



**NEW JERSEY ACADEMY OF  
FAMILY PHYSICIANS  
ANNUAL MEETING**

**RESIDENT AND STUDENT  
ABSTRACT COMPETITION**

**MAY 2024**

## **PARTICIPATING INSTITUTIONS**

Thank you to all the programs who submitted abstracts for this year's abstract competition.

Abstracts were received from the following programs:

### **Residency Programs**

AtlantiCare Family Medicine Residency Program

CentraState Medical Center Family Medicine Residency

Hackensack Meridian Health JFK Medical Center

Hoboken University Medical Center

Mountainside Family Practice

Ocean University Medical Center

Overlook Medical Center

Rowan University School of Osteopathic Medicine

St. Joseph's University Medical Center

St. Luke's Warren Family Medicine Residency

### **Medical Schools**

Robert Wood Johnson Medical School Rowan

University School of Osteopathic Medicine

### **Poster Judges**

Jen Brull, MD

David Cennimo, MD

Fran Griffin

Sara Leonard, MD

Jeff Zlotnick, MD

### **DISCLAIMER**

It is assumed that all participants adhered to the rules as stated in the submission form. It is also assumed that the abstracts submitted were original works, represented by the true authors.

**RESIDENTS**

# **Optimizing Healthcare: Streamlined Implementation of a Comprehensive Screening Protocol for Identifying High-Risk Patients, Facilitating Diabetes Management, and Ensuring Flu/COVID Vaccination Coverage**

Quality Improvement

Resident

Daniel Hong, DO | Alexis Torres, DO

Sabrina Deyhle; Ali Choudhary

AtlantiCare Family Medicine Residency Program

Diabetes Mellitus, a chronic metabolic disorder, continues to pose a significant health challenge, particularly in the South Jersey area, where genetic predisposition interacts with environmental factors such as diet, physical activity, and socioeconomic status to influence disease development. Complications stemming from uncontrolled diabetes, including cardiovascular disease, neuropathy, nephropathy, and retinopathy, exert substantial burdens on the American healthcare system.

As family medicine physicians, our objective is to implement a streamlined approach to promptly identify and intervene in cases of diabetes/prediabetes, aiming to mitigate disease progression and reduce associated complications. Through collaboration with this year's NJAFP collaborative, our focus lies in enhancing screening efforts, particularly targeting patients with a BMI  $\geq 25$  using an ADA screening tool and obtaining A1c measurements for individuals with ADA risk scores of  $\geq 5$ . Additionally, we seek to accurately assess vaccination rates for flu and COVID among the screened population.

In our study, conducted in a diversified urban FQHC setting, we engaged a multidisciplinary team comprising residents, attendings, and IT support to implement a 5 question ADA popup using ad hoc tools integrated into the EMR system. Presently, our data indicates that our average screening rates encompass approximately 28% of eligible patients, with documentation of flu and COVID vaccinations standing at 0.05%. We continue to implement different strategies to improve our screening with routine PDSA's and meeting check-ins.

Further research is warranted to explore effective interventions for newly diagnosed pre diabetics/diabetics and to accurately monitor the outcomes of such interventions. Leveraging the resources and collaborative efforts facilitated by the NJAFP Collaborative, we endeavor to acquire new insights and innovative strategies to address this persistent global health issue.

# Enhancing Diabetes Screening and Improving Vaccine Adoption in our FQHC.

Quality Improvement

Resident

Bianca Leuzzi, MD | Marielle Jamgochian, MD

Jagtar Sekhon, MD; Chandni Lotwala, MD; Christina Sheedy, MD; Yuliya Tsebriy, DO; Zachary Bloom, DO; Aasim Chaudry, MD; Maria Ciminelli, MD; Zeeshan Khan, MD; Nicole Castro, MD

CentraState Medical Center Family Medicine Residency

**Abstract:** Quality improvement at the residency level can be challenging due to rotating schedules, differing levels of interest, staffing, and population challenges. The NJAFP Learning Collaborative provided a template for NJ Family Medicine residencies to initiate quality improvement projects within their community clinics.

Our Family Medicine residency program embarked on a journey to see if we could increase screening of patients at high risk for metabolic disorders for prediabetes/diabetes at a rate greater than 90% and achieve 70% documentation of a current flu vaccine and COVID booster in patients with established pre-diabetes or diabetes. We began with educating office staff (e.g. medical assistants, receptionists, nursing managers), residents, and faculty on diabetes, risk factors to look out for in patients. Education was done through presentations during morning clinical team huddles. We made flyers and distributed them throughout the clinic for reminders on the project. We tried to improve the office workflow by implementing standing orders for medical assistants for a point of care A1c. We also worked to improve documentation of COVID and flu vaccines administered at the clinic and at outside pharmacies.

Through the above measures, our clinic's screening for prediabetes increased from 32% in beginning of October to an overall average of 70%, with a peak of 89.47% in December. We did not meet our goal of 70% flu and COVID in diabetic and prediabetic populations, likely due to multifactorial influences of lack of interest in COVID vaccination despite efforts at counseling.

Quality improvement is achievable in a clinic primarily run by residents as we saw in our screening for diabetes arm. Challenges faced in vaccine uptake may be due to systemic institutional gaps and population perceptions that need to be addressed through multidisciplinary efforts at the local/institutional, state, and national levels.

# Breaking the Barrier: Understanding Esophageal Ruptures

Clinical Inquiry

Resident

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Rutgers Robert Wood Johnson Medical School at CentraState Medical Center

**Abstract:** Esophageal rupture, though rare, poses a critical medical emergency, especially when intertwined with underlying malignancy such as metastatic squamous cell carcinoma. This case report examines the intricate challenges in diagnosis, treatment, and ethical decision-making surrounding a 66-year-old male presenting with mid-esophageal perforation secondary to metastatic squamous cell carcinoma.

The patient's clinical presentation was marked by altered mental status, electrolyte abnormalities, and sepsis, necessitating aggressive resuscitation and diagnostic workup. Imaging studies revealed extensive metastatic disease involving the esophagus, liver, bones, and lymph nodes, consistent with metastatic squamous cell carcinoma with a suspected primary esophageal origin. This extensive metastatic burden posed significant challenges in determining the optimal management approach for the esophageal rupture.

The standard treatment options for esophageal perforation, such as esophagectomy or primary esophageal repair, were not feasible in this case due to the patient's deteriorating clinical status and advanced metastatic cancer. As a result, alternative palliative measures, including esophageal stenting, emerged as potential options to alleviate symptoms and improve quality of life. However, the decision-making process was complex, involving discussions among multiple specialties, including hematology/oncology, radiation oncology, and palliative care.

The patient's deteriorating clinical status and extensive metastatic burden rendered conventional treatment options impractical, necessitating alternative palliative measures such as esophageal stenting. Ethical considerations, pivotal in guiding treatment decisions, entailed a delicate balance between aggressive interventions and palliative care, with active involvement of the patient and family.

Ultimately, transitioning to inpatient hospice care underscored the significance of holistic, patient-centered approaches in addressing the multifaceted needs of individuals with advanced cancer. The integration of palliative measures, such as esophageal stenting, highlighted the role of symptom management and comfort care in improving the patient's quality of life during the end-of-life phase.

This case report underscores the challenges and ethical dilemmas faced in managing esophageal rupture in the setting of metastatic squamous cell carcinoma. It emphasizes the importance of interdisciplinary collaboration, effective communication, and shared decision-making in providing comprehensive care to patients with advanced cancer and complex medical needs. The insights gained from this case contribute to the ongoing discourse on optimizing care strategies for patients with similar clinical presentations and highlight the need for a compassionate and holistic approach to patient care.

# New Onset Type 1 Diabetes Mellitus with Presentation of COVID-19 Infection and DKA in a Previously Healthy Adult Male: A Case Report

Clinical Inquiry

Resident

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**Abstract:** In this case we examine a patient with new onset of Type 1 DM after COVID 19 infection presenting with DKA and admitted to CCU for management. The patient was treated with insulin drip, potassium repletion, and hydration fluids for DKA, given remdesivir for exacerbation for COVID-19 infection, and supportive care for his concurrent symptoms. The patient was following up outpatient after 3 months for management of type 1 diabetes mellitus. Patient is currently on insulin 70-30 with sliding scale. From this, we concluded that there is a correlation of COVID-19 and T1DM onset in this patient can provide earlier intervention and improve outcomes for COVID-19 patients that have new onset T1DM. Furthermore, it will also be important to continue long-term surveillance of people with new-onset diabetes to ensure their risk factors are managed and that they achieve good glycemic control, as many may also have other symptoms of long COVID.

**Purpose:** Diabetic ketoacidosis (DKA) is an often fatal and serious presentation of new onset Type 1 Diabetes Mellitus (T1DM) patients that less often presents in adults with no history of autoimmune disease. While correlation between DKA and COVID-19 infection has been studied, reported cases involve patients <21 years of age or patients with established Type 2 Diabetes Mellitus (T2DM) [1,2]. We aim to highlight a unique case of new onset T1DM in a previously healthy 39-year-old man presenting at the time of COVID-19 infection with DKA.

**Methods:** Background research for this case report was conducted using a literature review. Key terms “DKA,” “Covid-19,” “Type 1 Diabetes Mellitus,” and “Adult” were searched on databases PubMed, Dynamed, and Google Scholar. Data collection of patients electronic medical record was done using most recent hospitalization, as well as previous medical records to correlate findings.

