focused on performing a root cause analysis and developing improvements in the system. PDSA cycles were used to test change. Education about sepsis outcomes, gaps, and protocols was provided to residents via multiple conferences. Residents were educated about documenting adherence in the EMR. Following implementation, data was collected to analyze compliance with documentation in terms of follow-up. Two PDSA cycles were completed to test changes. In the first cycle, education about guidelines was provided. In the second cycle, education along with a workshop was created to provide case scenarios and a Q&A session. For the third PDSA cycle, the team provided educational sessions about the sepsis bundle and the outcome benefits of standardized sepsis orders. We also sent emails summarizing recommendations from the sepsis committee meetings and reminders to use the sepsis bundle order set. We are currently collecting post-implementation data to measure the sepsis bundle next 6 months.

Conclusion/Next Steps: Improving sepsis outcomes by utilizing surviving sepsis campaign guidelines provides us with the tools necessary to reduce overall mortality from this condition. The most effective and sustainable results are usually created using a system-based approach and a multidisciplinary team. Our hospital sepsis committee is a great example of a multidisciplinary team approach to managing sepsis. We continue to meet monthly, re-evaluate the root cause analysis, incorporate education and EMR changes, and implement a reward program as part of a culture change that may lead to improvement in sepsis care.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 28**    **Category:** Continuous Quality Improvement/Evidence-based Medicine

**Residency Program:** Wayne State University Providence Rochester Hospital

**Presenter:** Anoop Mathew

**Additional Authors:** Zarghoona Wajid, Tamara Altaweel, David Samrah, Nabeel Bader, Kyle Gifford, Sarwan Kumar, Vesna Tegeltija

**Addressing Health Disparities in Inpatient Diabetes to Improve Patient Outcomes: A Resident Run Quality Improvement Initiative**

**Introduction:** The disproportionate impact of diabetes on racial and ethnic minorities and people with low socioeconomic status has been demonstrated time and again. The recent COVID-19 pandemic also highlighted the disadvantages borne by marginalized communities leading to poor health outcomes like higher prevalence rates, worse diabetes outcomes, increased complication rates, and higher readmission rates. Healthy People 2030 also focuses on achieving health equity by eliminating health disparities. As clinicians, it is essential to identify the social determinants of health (SDOH) and address these disparities to improve overall health outcomes.

**AIM:** To improve hospital readmission rates among patients with diabetes by 20% by addressing health disparities.

**Methods:** We used the IHI model of improvement to guide the project. Root cause analysis was performed using a fishbone diagram and a multidisciplinary team was involved in understanding barriers to identifying health disparities. An incomplete understanding of health disparities and the lack of a standardized discharge checklist for all diabetes patients were identified as key barriers. We tested a change on a small scale using the plan-do-study-act framework. During the 1st PDSA cycle, we conducted a pre-test survey (n=30) to determine the baseline understanding of health disparities among the resident physicians. We conducted an education session highlighting the importance of identifying SDOH. It also focused on effective ways to address disparities by identifying the lack of access to healthy food, lack of social support, referring patients to the outpatient diabetic education clinic, consulting inpatient dieticians, availability of cheaper insulin alternatives, and using the teach-back method to evaluate patient understanding. Post-test survey data (n=28) was collected two months after the education intervention to determine any improvement.

**Results:** An improvement in identifying SDOH was noted. About 90% felt that the education session was helpful and filled a gap in their knowledge. 80% of residents correctly identified race, education, and socioeconomic status as SDOH, whereas only 40% of the residents identified transportation, marital status, and health policy as SDOH. Post-education, there was a 50% improvement in the correct identification of all SDOH. There was a 20% increase in the number of residents who consulted dieticians for diabetes patients and referred patients to the outpatient diabetes education clinic. There was a 15% increase in using teach-back methods and a 50% increase in assessing for lack of social support.

**Next Steps:** The next step is to introduce a discharge checklist that includes the above-mentioned factors to all resident physicians. The usage of this checklist in the discharge summary for all diabetic patients admitted with hyperglycemia, DKA, or HHS and the readmission rates with diabetic-associated complications will be monitored.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 29    Category:** Research

**Residency Program:** Wayne State University Providence Rochester Hospital

**Presenter:** Wadid Sirry

**Additional Authors:** Alaa Taha, MD, Abdullah Yesilyaprak MD, Nabeel Badar, MD, Sarwan Kumar, MD, Vesna Tegeltija, MD

**Acute gout flares in hospitalized patients with inflammatory bowel disease, an NIS database analysis**

**Background/AIM:** Gout attacks have been associated with numerous risk factors as identified in existing literature. These factors range from dietary changes and dehydration to more clinical circumstances like hypertension and congestive heart failure. Recent studies have highlighted an increased prevalence of gout in patients with Inflammatory Bowel Disease (IBD) (ref). Building on this finding, our study leveraged the National Inpatient Sample (NIS) database to further investigate the potential association between IBD and the incidence of gout flares in a hospitalized patient population.

**Methods:**

Our study utilized data from the 2016-2020 NIS database, focusing on adult hospital admissions. We employed ICD-10-CM codes to identify relevant cases (Acute gout: M10, Crohn's disease: K50, Ulcerative colitis: K51). The primary objective was to evaluate the association between IBD and gout flare occurrences. Multivariable logistic regression were used to adjust for traditional risk factors and other possible confounders.