**Results:** Presenting in the Emergency Department with no past medical history, positive COVID-19 testing, and chief complaint of shortness of breath, this patient’s primary labs yielded a blood sugar result of 765. Subsequent Arterial Blood Gas showed a pH of 6.99 and bicarbonate value of 3.5; and urinalysis with +2 ketones confirmed Diabetic Ketoacidosis in this patient who had no history of diabetes mellitus. He was treated with insulin drip, potassium repletion, and hydration fluids for DKA, given remdesivir for exacerbation for COVID-19 infection, and supportive care for his concurrent symptoms. As he stabilized, further evaluation confirmed T1DM with labs demonstrating decreased C-peptide of 0.31 and elevated glutamic acid decarboxylase level greater than 250. It has been thought that viruses such as SARS-CoV and SARS-CoV2 can enter islet cells via angiotensin converting enzyme 2 receptors, which are strongly demonstrated on pancreatic islet cells [3]. This mechanism, as well as correlation of diagnosis of T1DM in COVID-19 positive patients, strongly proposes a causal relationship for researchers to explore.

**Conclusions:** Further research evaluating the mechanism of COVID-19 virus in promoting autoimmune response such as onset of T1DM can allow for better understanding of the progression of the virus itself. Moreover, illustration of the correlation of COVID-19 and T1DM onset in this patient can provide earlier intervention and improve outcomes for COVID-19 patients that have new onset T1DM.

# Cardiac AL Amyloidosis

Clinical Inquiry

Resident

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Christina Sheedy, MD; Bianca Leuzzi, MD; Evana Henin, MD; Zachary Bloom, DO

CentraState Family Medicine Residency

**Abstract:** Cardiac amyloidosis is a rare condition that occurs when abnormal collections of proteins accumulate in the myocardium of the heart. This condition is insidious and varied in presentation. The patient discussed in our case study did not have a confirmed diagnosis of cardiac amyloidosis because the patient expired prior to a definitive diagnosis being made. However her symptoms, physical examination, and imaging findings strongly suggest that she suffered from this rare and insidious disease. Furthermore, there was no cardiac MRI available at our community hospital, a common plight amongst community hospitals. Presumptive diagnosis in cases like these must be made using different combinations of more common modalities like echocardiography and serum light chain studies, which alluded to this diagnosis in our patient. In our case study we hope to illustrate the means available to community hospitals to make this diagnosis and the methodologies that exist in academic and high resource centers that are increasing in use nationally.



# The Role of Hyperbaric Oxygen as an Adjunct to Sodium Thiosulfate in the Treatment of Calciphylaxis

Research

Resident

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Centrastate Family Medicine Residency

**Abstract:** In this case we examine a patient with Calciphylaxis of the RLE secondary to ESRD on Peritoneal Dialysis. The patient has been receiving treatments of sodium thiosulfate for his calciphylaxis. Despite multiple treatment sessions, the patient's condition persisted. It was determined that treatments with sodium thiosulfate is ineffective due to poor tissue perfusion and, treatment with hyperbaric oxygen therapy would promote collateral circulation to facilitate penetration of sodium thiosulfate. The patient was managed in the outpatient setting with frequent visits with Wound Care, PCP, and Nephrologist. The treatment with STS lasted for 8 months and on the 9th month patient was started on hyperbaric oxygen therapy and had his PD dose increased by adding Icodextrin daily. After 2 months of hyperbaric oxygen therapy the patient's calciphylaxis was treated and his pain resolved. From this, we concluded that hyperbaric oxygen therapy should be an adjunct to sodium thiosulfate treatment for calciphylaxis.

# Improving Adolescent HPV Vaccination Rates Through Recommendation During Pre-Participation Sports Physicals

Quality Improvement

Resident

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**Introduction:** Human papillomavirus (HPV) is a common sexually transmitted infection that affects over 42 million individuals, with three-quarters of cases among those aged 15-24. As HPV is the leading cause of cervical and oropharyngeal cancers, it is essential to encourage vaccination at an early age, prior to exposure. HPV vaccination uptake, however, remains low. Although reasons are multifactorial, it is thought that provider recommendation is key to improving vaccination rates. Opportunities to offer vaccinations in adolescence, however, can be infrequent, as 1 in 3 adolescents do not attend well child checks (WCC) annually. With most states requiring a pre-participation examination (PPE) to participate in sports, a PPE may be the only occasion an adolescent is seen by a physician. This makes PPEs a crucial opportunity to promote HPV vaccinations. The purpose of this study is to improve HPV vaccine recommendation and vaccination rates during PPEs in an outpatient family medicine residency clinic.

**Methods:** We conducted a quality improvement study in a suburban, outpatient family medicine residency clinic using the Plan-Do-Study-Act (PDSA) methodology. Eligible patients included adolescents aged 11-18 presenting for PPEs. We established baseline data by determining the rate of recommendation as well as the vaccination rate of the HPV vaccine at PPEs. The key drivers in the PDSA cycles were to target nursing knowledge, resident knowledge, and resident communication at PPEs. We assessed the effectiveness of the interventions by monthly analyses of HPV vaccine recommendation and vaccination rates using standard run charts over 6 months of intervention.

**Results:** A total of 114 eligible patients attended PPEs during the data collection periods. The pre-intervention group consisted of 48 patients and the post-intervention group had 66 patients. Prior to the intervention, the median rate of recommendation of the HPV vaccine at PPEs was 17%. After three PDSA cycles over 6 months, the median rate of patients being offered the HPV vaccine increased to 60%. An analysis of the mean HPV vaccine recommendation rates at PPEs pre-intervention was 22%. Post-intervention recommendation rates improved to 55%. Pre- and post-intervention analysis of vaccination rates for eligible patients attending PPEs was also conducted. Preintervention data showed the mean HPV vaccination rate of patients attending PPEs was 8%, which increased to 41% following intervention.

**Conclusion:** Despite the near 100% efficacy of the HPV vaccine against persistent HPV infection, vaccination rates remain low among adolescents. It is essential for family medicine physicians to recognize that each visit should be used as an opportunity to vaccinate. With 8 million adolescents seen for PPEs each year, these visits are of paramount importance. Our quality improvement initiative demonstrated that improving provider recommendation at sports physicals reduces missed opportunities to vaccinate and can improve overall rates of vaccination. Our study demonstrates that provider recommendation may be a strong predictor of vaccine uptake, underscoring the physician role in low vaccination rates. Further studies should focus on the use of PPEs as an opportunity to address additional preventative services to adolescents who may be otherwise lost to follow up.

# Examining Treatment Efficacy For Bacterial Vaginosis in light of medication cost: A Quality Improvement initiative

Quality Improvement

Resident

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**Abstract:** Our study seeks to explore the effectiveness of PO Metronidazole compared to Intravaginal Metronidazole in treating bacterial vaginosis during pregnancy, particularly considering the low socioeconomic status of a significant portion of our clinic's patient population. Should PO Metronidazole prove comparable, it would guide treatment as a cost-effective option.

# A Quality Improvement Project to Optimize the Management in Populations at Risk of Type 2 Diabetes in an Academic Outpatient Setting

Quality Improvement

Resident

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Hoboken University Medical Center

**Abstract:** Despite the continuous progress in therapeutic advances, with an increase by \$80 billion in the national health care cost in the past 10 years (1), diabetes continues to be a global health concern with rising prevalence and less than ideal clinical outcomes (2,3). Because of this, there has been a surge of quality improvement (QI) initiatives to address the challenges that compromise diabetic care and its outcomes. Hoboken University Medical Center aspired to work with the project "Collaborating for a Healthier New Jersey 2023-2024" to improve the health of people at risk of prediabetes and type 2 diabetes. The project strived to screen 90 percent or more of appropriate patients for prediabetes or diabetes and appropriate documentation of flu vaccine and covid booster (70%) of at-risk patients, per CDC recommendations. After meeting set goals for patient screening, efforts were focused on improving lifestyle; specifically with referral to diabetic prevention programs and implementing modifications to their daily habits for an approximate 5% decrease in weight. Initial findings were static, however by the end of the study period a 2-3% weight loss was noted in the target patient pool. Another focus point for collaboration/study regarding documentation for Seasonal Influenza and COVID vaccine boosters in prediabetic/diabetic patients started below par, leading to the implementation of educational materials including but not limited to: CDC posters and pamphlets, clinic appointments for vaccine discussion, and including areas in medical records designated for documentation. After implementing these changes, an increase was appreciated for the target population. Collaborative efforts to improve the health and well-being of prediabetic and diabetic patients in Hoboken University Medical Center patient population have allowed the implementation of educational materials into daily practice, as well as noted improvement in documentation of screenings and vaccination recommendations as per CDC recommendations. The findings noted above can be applied to include a larger patient population in the outpatient setting, with hopes of further improving the quality of life of our patient population.

## Leveling up on Prenatal Screening for Substance Use Disorder

Clinical Inquiry, Quality Improvement

Research

Resident

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Mountainside Family Practice

**Abstract:** Substance use disorder is a modifiable risk factor for increased morbidity and mortality in adolescents and adults. It is also a major factor for maternal and neonatal adverse outcomes in pregnant persons. Furthermore, published reports quote up to 20% of pregnant persons endorsing substance use as polysubstance users. Of the prenatal population surveyed at our suburban family practice in the Northeast, we included 71 people. About 20% of these individuals screened positive for any substance use. Furthermore, 44% of those that screened positive, screened positive on >1 substance. This project highlights the need for standardized screening for substance use disorders in our prenatal patient population. Identifying individuals and providing resources for intervention and treatment are important to overall risk reduction. By introducing more training to residents and staff, implementing a standardized screening tool, and partnering with community stakeholders, we could reach the goal of capturing all at-risk persons in our pregnant population.

# Are High Risk Type 2 Diabetes Mellitus patients at Mountainside Family Practice Appropriately Prescribed SGLT2 or GLP1?

Quality Improvement

Resident

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Mountainside Family Practice

**Abstract:** The American Diabetes Association recommends that all individuals with type 2 diabetes mellitus who have an established cardiovascular risk should be prescribed a Sodium glucose co-transporter 2 inhibitor (SGLT-2) or Glucagon-like peptide-1 receptor agonist (GLP-1) regardless of their A1c. This quality improvement project looks to see if type 2 diabetic patients at Mountainside Family Practice who have a calculated ASCVD risk of  $\geq 10\%$  are on either one of these medications. Retrospective data sampling of 100 type 2 diabetic patients from 2020-2023 indicated that only 17% of patients were prescribed a SGLT-2 or GLP-1. This data suggests that the practice does not prescribe these medications consistently enough when they are warranted for our patients. Limitations to the results may be due to incomplete documentation, cost barriers, fear of injections, and availability of medications. Moving forward, we should assess each patient's risk appropriately and offer these medications if clinically appropriate.

# Recurrent ischemic Priapism in a 51-year-old Male with History of Alcohol Abuse on Quetiapine

Clinical Inquiry

Resident

Rubab Farooq, MD | Michelle Zhang, DO

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Ocean University Medical Center

**Introduction:** Priapism refers to a sustained erection that lasts for more than four hours and is not the result of sexual excitation. Priapism is classified as either low-flow or high-flow. Low-flow priapism, which is caused by inadequate venous outflow from the corpus cavernosum, results in painful penile ischemia. Low-flow priapism in adults most commonly arises as an adverse effect from treating erectile dysfunction (e.g., sildenafil). High-flow priapism is less common and usually the result of perineal trauma.

**Case report:** A 51-year-old male with a past medical history of obesity, alcohol abuse, anxiety (treated with Quetiapine) and priapism, presented to the emergency department complaining of an erect penis for 5 days after failing oral tadalafil. The patient had two prior episodes treated with aspiration and Winters shunt in the past year. In the ED, the patient underwent two unsuccessful attempts of corporal aspiration, irrigation, and intracavernosal phenylephrine to achieve detumescence. A Winter shunt was then attempted, and upon reevaluation the next day, there was no penile detumescence. Concerned for progression to ischemia from his fully rigid priapism, he was brought emergently to the OR for Quackels proximal penile shunt. Patient achieved about 85% detumescence and felt better. He was discharged with Toradol for pain and home medication Quetiapine was held. He was advised to follow up with his Urologist and an Addiction Medicine Specialist to consider Quetiapine alternatives.

**Discussion:** When you have a patient with low-flow priapism, pharmacologic and non-pharmacological causative factors must be considered. For individuals with acute priapism, medications that may exacerbate priapism, including certain anxiolytic, antidepressant, and antipsychotic medications should be avoided. It is known that alcohol consumption increases circulation and affects erectile function, possibly leading to priapism. However, the mechanism of how alcohol directly affects the corpus cavernosum is not fully understood.

Our patient was not currently using alcohol but had a history of anxiety and excessive alcohol use from 12-20 shots of liquor per week starting at age 19 and previously on Vivitrol, Buspirone, and Wellbutrin. Our patient's history of alcohol use disorder and current use of Quetiapine may have made him a more naive candidate for drug-induced priapism. Low-flow priapism is an uncommon but well-known adverse effect of antipsychotic medication use. There have only been a few case reports of priapism developing after quetiapine use. This case study emphasizes the importance of taking a thorough history including psychoactive substances, recreational drugs, and prior effective therapies and interventions. Recognition by clinicians and health education to patients that priapism is a possible adverse reaction from quetiapine is critical to treat it effectively when recurrent priapism occurs.

# Three Pyogenic Liver Abscesses in a 55-year-old Immunocompetent Male

Clinical Inquiry

Resident

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Kelly Ussery-Kronhaus, MD; Christopher Bader, DO; Kenneth Kronhaus, MD; Andrew Lee, MD; Apurva Patel, MD

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**Introduction:** The most common type of visceral abscesses are liver abscesses. A considerable proportion of pyogenic liver abscesses follow bacteria traveling through the hepatic artery during a state of bacteremia or sepsis. Most pyogenic liver abscesses are polymicrobial— a mix of enteric facultative and anaerobic species.

**Case report:** A 55-year-old male with a past medical history of supraventricular tachycardia and migraines presented with two days of intractable fever and one episode of watery, non-bloody diarrhea. In the emergency room, the patient was tachycardic and ill-appearing with a temperature of 103.1 °F. He was found to be septic with an elevated lactic acid and procalcitonin, mild transaminitis, and thrombocytopenia. Sepsis protocol and Piperacillin/Tazobactam was started. The following day, he complained about right upper quadrant tenderness. An abdominal ultrasound showed at least 3 hypoechoic to anechoic areas in the liver, suspicious for developing abscess versus neoplasm.

Patient underwent IR-guided drainage and biopsy. The multicystic hepatic collection of pus was aspirated and cultured. Blood cultures grew *Fusobacterium naviforme* and aspirate from the abscess grew *Proteus mirabilis*. After 8 days of Piperacillin/Tazobactam, he was discharged on 28 days of Amoxicillin/Clavulanic acid. During outpatient follow up, he showed clinical improvement with antibiotics and repeat CT imaging showed reduction in abscess size.

**Discussion:** Many hepatic abscess pathogens have been described including *E. Coli*, *K. Pneumoniae*, *S. aureus*, *S. pyogenes*. Our patient's blood cultures grew *Fusobacterium naviforme*, an obligate anaerobic Gram-negative rod-shaped that frequently colonizes the oropharyngeal and enteral microbiome. Aspiration of his liver abscesses grew *Proteus mirabilis*, a facultative anaerobic Gram-negative rod-shaped bacterium frequently found as a source of catheter-associated urinary tract infections. The variability reflects the different causes of liver abscesses and importance of a microbiology work up. Drainage of liver abscesses is both diagnostic and therapeutic, which is then followed by a total of 4-6 weeks of antibiotic treatment.

The typical presentation of pyogenic liver abscesses is a triad of fever (90%), abdominal pain (50-75%) – usually RUQ pain, and malaise. Blood cultures are positive in up to 60%, making imaging essential in helping to confirm the diagnosis and identify the underlying etiology. This case study further emphasizes the importance of taking a thorough history and work up, including cultures, of patients who present with non-specific high fever in the setting of sepsis in order to broaden the differential diagnoses and determine the appropriate treatment regimen. This is to ultimately prevent life-threatening complications (e.g., shock) and to take preventative measures to reduce the rare possibility of the increased incidence of colorectal cancer associated with pyogenic liver abscess.



# Intractable Nausea and Vomiting, Making Patients Sick in Unexpected Ways: A Unique Trigger of Sick Sinus Syndrome

Clinical Inquiry

Resident

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**Abstract:** Sick Sinus Syndrome (SSS), also known as sinus node dysfunction, is a cardiac condition characterized by the sinoatrial node's inability to produce a normal and consistent heart rate and rhythm, leading to issues like bradycardia, sinus pauses, and sinus arrest. Risk factors for SSS include hypertension, diabetes mellitus, and coronary artery disease. We present a unique case of sick sinus syndrome seen in a patient with SSS induced by intractable nausea and vomiting, underscoring the importance of a comprehensive approach in diagnosing and managing SSS. This case highlights the importance of heightened clinical suspicion and the utilization of inpatient telemetry for accurate diagnosis, as traditional EKG may not always reveal SSS. Despite initial attempts with atropine, the patient remained symptomatic with prolonged pauses, necessitating pacemaker placement which ultimately resulted in symptom resolution. The decision-making process involved collaboration between the inpatient medical team, cardiology, and consideration of an electrophysiology study. This case highlights the subtle clinical presentations of SSS and underscores the importance of considering this diagnosis in elderly patients with unexplained and vague symptoms. The successful outcome after pacemaker placement emphasizes the crucial role of interdisciplinary collaboration and tailored interventions in managing this disorder. Clinicians should remain alert, considering a wide range of possibilities for atypical triggers for SSS and for therapeutic approaches for optimal patient outcomes.

# Multidisciplinary Approach to Classic Hodgkin's Lymphoma, Nodular Sclerosis Subtype, Stage 3

Clinical Inquiry

Resident

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**Introduction:** Hodgkin's lymphoma (HL) is a rare malignancy of the lymphatic system characterized by the presence of Reed-Sternberg cells. The cause of HL is still unknown. It predominantly affects young adults, with a peak incidence between the ages of 15-35 years and after the age of 55. HL is divided into two main categories, classical and nodular lymphocyte predominant types. HL is diagnosed by the combination of history, physical examination, labs, imaging, and biopsy. Staging of HL is based on a few factors, including whether it's found in one region, the side of the diaphragm it's located, and if it spread to other organs.

**Case Study:** 21-year-old female with a past surgical history of tonsillectomy and adenoidectomy at age 5 presented to the ER with recurrent fevers: TMax 103; which had been ongoing for a week. For the past month, she had a cough, shortness of breath and lumps on the left side of her neck, treated initially with Zpak but symptoms lingered. She also reported an approximate 20lb unintentional weight loss over the past 2 months. She denied smoking, alcohol, or drug use, but reported family history of breast and lung cancer in one of her great aunts, and multiple myeloma in another. On physical exam, patient was tachycardic and had left sided cervical lymphadenopathy. Labs showed WBC 15.7, CRP 30.5 and ESR 97. CT Soft Tissue Neck W/Contrast showed innumerable diffuse multistation bilateral cervical chain lymph nodes measuring up to 3 cm; highly concerning for malignancy. Immunohistochemical stains showed Hodgkin-Reed-Sternberg cells positive for CD30, CD15, PAX5 (weak). Neck biopsy resulted in classic Hodgkin's lymphoma, nodular sclerosis subtype and PET scan showed she was in stage 3. Patient was advised to start chemotherapy outpatient with Nivolumab + AVD (DOXOrubicin/VinBLASTine/Dacarbazine). ObGyn discussed fertility preservation options with the patient and an informed decision was made to move forward with chemotherapy. To prevent tumor lysis syndrome, prednisone 60 mg and allopurinol 300 mg daily were prescribed. PET/CT after 3 cycles of nivo-AVD showed great improvement, with decrease in size of multiple lymph nodes and resolution of previously noted pathologic uptake. The follow-up plan is to repeat PET/CT after completion of 6 cycles nivo-AVD.