**Results:**

In our comprehensive analysis of 148,767,786 hospitalizations, we found that 2.8% (4,215,894) of admissions involved an acute gout attack. This cohort included 994,790 patients with Crohn's disease and 609,820 with Ulcerative Colitis. Notably, among the patients who developed gout, those with IBD were typically younger (68.5 vs. 70.6 years,  $P < 0.001$ ) and more often female (35.4% vs. 31.9%,  $P < 0.001$ ). Upon adjusting for traditional risk factors, our analysis revealed Crohn's disease and Ulcerative Colitis independently increased the risk of gout flares (OR 1.25, 95% CI 1.21-1.29; OR 1.05, 95% CI 1.01-1.08, respectively), while neither IBD-associated arthritis nor Rheumatoid Arthritis showed a significant association with gout flare risk (Table). Our results corroborate the findings in existing literature, highlighting traditional risk factors for gout flares including age, male gender, specific ethnic backgrounds (Black, Asian, or Pacific Islander), and various comorbidities such as Congestive Heart Failure (CHF), Hypertension (HTN), dyslipidemia, Diabetes Mellitus (DM), obesity, renal insufficiency, and lymphoma/leukemia. Social factors, particularly alcohol dependence or abuse, had a significant association. We also observed an inverse relationship between smoking and the occurrence of gout flares, consistent with prior research.

**Conclusion:** Our study shows a significant increase in the risk of gout attacks among hospitalized patients who have inflammatory bowel disease, particularly in patients with Crohn's disease. This increased risk remains significant even after adjusting for various established risk factors. There are studies that found a higher level of uric acid in patients with Crohn's disease and Ulcerative colitis which could account for these results.

Consequently, physicians should maintain a higher level of suspicion for acute gout flares in IBD patients who exhibit artralgiias or joint-related symptoms. Higher suspicion of acute gout flares should be present when evaluating patients with IBD when joint-related symptoms are present.

**2024 Michigan Chapter ACP and SHM Michigan Chapter Resident and Medical Student Day  
Resident Oral Presentations**

**Resident Oral Presentation # 30    Category:** Research

**Residency Program:** Western Michigan University Homer Stryker M.D. School of Medicine

**Presenter:** Alana Pinheiro Alves

**Additional Authors:** Ishan Purani, Nuha Mahmood, Shant Abhramian, Alec Johnson, Kathryn Garber, Matthew Belardo, Alec Johnson, Mujahed Abbas

**A Double-edged Sword: Secondary Bacterial And Fungal Infections In Hospitalized COVID-19 Patients Receiving Steroids**

**Background:** The high death toll from COVID-19 is caused by both primary disease and secondary complications, including bacterial and fungal infections. Several reports have emerged describing the increased risk of bacterial and fungal infections associated with the use of steroids in COVID-19 patients. Our study aimed to estimate the risk of this outcome associated with steroid exposure.

**Methods:** This study is a retrospective analysis of medical records of adult patients aged 18 years and above admitted to the hospital due to COVID-19 infection. Data mostly comes from 2020 and 2021, when vaccination rates were low, and the use of anti-viral medications was minimal. Notably, upon admission, many patients were given antibiotics for coverage of superimposed community-acquired pneumonia. These patients were classified as having infections before 48 hours of hospital stay. Steroid dose will be described in equivalents of dexamethasone.

**Results:** Data from 57 patients was analyzed. Half of patients (29 of 57) were diagnosed with intra-hospital infections after 48 hours of hospital stay, most of whom received steroids (93.1%), mainly dexamethasone. Eleven patients also received methylprednisolone, and four received hydrocortisone (mainly in the setting of septic shock). Patients without an infection after 48 hours used a mean dosage of 27.71 in dexamethasone-equivalents. For those who exclusively had infections after 48 hours, the mean cumulative steroid dosage was 123.4, with a median of 66 for dexamethasone equivalents. In the infection group, most patients had pneumonia (48.4%), followed by bloodstream infection without a known source (18.8%) and ventilator-acquired pneumonia (VAP) (15.1%). The diagnosis was clinical for nine patients (27.7%), and there was no known agent. The most commonly identified pathogens were coagulase-negative staphylococcus and MSSA, followed by MRSA and Pseudomonas aeruginosa. Only two patients had identified fungal infections (Candida albicans and Aspergillus). Among COPD patients, 27.5% had infections diagnosed after 48 hours of hospital stay. Only one patient in our cohort received tocilizumab. Of the deceased patients, two had infections acquired after 48 hours of hospital stay.

**Discussion:** Due to their well-known immunosuppressive effects, steroids have been a standard treatment for COVID-19 patients needing oxygen therapy. Our study reinforces previous findings that administering a corticosteroid like dexamethasone to COVID-19 patients can increase their chances of contracting secondary bacterial infections. This risk is exceptionally high for common pathogens associated with hospital-acquired diseases. Considering the study's flaws, especially its retrospective model, is essential. The study did not consider the impact of drugs like remdesivir and tocilizumab on immunity. There could have been multiple factors that led to an increased risk of infection for our patients. Some of the patients were given high doses of steroids due to concerns of exacerbation of COPD or as per clinical judgment. Even though the use of steroids resulted in worse infections and morbidity, the mortality rate was low. Our group is still determining the extent to which steroids have improved outcomes. The available data is conflicting despite some evidence showing a positive effect of steroids for specific subsets of patients.