**Discussion:** This case underscores the importance of prompt evaluation and multidisciplinary management in young patients presenting with concerning symptoms such as lymphadenopathy and unintentional weight loss. The treatment regimen employed in this case is consistent with current guidelines for the management of Hodgkin's lymphoma. The successful treatment outcome observed in this case highlights the efficacy of Nivolumab-based regimens in HL and emphasizes the significance of fertility preservation discussions in young cancer patients. Further studies and long-term follow-up are necessary to validate these findings and optimize treatment strategies in similar patient populations.

# Shots for Success: Enhancing Vaccination Rates Among Diabetics

Quality Improvement

Resident

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James Ding, MD; Robert Taylor, DO; Kenneth Kronhaus, MD

Ocean University Medical Center

**Introduction:** As part of the NJAFP Resident Learning Collaborative, this quality improvement project is designed to improve the percentage of vaccination rates in the prediabetic and diabetic population in NJ. Patients were screened for diabetes and were recommended flu and COVID vaccines to improve health outcomes, through patient centered talking points rather than general vaccine information.

**Methodology:** Population Selection: Patient population was obtained from a private Family Medicine practice in suburban New Jersey. Any patient that had an in-person visit or telehealth visit within the months studied was eligible to be included in the data analysis. Using the practice's Electronic Medical Record (EMR), eligible patients with a documented history of "impaired fasting glucose", "prediabetes", or "diabetes" were included in the data analysis for vaccination compliance. These patients were evaluated for documentation of up-to-date influenza and COVID vaccines. Patients who had both vaccines were considered "completely vaccinated". Those who had documentation of only one vaccine or no vaccines were "incompletely vaccinated". Monthly baseline data for complete vaccination was obtained from diabetic and pre-diabetic patients who had an office visit from June 2023 to August 2023. Within this population, an up-to-date vaccination was defined as an administration of the influenza vaccine within the 2022-2023 winter season and administration of the COVID vaccine within the 2022 to early-2023 time period. From September 2023 onwards, an up-to-date vaccination was defined as an administration of the influenza vaccine for the following 2023-2024 winter season and administration of the most recent COVID vaccine that was released in the same month of September 2023.

Starting September 2023, any incompletely vaccinated diabetic or pre-diabetic patients presenting to the office received follow up phone calls from family medicine residents counseling them on staying up to date with vaccinations. An initial script using neutral language was created to keep counseling uniform and to avoid any stigmatization around vaccinations. Patients who expressed consideration about obtaining vaccinations were followed up within the next month to assess for completion and/or documentation of vaccination status in the EMR. Complete vaccination rates were assessed monthly. A PDSA method was applied to further develop the intervention. Adjustments were made through multiple PDSA cycles to increase vaccination rates which include emphasizing a patient's increased risk for complications from viral illnesses and increasing in-person counseling to patients within the clinical setting. The goal rate for completely vaccinated pre-diabetic and diabetic patients was set at 70%. Secondary measure was an increase in overall vaccination rates of both the recent influenza and COVID vaccines.

**Results:** Over the course of the study, there were 976 total patient visits that were eligible for diabetic screening based on the eligibility criteria. Of those 976 patients, 819 were screened and 515 patients were documented with the diagnosis of pre-diabetes or Diabetes Mellitus. At the start of the study, the vaccination rate for both flu and covid-19 was 2.44%. During the last month of the study the vaccination rate was 17.89%, and the overall vaccination rate over the course of the study was 9.12%.

**Discussion:** Efforts to enhance patient-centered care should focus not just on infrastructural changes but also on improving communication, understanding, and involvement in care processes. Additionally, measuring patient-centered care poses challenges, as existing metrics often conflate behaviors with outcomes and may not fully capture patients' experiences or needs. This study displayed improved metrics after patient centered care was introduced.

# Womb Warrior: Triumphs in Pregnancy with Uterine Didelphys

Research

Resident

Reema Iqbal, MD | Danielle Nhan, DO

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Ocean University Medical Center

**CASE SUMMARY:** A 28 y.o G3P0020 female at 37-weeks' gestation with uterine didelphys presents with an elevated blood pressure of 159/102 mmHg, ongoing headaches, and history of two spontaneous abortions. Throughout her pregnancy she was closely monitored for preterm labor and fetal growth restrictions. She was placed in observation to rule out pre-eclampsia, and serial blood pressures were monitored. Fetal heart monitor was reassuring, and symptoms resolved. A week later, she was sent to the hospital by maternal fetal medicine after a routine ultrasound revealed no fetal growth; induction was recommended. Given her complicated history of uterine didelphys, both the mother and fetus were at increased risk for a complicated vaginal delivery. The risks and benefits were discussed, and she was induced with Cervidil and later given two doses of Cytotec. After another dose of Cervidil was administered, she did not progress, resulting in failed induction of labor. Blood pressures were monitored closely and treated with nifedipine and magnesium. Primary cesarean section was conducted secondary to failed induction for 2 days, fetal growth restriction and preeclampsia. During the surgery, a didelphys uterus was visualized with two uteri and two cervixes. Pregnancy was noted in the left uterus and a nonpregnant right uterus. Two days after delivery she was discharged with her newborn.

**DISCUSSION:** Uterus didelphys, defined as the presence of two uteri, two cervixes, and at times a longitudinal vaginal septum, is a congenital anomaly seen in 2% - 5.5% of women of reproductive age due to failure of Mullerian duct fusion. Uterus didelphys is one of the least common Mullerian duct anomalies, occurring in about 1 in 1000 women. Up to 32 % of pregnant women with uterine didelphys experience spontaneous abortions and 28% will have a preterm delivery, which warrants frequent prenatal appointments for close monitoring. We present a case of a successful cesarean section in a pregnant female with uterus didelphys after failed induction of labor. Due to a septate vagina, in 75% of cases, there are difficulties with vaginal birth thus the capacity of conception continues to be a topic of debate. In women with recurrent miscarriages or preterm birth, metroplasty can be considered. Due to insufficient evidence of metroplasty or surgical correction it is usually not conducted.

In successful pregnancies, per guidelines, a primary cesarean delivery is not permitted unless there is a thick and inelastic vaginal septum, which increases the risk of vaginal dystocia. However, the birth rate by cesarean section is reported to be 82% which is the most frequent means of successful delivery in these patients. This high rate of cesarean section warrants a revision of guidelines to prevent prolonged labor as seen in this case. Developing comprehensive clinical guidelines for managing patients diagnosed with uterine didelphys is imperative to mitigate the risk of complications effectively.

# Barriers to Exclusive Breastfeeding Initiation and Duration Among Mothers at Overlook Medical Center's Health Start Clinic

Research

Resident

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Overlook Hospital

**Abstracts:** The health benefits of breastfeeding for infants, children, and mothers are well established however data from the CDC shows a significant decline in breastfeeding duration across the U.S. According to the CDC Breastfeeding Report Card in 2020, 46.9% of the babies born in the U.S. were exclusively breastfed through 3 months of age, however, only 25.6% of babies were exclusively breastfed through 6 months of age. In NJ, only 41.2% of infants were exclusively breastfed at 3 months and only 23.5% at 6 months in 2019. The current recommendation for breastfeeding is to encourage exclusive breastfeeding for the first 6 months of life. Lack of support from loved ones, inadequate hospital/provider practices, and sociocultural factors are known barriers to breastfeeding initiation and duration. There have been numerous studies demonstrating the various barriers to achieve breastfeeding goals among mothers nationwide and statewide. However, the specific population of postpartum mothers at the Health Start Obstetric Clinic at Overlook Medical Center has never been assessed. There is a need for better understanding the unique needs of this patient population in order to help our healthcare providers including pediatricians, obstetricians and family physicians address the challenges of breastfeeding faced by our local community. The purpose of this study was to examine barriers to timely initiation and duration of breastfeeding among mothers in the Health Start OB Clinic at Overlook Hospital. This longitudinal cohort study aims to examine barriers to timely initiation and duration of breastfeeding among mothers in the Health Start OBGYN Clinic at Overlook Medical Center. Participants: Participants (N = ~ 54) were recruited from the OBGYN Health Start Clinic. Inclusion criteria included expected delivery date between 8/2023 to 12/2023, consent to participate, and completion of initial breastfeeding survey. Data was collected in multiple stages: initial breastfeeding survey completed prior to delivery by participant followed by telephone interviews conducted at 2 weeks, 1 month, and 3 months postpartum.

**Results/Conclusions:** Pre- and post-surveys were collected from mothers during the gestational and postpartum periods which asked about breastfeeding goals and challenges. We found that only 27% of participants had a specific duration goal for breastfeeding. We also found that 73% planned to do both breast and formula feeding with the majority reporting a concern for low milk supply.

Interestingly, we found that 72% were offered formula before leaving the hospital.

Of the participants, 51% continued to breastfeed at the 1-month postpartum period. We found that only 14% reported receiving breastfeeding support at 4 weeks postpartum following discharge from the hospital. Based on our results, it is evident that there is room for breastfeeding support during both the gestational and postpartum periods.

Limitations include the use of self-reported measures, potential response bias, and constraints on data collection such as losing participants to follow up.

# Contact Dermatitis or Paraneoplastic Syndrome?: A Case of Atypical Dermatomyositis Resulting in End Organ Involvement and Significant Functional Decline

Clinical Inquiry

Resident

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Overlook Medical Center | St. George's University School of Medicine

**Abstract:** An 81-year-old Caucasian male with HTN and 50+ years past smoking history presents to the hospital with significant dysphagia, diffuse pruritic rash, unintentional 20 lb. weight loss, and increased fatigue. Dermatologic findings were initially thought to be contact dermatitis related to home construction work during preceding months of outpatient evaluations. After sudden dysphagia developed the patient was admitted for inpatient care. Initial endoscopic evaluations yielded no structural abnormalities. Standard rheumatologic labs were largely within normal limits including a normal Creatinine Kinase level. However, further workup was notable for elevated aldolase and MRI findings significant for muscular edema consistent with myositis. A diagnosis of dermatomyositis was made. Standard treatment of high dose oral prednisone and intravenous immunoglobulin was initiated. Unfortunately this course was complicated by aspiration pneumonia due to loss of swallow ability and loss of independent ambulation. This case highlights the importance of recognizing atypical presentations of dermatomyositis early, emphasizing the need for a multidisciplinary approach to achieve accurate diagnosis and optimize patient outcomes in a timely and cost-effective manner.

Dermatomyositis (DM) is a rare idiopathic inflammatory myopathy characterized by progressive, symmetric, proximal muscle weakness and a subset of characteristic cutaneous findings. It is believed to result from either an autoimmune process or a paraneoplastic process. The reported incidence is 1 in 100,000 and typically affects females from 40-60 years old. Characteristic cutaneous findings include gottron's papules, shawl sign, periungual erythema, and heliotrope eruption. However, atypical presentations in patients that do not fit typical disease demographics can challenge timely diagnosis and management. In this report, we aim to explore the current understanding of DM, dysphagia in DM, the significance of a normal CK but elevated aldolase, the role of MRI in diagnosis, and recent advancements in management.

Dysphagia is a non-classical presentation of DM. The estimated prevalence of dysphagia in DM is 32.3%. The pathophysiology is theorized to be that the muscles involved in swallowing are injured resulting in significant weakness. Our patient failed multiple swallow evaluations and remained an aspiration risk requiring placement of a PEG tube for an alternate source of nutrition. The incidence of idiopathic inflammatory myositis patients needing a PEG tube is 2.4%.

Contributing to the challenge of diagnosis, our patient's CK was within normal limits. Further studies showed elevated aldolase (9.1), LDH (262), and myoglobin (265). Although elevated CK remains part of the classic criteria for DM, a retrospective review study found 26% (17/66) of DM patients to have normal CK value at presentation. Of the 17 DM patients with normal CK, aldolase levels were checked in 12 patients and found to be elevated in 9 cases (75%).

Our study is limited by the absence of a biopsy/ pathological evidence to date. The case is currently ongoing, and the patient remains hospitalized. It is possible that future workup will include biopsy. This case underscores the relevance to family medicine by demonstrating how evaluation of what was thought to be a common rash could lead to missing a potentially life-threatening diagnosis.

# Exploring Family Medicine Residents' Engagement with Employment-Based Behavioral Health Support

Quality Improvement

Resident

Ashley Park, DO

Stuart Green, DMH, LCSW; Joseph Tribuna, MD

Overlook Medical Center

**Background:** With increasing awareness of burnout and mental health disorders amongst medical residents, more initiatives promoting resident wellness have been incorporated into residency programs. In addition, many hospital systems offer behavioral health services for employees. The Overlook Family Medicine Residency Program in Summit, NJ incorporated employment-based behavioral health counseling sessions into the resident schedule during the 2023-2024 academic year. Residents were scheduled sessions to meet with a counselor for up to three sessions to confidentially converse with a trained professional. There was no cost attributed to the sessions. Residents were offered the option to opt out of this experience if they desired. Later in the academic year, residents participated in a focus group to gather qualitative data regarding their experiences.

**Design:** Qualitative focus group

**Subjects:** 9 residents of Overlook Family Medicine out of 21 total residents. 5 of the 21 residents chose to opt out of sessions. The focus group included participants who opted out. 1 PGY-1 resident, 3 PGY-2 residents, 5 PGY-3 residents

**Setting:** 45-minute focus group

**Methods:** Sessions with an employment-based counselor were scheduled for residents by the residency program's behavioral health specialist, who was the linkage between both parties. Residents participated in an in-person focus group during which a set of pre-determined questions aimed to gain insight into the experiences with employment-based counseling. The conversation was recorded with participants' consent and audio reviewed to gather themes.

**Results:** Theme 1: Work vs. Personal stressors, Theme 2: Importance of an individualized wellness plan, Theme 3: Time constraint as a barrier, Theme 4: Stigma of seeking help

**Discussion:** The inability to capture all residents' perspectives in a single focus-group due to scheduling conflicts was a limitation to the findings of the study, which may have highlighted additional themes or influenced the nature of the conversation. In the contemporary workplace, the boundary between work-related and personal stressors often become blurred, presenting challenges for individuals navigating an employment-based behavioral health service. This ambiguity underscores the need for clarity in the focus of employment-based counseling sessions to effectively address expectations. Additionally, the importance of an individual tailored plan for mental health wellness that fits diverse needs and preferences was recognized by the participants, whether it involves formal counseling or alternative wellness strategies. The issue of time creating an individual plan is a significant limitation for medical residents who have competing demands and priorities. Addressing this barrier by improving flexibility and ease of scheduling one's own sessions to accommodate busy schedules can enhance this experience for residents in the future. Moreover, continued stigma surrounding mental health in the medical field further complicates this landscape, deterring residents from seeking help or openly discussing struggles. Introducing this service to the residency program and scheduling sessions on behalf of the residents in an opt-out format aimed to confront these challenges. This study highlights the potential for proactive mental health initiatives within residency programs in ensuring that residents have access to resources that they may not have otherwise sought out independently.

# A First Step in Improving one of Medicine's Most Vulnerable Times: The Discharge

Quality Improvement

Resident

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Rowan School of Osteopathic Medicine

**Abstract:** There is currently a lack of research on discharge summaries in the United States compared to other countries, such as Australia and the United Kingdom. One study showed that an alarming 61% of discharge summaries had at least one reconciliation error. Similar studies revealed that the use of pharmacists, multidisciplinary teams, and educational conferences can help aid in decreasing these errors. The timeliness and accuracy of discharge summaries is essential in creating a seamless transition for a patient's care. Research shows that practitioner understanding is vital to the success of a discharge summary. This would be most beneficial in many realms including but not limited to overall patient safety, continuity of care, and enhancement in the overall trust in the healthcare system. This is especially important to family doctors due to their role in care coordination. Studies indicate family doctors are accurate in their facilitation of their own patients' transfers between different stages of healthcare, but the timeliness of discharge coordination can then become a limiting factor. Early integration of discharge summaries in medical school curriculums would allow for incoming residents to be more confident and prepared in the facilitation of a successful discharge.

Implementation of standardized practices and precise communication are needed to augment the efficacy of modern-day discharge summaries both between inter-facility transfers and home-based care. This poster aims to propose a way to introduce medical students to the construction of a successful discharge summary, and how a multidisciplinary approach can enhance the utility and safety of each transition of care. The program would consist of students from multiple disciplines of health care including nursing, pre-med, pharmacy, social and others, who would collaborate and after a short period of instruction, have the opportunity to construct their own multidisciplinary discharge summary based on a case presentation. The utility of a curriculum like this would allow for students to enhance collaboration skills while at the same time learning one of the most critical sources of unsafe patient transitions.

The basic structure of the curriculum would start with an introductory survey that could assess the students' understanding of discharges to form a baseline. This would be followed by a facilitator leading a short lecture to students of multiple disciplines on what that anatomy of a discharge contains, and then allow in a group setting for learners to be able to construct their own discharge summary with a debrief session with the facilitator at the conclusion. The approximate time of one session of this program which has the potential to significantly improve the preparedness for students entering the workforce would be between 1-2 hours, after which a closing survey would be used to assess the experience and comfort level of students to perform discharge summaries to the highest level.



# An Exceedingly Unusual Case Of Disseminated TB With Testicular And Prostate Involvement

Clinical Inquiry

Resident

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Shideh Doroudi, MD; Christine LeRoy, MD, PhD; Mukundha Maneyapanda, MD

St. Joseph University Medical Center Family Medicine Program | St. George's University

**Abstract:** A 58-year-old male presented initially with complaints of testicular pain. He was evaluated with ultrasound of the testicles, which demonstrated acute left epididymo-orchitis. He received outpatient treatment with Ceftriaxone 500 mg IM one time, and a course of cephalexin and doxycycline. Unfortunately, he failed to improve on this regimen and was hospitalized for worsening pain, and scrotal swelling with a draining lesion. Inpatient septic workup was unremarkable, and he was treated with vancomycin and piperacillin-tazobactam without any improvement. Tumor markers were negative for testicular malignancy. Given continued treatment failure, worsening leukocytosis, and concern for malignancy or atypical infection, left radical inguinal orchiectomy was planned. However, upon preoperative evaluation, multiple cavitory lesions with a potential Ghon focus were apparent on chest radiograph. This prompted additional testing, which demonstrated a positive TB Quantiferon and CT chest imaging findings concerning for tuberculosis. He was started on a multi-drug regimen for active disseminated tuberculosis with testicular and prostatic involvement. On adequate therapy for tuberculosis, he had near total resolution of the testicular mass and drainage, so surgical management was not warranted.

This case is an interesting example of a rare cause of acute scrotal infection by disseminated tuberculosis, which resolved with appropriate anti-tuberculous therapy. The most common causes of scrotal infections include *Neisseria gonorrhoea*, *Chlamydia trachomatis*, *Escherichia coli*, and *Pseudomonas spp.*, which typically demonstrate susceptibilities to our initial therapies.

However, as is seen in this case, given the continued presence of tuberculosis in our treatment area, having a strong index of suspicion for the possibility of tuberculous infection is important in cases which do not resolve with typical therapy.

# Healthier North Jersey: Part of NJAFP Collaborative Residency QI Project

Quality Improvement

Resident

Kyrillos Ghattas, MD | Marian Ghaly, MD

Andrew Abdelsayed, MD; Christine LeRoy, MD, PhD; Shideh Doroudi, MD

St. Joseph's University Medical Center

**Background:** The "Healthier North Jersey" quality improvement project is part of the New Jersey Academy of Family Physicians (NJAFP) Residency Collaborative. With the obesity epidemic we are currently facing, far-reaching screening and comprehensive management of prediabetes or diabetes and its complications are imperative. The aim during this 2023-2024 Collaborative QI project was to improve the overall health of patients at risk of or diagnosed with Prediabetes or Type 2 diabetes. As a university hospital-based residency clinic, high-quality comprehensive care for our patients is a strong focus of our mission, yet our patient population is challenged by many social determinants of health, obesity, and limited medical literacy. Given these challenges, we hoped to assess our current rates of prediabetes and diabetes screening, as well as improve our diabetes education efforts.

**Design and Methods:** Through a multidisciplinary team including residents, physicians, a collaborative pharmacist, and nursing, we hoped to perform appropriate prediabetes and diabetes screening on at least 70 percent or more of eligible patients. Following a Plan-Do-Study-Act (PDSA) method which involved continued review and assessment of screening and education, monthly reports were populated for the appropriate cohort of patients in our practice, including those aged 35-70 years with a BMI greater than or equal to 25 kg/m<sup>2</sup>, or with a previous diagnosis of gestational diabetes mellitus. In the aforementioned cohort, the number of people with an HbA1c, fasting glucose, or glucose tolerance test ordered or completed during the visit or with a documented result within the past 36 months were considered appropriately screened.

**Results:** Baseline data showed that the mean and median prediabetes and/or diabetes screening rates for the months of August and September 2023 were 89.34 percent and 89.35 percent, respectively. Our mean and median prediabetes and/or diabetes screening rate is 89.2 percent and 89.02 percent, respectively for 5 consecutive months (Oct 2023 – Feb 2024). Our screening rate for February 2024 was 90.43 percent.

**Discussion:** These results demonstrate strong baseline screening for diabetes and prediabetes in our practice, with a 90% screening rate of appropriate patients. However, our PDSA cycles demonstrated additional opportunities for screening and diabetes education. Implementation of the validated ADA/CDC prediabetes risk assessment tool across the practice will improve patient screening. Additionally, while we utilized a multidisciplinary approach through integrated medication co-management with our collaborative pharmacist, we do not have a structured Diabetes Prevention Program. Using available nearby resources, we compiled a list of locations for patients who have, or are at risk of prediabetes or diabetes, in order to receive structured diabetes education. Moving forward, we will monitor screening rates and assess improvements in patient care through diabetes prevention programs. Ultimately, we hope to continue incorporating all aspects of our patients' physical, mental, and psychosocial health to best improve diabetes outcomes.

# Developing an Addiction Medicine Track in a Rural Family Medicine Residency

Quality Improvement

Resident

Biju Babu, MD | Gayathri Gurumurthy, MD

Gregory Dobash, MD; Steven Picozzo, MD

St. Luke's Warren Family Medicine Residency

**Introduction:** According to the 2022 National Survey on Drug Use and Health (NSDUH): 38.7 million American Adults met criteria for a substance use disorder (SUD). Almost 75% with a SUD had alcohol use disorder (AUD), besides other SUDs such as opioid misuse. Only about 1 in 10 people with a SUD received evidence-based treatment in any setting. 1 in 20 were treated in specialized SUD facilities. Alcohol misuse costs the United States \$249 billion annually and illicit drug use costs \$193 billion. Family Medicine physicians are in an ideal position to diagnose and treat SUDs through SBIRT and prescribe MOUD. Training rural family physicians in Addiction Medicine will increase the number of clinicians in our rural areas equipped to face the opioid epidemic.

**Methods:** The Addiction Medicine Track provides interested residents with immersive elective experiences in an outpatient MOUD clinic, a residential treatment facility, an inpatient medication-assisted withdrawal floor, time in the Toxicology department, and time with domestic violence and homeless shelters. Additional requirements for the track include completion of a QI project in the field of Addiction Medicine, presentation of monthly lectures to the residency program, conducting MAT and Opioid waiver training, present at ASAM conferences, and becoming members of St. Luke's Rural Opioid/Psychostimulant Response Steering Committee.

**Learning Activities:** MOUD Clinic, Department of Toxicology, Medication Assisted Withdrawal Unit, Counseling Services, Research/QI, Independent Study

**Results:** The track was started in the calendar year 2023. After graduation, we will track the number of residents who are x-waivered, apply for an Addiction Medicine fellowship, present at national conferences including ASAM, conduct MAT/MOUD waiver training and incorporate the treatment of addiction in their clinical practice at five years after graduation.

**Conclusion:** The Addiction Medicine track is a unique way to equip interested Family Medicine residents with the tools to provide comprehensive medical care for patients with substance use disorders. This track is part of a rural residency program that intends to train and retain its graduates in our rural communities while keeping with the ACGME's requirements of six months of elective experience. We are confident that our residents will be well qualified to enter an Addiction Medicine Fellowship should they choose that route. In this way, we intend to increase the rural workforce that is adept at treating the disease of addiction and its comorbidities and continue the fight against this epidemic.

## Wrong Number, Who's This?

Quality Improvement

Resident

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Majed Dayoub, MD

St. Luke's Warren Family Medicine Residency

**Abstract:** A middle-aged patient with multiple comorbidities presents to the ED with a relatively benign condition. The patient is sent home after appropriate interventions and some pending labs with instructions to follow-up with their PCP. Those labs were later found to be severely abnormal, and despite multiple calls and voice messages, the patient is unreachable. Months pass with multiple attempts via phone, EMR messaging, and even certified mail, but no success. What do you do now? We propose a standardization of best practices in such circumstances, incorporating an interprofessional approach, with a goal of increasing patient safety and minimizing rehospitalizations. We take into consideration not only the well-being of our patients but the excessive costs of ED visits and hospitalizations that could be avoided with more aggressive outpatient follow-up. By standardizing the approach to such scenarios, we believe that there will be a significant improvement in overall patient safety and healthcare cost burden. The limitations to this study include the criteria for which patients would qualify for this algorithm being at the discretion of the clinical judgement of the provider and the variable resources available in different healthcare systems. We believe that having a well-defined guideline for providers can help mitigate these limitations.

# Saving Lives by Completing Your Patients' Chart on Time

Quality Improvement

Resident

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St. Luke's Warren Hospital Family Medicine

**Abstract:** Have you ever been frustrated when you are trying to find more information on a patient's chart and the previous provider has not completed his/her notes yet? This is why our program emphasizes on completing our charts on time. Our programs official policy is to complete outpatient notes on the same day or latest by 24 hours of seeing the patient because this directly ties into patient safety as well as for the provider who see the patient next to deliver an informed decision according to what previous provider did. Even with our clear policy, several residents were still falling behind in completing the notes on time. Therefore, Incomplete Office Note Audit (IONA) was started. Every week, EPIC outpatient report was run, and the Incomplete Office Note (ION) numbers were emailed to residents and faculties every Sunday as a continuous Plan-Do-Study-Act (PDSA) method. Although this led to improvement, we still had some incomplete charts. To get further improvement, we modified our weekly data reporting to add the cumulative numbers of incomplete charts. There was some resistance in the beginning of the implementation due to everyone being able to see accumulation of numbers next to their names, but we started to see the ION numbers decreasing rapidly. With positive encouragement and rewards when everyone had no ION that week, we finally were able to see several weeks in a row without any ION on the reports. Again, completing notes is not just about getting the work done, but it can save patient's lives by providing information to either ED providers or hospitalists when patients get admitted. On the contrary, if medication adjustment was made during the visit and the note was not completed, and then following provider makes another medication adjustment, not knowing the previous medication adjustment can harm the patient. It took many months of hard work (over 40 weekly reports) and implementing different ways to encourage resident physicians to complete the notes on time, but all the work was worth it for the patients, saving lives and doing no harm. In conclusion, using EHR to audit charts with weekly reminders and using the principles of continuous PDSA cycle resulted in marked improvement in chart completion at our residency program.

# A Novel Collaboration Between Medical and Dental Providers: Identification of Gaps in HPV Vaccination Status

Quality Improvement

Resident

Anna Derian, MD

St. Luke's Warren Hospital Family Medicine

**Statement of Purpose:** In an effort to increase HPV vaccination rates, we are screening patients in our dental clinic for HPV vaccination status. Patients are counseled about HPV and head and neck cancers and are offered vaccination at their dental visit.

**Methods:** All patients scheduled for the dental clinic were screened for age (11 to 26 years) and for HPV vaccination status. Eligible patients 18 years of age and older were contacted through the patient portal of the EMR and given information about HPV and head and neck cancer and the available vaccines. All eligible patients were given non-branded, St Luke's University Health Network approved, culturally sensitive patient education materials at their dental visit. Interested patients could receive the HPV vaccine at the time of their dental visit.

**Brief Statement of Results:** To date, we have had 9 months of patient screenings. We have given 7 HPV vaccines at patients' dental visits.

**Conclusions and Implications for Future Research:** We are 9 months into this collaboration. Most routine dental visits occur at six-month intervals. Most vaccinations are provided at well child checks at yearly intervals. We have given threes vaccines through the dental clinic, but we are optimistic that the number will increase as patients cycle through their dental visits and well checks.

# Developing an Obesity Medicine Track in a Rural Family Medicine Residency

Quality Improvement

Research

Resident

Gayathri Gurumurthy, MD | Biju Babu, MD

Gregory Dobash, MD

St. Luke's Warren Hospital Family Medicine

**Statement of Purpose:** According to the CDC, more than 70% of the US population is overweight or obese. Being overweight and obese are also major risk factors for the development of many chronic conditions. Fortunately, family physicians are uniquely positioned to manage these chronic conditions while addressing obesity-related comorbidities and social determinants of health that drive unhealthy weight.

**Methods:** The Obesity Medicine Track (OMeT) provides interested residents with immersive elective experiences in Bariatric Surgery, Bariatric Medicine, Dietary and Nutritional Services, and Medical Fitness. Additional requirements for the OMeT include the completion of a QI project in the field of Obesity Medicine and the presentation of monthly lectures to the residency program.

**Results:** The OMeT was started in the calendar year 2023. Three inaugural OMeT residents were determined at the time of publication. After graduation, we will track the number of OMeT residents who apply for an Obesity Medicine Fellowship, sit for the Obesity Medicine Board Exam, and the number who incorporate the treatment of obesity in their clinical practice at five years after graduation. So far, one resident has successfully completed the Obesity Medicine board exam. We will also track the number of presentations at different meetings related to Obesity Medicine.

**Conclusion:** The OMeT is a unique way to equip interested Family Medicine residents with the tools to provide comprehensive medical care for patients who are overweight/obese. This OMeT is part of a rural residency program that intends to train and retain its graduates in our rural communities while keeping with the ACGME's six months of elective experience requirements. We are confident that the OMeT resident will be well qualified to enter an Obesity Medicine Fellowship should they choose that route. In this way, we intend to increase the rural workforce adept at treating all the diseases surrounding obesity and continue the fight against this epidemic.

**STUDENTS**



# Understanding Menstrual Migraines: Current Treatments and Implications for Family Medicine Practice

Clinical Inquiry

Student

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Nancy Phillips, MD

Robert Wood Johnson Medical School

**Introduction:** Menstrual migraines (MM) are prevalent among a significant portion of the female population yet remain poorly understood despite their debilitating nature and profound impact on the quality of life of those affected. Presently, there are no FDA-approved treatments specifically for MM. Given the high prevalence of this condition, family medicine physicians are likely to encounter patients struggling with it, emphasizing the need for a comprehensive understanding of effective management strategies. This abstract delves into the presentation of MM and critically examines the existing body of research pertaining to potential treatments.

**Case Description:** The International Classification of Headache Disorders (ICHD) has established criteria for diagnosing pure menstrual migraine without aura (PMM) and menstrual related migraine without aura (MRM). According to these criteria, PMM attacks must occur within two days before or after the onset of menstruation and persist in at least two out of three menstrual cycles. MRM attacks may occur within that time frame, or at other times of the menstrual cycle. Common accompanying symptoms include nausea, vomiting, sensitivity to light or sound, and fatigue. Research indicates that compared to other migraine types, migraines in women with MRM are typically longer in duration, more severe, and less responsive to symptomatic treatment. Furthermore, a study revealed that among individuals sampled, those experiencing MM missed work at least three days in the last three months. Current literature on MM suggests that declining estrogen levels may make blood vessels more susceptible to prostaglandins, triggering neurological inflammation and precipitating migraine pain. Additionally, estrogen influences levels of neurotransmitters in the brain such as serotonin, which are also implicated in migraine pathophysiology.

**Discussion of Practice Guidelines:** While the FDA has yet to endorse any medications explicitly for managing MM or their subtypes, various studies have demonstrated the efficacy of different pharmacological therapies. For example, multiple studies reported statistically significant pain relief associated with the use of triptans. Additionally, non-triptan agents like magnesium have demonstrated efficacy in reducing the frequency of headache days. In another study, naproxen sodium showed promise in decreasing both the average number and duration of MMs by several hours. Mini-prophylaxis for MMs involves employing preventive measures specifically timed around menstruation to alleviate the severity and duration of symptoms. These measures encompass pharmacological interventions like triptans alongside other preventive approaches such as non-invasive vagus nerve stimulation and oral contraceptives as potential methods to stabilize hormone levels and mitigate MM symptoms.

**Conclusions:** In summary, MMs represent a significant burden for affected individuals, impacting daily functioning and overall quality of life. Despite their prevalence and debilitating nature, the understanding of MMs remains limited, and effective management strategies are still evolving. The lack of FDA-approved treatments tailored for MMs underscores the need for further research in this area. Additionally, understanding the molecular mechanism behind MMs may provide insights into the development of novel therapies. Moving forward, collaborative efforts among researchers and primary care providers are essential to advancing our understanding of MMs and developing more effective treatments to alleviate the burden they impose on those affected.

# How Project ECHO Enhances Clinical Care in a Student Run Free Clinic

Quality Improvement

Student

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**Background:** Project ECHO is a globally recognized educational program that builds learning communities for participants to share expertise and problem-solve patient and client situations, extension for community healthcare outcomes. Rutgers Project ECHO - Diabetes-Related Chronic Kidney Disease is a virtual health education and mentoring program improving population health in New Jersey. Leaders include multidisciplinary practitioners: endocrinologists, nephrologists, clinical pharmacists, behavior health, peer educators, and patient advocates.

**Hypothesis:** Participants of Project ECHO usually practice in the community, serve as both learners and teachers, share, and receive support, guidance, and feedback from their peers.

**Design and Setting:** We received special permission to bring 4 MD/PharmD students, 2 student doctors, and 2 student laboratory committee members to participate in seven monthly sessions between fall of 2022 to spring of 2023, including case presentation. At the conclusion of ECHO sessions, we completed survey with aggregate practice-level metrics. We continue monitoring patients with regular visits and blood tests in our longitudinal clinic.

**Results:** We have gained valuable skills to screen, diagnose, and manage the renal complications of diabetes, delaying development of chronic kidney diseases. At the same time, these 8 MD-PharmD students become champions for change within clinic practice for addressing diabetes disparities and the effectiveness of the ECHO model to support training.

The core student participants brought back knowledge and skills learned and help student doctors of the free clinic to identify the following issues:

CKD Disparities & Social Determinants of Health to Achieve Diabetes Management Goals; Best Practices to Address Diabetes-Related CKD, Approaches to Identifying CKD & the New Kidney Health Evaluation; SGLT2 Inhibitors and GLP-1 Agonists: Diabetes Agents that Improve Renal Outcomes; Halting CKD Progression: From Optimizing Hypertension Management to Newer Agents; Primary Care Provider Interventions to Arrest CKD Progression; CKD & Renal Transplant Disparities; Management of CKD.

**Discussion:** After discussion with faculty advisor of this student-run free clinic, we set priority to provide evidence-based medications to patients despite limited budget. Student leaders of various committees in the clinic are committed to improving patient outcomes, subsequently, the clinic obtained a one-year grant for HIPHOP Promise Clinic Diabetes Action Plan 2024-2025, IRB application approval is pending.

**Conclusion:** The entire project is not only relevant to family medicine practice but also a unique education to medical students – future physicians, we witness the interdisciplinary team care, evidence-based intervention, cost vs. benefit consideration. Most importantly, it provides better services to a vulnerable population in the community.

# Assessing the Impact of Demographic Factors on Public Awareness of the Human Microbiome

Research

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**Background and Hypothesis:** The human microbiome has been increasingly recognized for its role in health maintenance, immunity, and disease susceptibility. While research initiatives, including the Human Microbiome Project, have grown our understanding of this complex ecosystem, the general public often lacks comprehensive knowledge when compared to healthcare and scientific communities. Furthermore, studies assessing microbiota knowledge among the public are lacking. This is notable considering previous studies have hypothesized that microbiota knowledge may motivate health behaviors in terms of individual's lifestyle choices related to diet, probiotics, and safe antibiotic use. This study aimed to evaluate demographic characteristics of the public associated with more vs. less microbiome knowledge, hypothesizing that specific age and gender groups may be less informed.

**Design, Subjects, Setting:** A 5-question survey was administered to general community members who attended Rutgers Day 2023. Rutgers Day is an informational open house that showcases activities of Rutgers University located in New Brunswick, New Jersey.

**Methods:** Responses to two survey questions assessing basic microbiome awareness, "Have you ever heard of the microbiome before?" and "Do all people have the same microbiome?", were collected. Responses were sorted by age and gender to assess for differences in microbiome knowledge. Descriptive statistics were used to summarize percentages. Chi-squared test was performed to assess significance ( $p < .05$ ).

**Results:** Overall, 148 survey responses were collected. Most respondents had heard of the microbiome and most were aware people did not have the same microbiomes. When sorted by age, those 18-24 were most likely to respond yes to having knowledge of the microbiome (71.4%) compared to those aged 25-34 (70%), 35-44 (61.1%), 45-54 (61.1%), 55-64 (69.2%), and 65+ (55.5%). Similar results were found for the "same microbiome" when sorted by age: participants aged 25-34 were most likely to respond no (90%), compared to groups 18-24 (67.1%), 35-44 (66.7%), 45-54 (61.1%), 55-64 (69.2%), and 65+ (55.5%). Age groups 45-54 and 65+ exhibited the highest percentage of 'don't know' responses (33.3%). More females had heard of the microbiome than males (70.5% vs. 61.4%) and were aware that people had different microbiomes (73.8% vs. 62.5%). However, there was no significant difference by age group or by sex.

**Discussion:** Most surveyed participants were aware of the microbiome and that it varied among individuals. No statistical difference was noted by age or sex. Limitations include skewing of the study sample towards a younger population, as the survey was administered at a college festival. Additionally, survey-specific factors related to the scope, depth, and readability of questions may limit definite conclusions and generalizability of results. Considering recent advancements in understanding the impact of microbiota on health, distribution of simplified, evidence-based microbiome information should be a public health priority. This will enable family medicine providers to better tailor recommendations and consumer education regarding topics related to gut microbiome health, such as probiotic and antibiotic use, to help patients make more informed healthcare decisions. Additional

research is necessary to identify gaps in the public's awareness of microbiota and determine whether addressing these gaps could help promote health behaviors.

# A Case of Mirtazapine-Induced Thrombocytopenia

Clinical Inquiry

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**Abstract:** Mirtazapine is a common atypical antidepressant that is prescribed for the treatment of major depressive disorder. It acts by inhibiting the presynaptic alpha-2-adrenergic receptors, leading to the increase of norepinephrine and serotonin. Mirtazapine also inhibits the serotonergic 5-HT<sub>2A</sub>, 5-HT<sub>2C</sub>, and 5-HT<sub>3</sub> receptors, leading to an increase in serotonin which will interact with the 5-HT<sub>1</sub> receptors. The increase in the noradrenergic and serotonergic neurotransmission is responsible for Mirtazapine's antidepressant effects. Mirtazapine also has been used off-label for treating insomnia and decreased appetite. Thrombocytopenia is a rare and reversible hematologic complication that can occur in patients undergoing Mirtazapine therapy, defined as the reduction in platelet count less than 150,000/microliter.

An 89-year-old female was discharged to subacute rehab for physical deconditioning following hospital admission for a syncopal episode. During her hospitalization, the patient was started on Mirtazapine for major depressive disorder, as well as to address concurrent symptoms of poor sleep and decreased appetite. The patient was known to have normal platelet counts initially. Routine labs done 3 days since initiation of mirtazapine 7.5mg po daily showed a platelet count of 141,000/microliter. The patient's platelet count would continue to downtrend with the lowest being 1 week following admission, with a platelet count of 60,000/microliter. Suspicion was raised that this was due to the recent addition of Mirtazapine therapy, as no other etiology could be linked to the patient's thrombocytopenia. Once Mirtazapine was discontinued, the patient's platelet count began to return to baseline with each subsequent lab draw. CBC at 5 days following the discontinuation of the medication showed a platelet count of 167,000/microliter.

This case sheds light on the rare complication of Mirtazapine-induced thrombocytopenia. Drug-induced immune thrombocytopenia is a life-threatening clinical syndrome that is underdiagnosed. It is speculated that this occurs due to the clearance and/or destruction of platelets opsonized by a drug-dependent antibody, in contrast to heparin-induced thrombocytopenia. The drug-dependent antibody was found to bind the glycoprotein (GP) IIb/IIIa complex resulting in thrombocytopenia. In patients being treated with Mirtazapine, it is important to monitor platelet count to prevent complications due to thrombocytopenia.

# Exploring Family Medicine Residents' Attitudes and Utilization of Social Services to Address Social Determinants of Health

Quality Improvement

Student

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**Introduction:** Social determinants of health refer to the environmental factors that significantly influence patient well-being and healthcare outcomes. This burden should not be carried by healthcare providers alone, and collaboration with social services can help mitigate these issues. Primary care physicians play a pivotal role in addressing these determinants by utilizing social services and effectively documenting social risk factors using ICD-10-CM codes. Codes Z55-Z65 allow for non-medical factors that may impact a patient's health to be recorded as a diagnosis. Utilization of these codes allows for tracking of a population's social needs, as well as highlighting the resources needed to address them. This study aims to describe Family Medicine Residents' attitudes towards and utilization of social services, as well as their proficiency in applying ICD-10-CM codes (Z55-Z65) to identify patients negatively impacted by social determinants of health.

**Methods:** A survey-based quality improvement study was conducted among family medicine residents enrolled in a residency program based in an urban environment. The survey was developed to assess residents' perceptions of the intersection between medicine and social services, their screening practices for various social needs (housing, transportation, mental health, food insecurity, access to healthcare) and the frequency of utilizing these services. Additionally, residents were asked about their familiarity with, and utilization of ICD-10-CM codes related to social risk factors (Z55-Z65). Descriptive statistics and thematic analysis were employed to analyze the survey responses.

**Results:** Initial findings revealed a general consensus on the importance of physicians' responsibility in addressing social determinants of health. The survey also showed diverse screening practices for social needs among family medicine residents, potentially influenced by factors such as awareness of available resources and perceived effectiveness. Mental health was the most consistently screened social determinant, while housing and transportation were among the lowest. The referring practices to social services also varied significantly among the residents. The study also identified gaps in knowledge and documentation practices related to ICD-10-CM codes for social risk assessment and management, as a majority of residents were unfamiliar with the codes Z55-Z65. Challenges in coding practices were evident, including inconsistencies and underutilization of relevant codes.

**Conclusion:** This initial study describes current perceptions and practices of Family Medicine Residents training in an urban setting and highlights the importance of improving residency curriculum to integrate work with social determinants of health. Improving understanding and utilization of social services, as well as becoming proficient in documenting social risk factors using ICD-10-CM codes, is crucial for improving patient care. Increased utilization of these codes would highlight the added layer of complexity in providing healthcare to patients with increased social needs and help to advocate for more financial support to serve these populations. Targeted interventions aimed at enhancing awareness, improving documentation practices, and incorporating social determinants of health education into residency program curriculums are recommended to optimize healthcare delivery and patient outcomes for underserved populations.

# Impact of State Abortion Laws on Medical Students' Career Choices

Research

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**Abstract** In June 2022, abortion access became limited in many states after the Supreme Court's *Dobbs v. Jackson* ruling. As a result, the regulations on abortion now vary from state-to-state. As medical students proceed through their education, state laws surrounding abortion may factor into their decision about where to train for residency.

The purpose of this study was to determine whether New Jersey (NJ) medical students receive abortion education, intend to provide abortions in the future, and perceive abortion laws to be an important factor in deciding in which state they will complete residency training. We hypothesized that a majority of medical students in NJ are exposed to abortion in their medical education, as the state is considered permissive with regards to abortion law. We also hypothesize that exposure to abortion in medical school is positively correlated with future plans to provide abortions, as well as a perceived importance of attending residency in a state where abortion is legal.

For this cross-sectional study, we created an 8 question Qualtrics survey that was distributed online via electronic messaging. The survey was sent to students in years 1-4 at all five NJ medical schools. Items on the survey include questions regarding demographics, student medical education, and intention surrounding future practice location and intention to provide abortion care. Data was analyzed via chi-square and logistic regressions.

Of the 387 responses, 44.2% of medical students reported exposure to abortion education in their preclinical education, while 18.9% reported clinical exposure. There was a significant relationship between exposure to abortion in clinical years and plans to provide abortions ( $p < 0.001$ ). There was also a significant relationship between preclinical exposure and perceived importance of attending residency in a state where abortion is legal ( $p = 0.007$ ).

Students who intend to provide abortions in the future say it is more important to attend residency in a state where abortion is legal compared to students who do not plan to go into these specialties ( $p < 0.001$ ). Those entering fields where they will perform abortion (OR 2.91, 95% CI 1.34-6.34) and those who are knowledgeable of NJ laws (OR 1.72, 95% CI 1.01-2.92) have greater odds of finding that doing a residency in a state where abortion is legal is important.

Our results demonstrate that the majority of NJ medical students do not receive abortion education, despite that abortion is accessible in NJ. However, those students exposed to abortion say that practicing in a state with permissive abortion laws is important to them. This was especially evident in students entering fields related to reproductive health and those who intend to provide abortions.

One limitation of this study was the potentially uneven distribution of responses at each school, given that abortion education may vary by school and students were not asked to report where they attend. Medical education surrounding abortion should be standardized to increase student exposure and awareness. Further, family medicine programs must prepare for how these regulations impact residency applications.

# Exploring a Correlation Between Age and The Effectiveness of Osteopathic Manipulative Techniques in Managing Chronic Low Back Pain

Research

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**Research Question:** "Does age influence the effectiveness of Osteopathic Manipulative Treatment (OMT) in managing chronic low back pain among adults aged 21 to 80?"

**Abstract:** Background: Chronic low back pain (CLBP) is a prevalent musculoskeletal condition affecting individuals across all age groups, with significant implications for quality of life and healthcare utilization. CLBP is defined as persistent and recurring pain or discomfort in the lower back region, typically lasting for more than three months. CLBP affects an estimated 632 million people worldwide and is the leading cause of disability, in the U.S CLBP accounts for over 3.7 million physician visits/year. Over the past couple of years there has been increased support for the use of OMT in the management of CLBP, in 2007 there was more than 18 million Americans who received OMT estimating a total annual out of pocket cost of \$3.9 billion.

**Purpose:** Analyzing age-based data, this review aims to address the limited statistical support for OMT in CLBP management. By identifying age-specific subgroups where OMT demonstrates efficacy, this research seeks to enhance CLBP management guidelines, potentially mitigating the necessity for expensive invasive interventions.

**Hypothesis:** Analysis of data will support the effectiveness of OMT in the elderly population (adults 50 and above) when compared to younger adults (<45).

**Methods:** The literature review was conducted by gathering data from three main databases, PubMed, De Gruyter, and Elsevier. Using the search term "osteopathic Manipulative treatment for chronic low back pain" articles were then filtered by date of publication within the last 10 years. Articles were also limited to research consisting of clinical trials (CTs) and randomized controlled trials (RCTs). The literature used in this review was limited to reviews providing open access.

**Results:** Recent research findings suggest variations in the effectiveness of OMT for CLBP across different age groups. While OMT demonstrated less effectiveness in managing CLBP among younger adults under the age of 45, it showed more consistent results in reducing CLBP intensity among older adults aged 50 and above. However, OMT's impact on improving low back functionality appeared limited in this older population. These findings contradict previous studies suggesting OMT's ineffectiveness compared to sham treatment, providing new insights into its efficacy in CLBP management.

**Discussion:** Age appears to be a significant factor influencing the effectiveness of OMT in treating chronic low back pain. Understanding age-related variations in treatment response is crucial for optimizing CLBP management and improving outcomes for patients receiving OMT. Further research is needed to elucidate the underlying mechanisms and develop personalized approaches to OMT based on age-specific considerations. This literature review could serve as a valuable resource for osteopathic physicians, physiatrists, physical therapists, and other healthcare professionals involved in the management of chronic low back pain, informing clinical decision-making and guiding future research directions.