

**POSTER: 1****“Pediatric Subperiosteal Abscess”****CATEGORY:** Clinical Inquiry**AUTHOR(S):** Patrick Norris Correa, D.O., Nicole M. Fiore, MD, Sarah A. Rawstron MB,BS**INSTITUTION:** Hackensack Meridian Health - Ocean Medical Center**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** Millions of patients are diagnosed with sinusitis annually. While many are treated with antibiotics, uncomplicated sinusitis typically resolves without medical intervention. Regardless of treatment method, sinusitis that may have originated from a chronic upper respiratory tract infection, is an extremely common affliction that most practitioners can be safely assumed to be familiar with. Subperiosteal abscesses (SPOA) are by all accounts, a concerning complication of the common sinusitis diagnosis, however, in various studies, this process was a common finding, with an incidence of 15-34%. Prompt recognition of a SPOA is required to prevent life-threatening sequelae and permanent vision loss. Presented today, is a case of a 10-year old Caucasian female diagnosed with a 14x5mm subperiosteal abscess secondary to long-standing sinusitis.

**POSTER: 2****“A Closer Look At Frequency Of Diabetes Office Visits And HgbA1c Control”****CATEGORY:** Research**AUTHOR(S):** Emmet Fenichel, MD, Daniel Cruz, Ph.D., ABPP, George W. Miller, Jr., MD, FAAFP, CMRO**INSTITUTION:** Hackensack Meridian Health Ocean Medical Center**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** Diabetes is public health problem of epic proportions which (per CDC) is the attributable cause of death of thousands of individuals in the United States annually. The impact of diabetes from an economic standpoint is also devastating costing (per ADA) the US economy hundreds of billions of dollars per year. As such strategies for optimally managing this disease need to constantly be evaluated and modified as appropriate. In this retrospective study which spanned over a two year time frame the possible correlation between frequency of diabetes mellitus office visits and HgbA1c control was evaluated. Were patient's who presented to their PCP for a diabetes follow up visit more frequently found to have better control of their diabetes (as measured by HgbA1c control) versus patient's who presented to their PCP less frequently for diabetes mellitus follow up visits? This question was examined further. Two groups (each consisting of 40 diabetic patients) were analyzed; "Group A" were diabetic patient's who presented 2 times to the residency outpatient office for a diabetes follow up visit and "Group B" were the diabetic patient's who presented to the residency outpatient office greater to or equal to 3 times. Data was gathered from the EMR and subsequently analyzed.

**POSTER: 3****“Surviving the impossible, a pH incompatible with life”****CATEGORY:** Clinical Inquiry**AUTHOR(S):** Brittney Grella MD, Alex Gusler, MD, Michael Kaufer, MD, Kelly Ussery-Kronhaus**INSTITUTION:** Hackensack Meridian Health Ocean Medical Center**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** A 66-year-old male with a past medical history of type 1 diabetes mellitus presented to the ER with 1 day of shortness of breath, vomiting, and urinary frequency. The patient stopped using his insulin pump once these symptoms started. On physical examination, the patient was tachycardic (heart rate of 102 beats per minute) and tachypneic (respiratory rate of 30 breaths per minute), using his accessory muscles to breathe. The patient was alert and oriented to person and place but not to time. He was able to answer questions and follow commands. Significant laboratory studies included: glucose 991 mg/dl (70-99 mg/dl), small acetone (negative), sodium 127 mmol/L (136-145 mmol/L), potassium of 7.2 mmol/L (3.5-5.2 mmol/L), creatinine 3.83 mg/dl (0.61-1.24 mg/dl), anion gap greater than 40 mmol/L (5-13 mmol/L), carbon dioxide undetectable (24-31 mmol/L), lactate 12.3 mmol/L (0.5-2.0 mmol/L). His venous blood gas revealed a pH of 6.505 mg/dl (7.35-7.45), pCO<sub>2</sub> of 27 mg/dl (35-45 mmHg), and HCO<sub>3</sub> of 2.1 mg/dl (22-28 mmol/L). His electrocardiogram revealed sinus rhythm with 1st degree atrioventricular block (PR interval of 210 milliseconds). The patient's heart rate decreased from 82 to 40 to 20 beats per minute, his rhythm converted to pulseless electrical activity (PEA) and asystole, and cardiopulmonary resuscitation was started. The patient was given two 1-liter boluses of normal saline, started on an insulin drip and a sodium bicarbonate infusion, and given intravenous pushes of the following: atropine, epinephrine, sodium bicarbonate, amiodarone, and calcium chloride. The patient was intubated for airway protection and the hypothermia protocol was initiated. His blood pressure became unstable and he was started on norepinephrine at 15 mcg/min. Return of spontaneous circulation (ROSC) was achieved after 14 minutes. The patient was admitted to the intensive care unit for further evaluation. His subsequent arterial blood gas improved with a pH of 6.808 mg/dl, PCO<sub>2</sub> of 20.5 mg/dl, and HCO<sub>3</sub> 6.3 mg/dl. The patient improved over the course of his hospitalization and was ultimately extubated with no neurological deficits. Diabetic ketoacidosis (DKA) is a fatal hyperglycemia with high rates of

morbidity and mortality. The pathogenesis involves insulin deficiency and an increase in counterregulatory hormones ultimately resulting in hyperglycemia, osmotic diuresis, loss of water and electrolytes, impaired renal function, and ketoacidosis. The treatment of DKA involves fluid resuscitation, correction of hyperglycemia, correction of electrolyte abnormalities, and correction of precipitating factors. This patient presented with a pH of 6.505 mg/dl with no neurological sequelae. It is important to recognize that this pH is not usually compatible with life, and this patient is lucky to have survived. This case report also provides us with the opportunity to complete a literature search and discuss the lowest pH values compatible with life.

**POSTER: 4**

### **“Demographics of interventional radiology (IR) guided biopsies in a community hospital”**

**CATEGORY:** Research

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**INSTITUTION:** Hackensack Meridian Health Ocean Medical Center

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**ABSTRACT:** Background: The purpose of this research project was to look at the distribution of biopsies being completed in a community hospital while patients are hospitalized as inpatients. This is important because inpatient biopsies can result in increased adverse events for the patient, increased lengths of stay, and decreased costs paid to the hospital (outpatient biopsies are more cost effective for the hospital). In the future, we would like to look at whether it is necessary for biopsies to be completed as an inpatient versus outpatient. Methods: A chart review of data from 51 patients ranging in age from 30 to 89 years old who underwent IR-guided biopsies over a 5-month period from March 1st 2019 to July 20th 2019 was completed. There were 22 female patients and 29 male patients. Out of the 51 patients, 2 of the patients underwent 2 different IR-guided biopsies during the same hospital admission. Results: It was determined that all 51 biopsies yielded a diagnosis (malignancy or other), identified tumor histology, or confirmed presence of metastases for staging. New malignancy or metastases was diagnosed in 39 patients. There were 12 patients who underwent biopsies that confirmed diagnoses not consistent with malignancy. For example, one patient had a renal biopsy, which confirmed a diagnosis of Granulomatosis with Polyangiitis. The most common biopsies completed were lung (29%) and liver biopsies (25%). There were 2 patients who suffered a pneumothorax as a result of their lung biopsy. Additionally, we looked at whether a patient’s biopsy was delayed (more than 2 days from when the biopsy order was placed). Of the patients, 14 had a biopsy that was delayed by 2 days. However, 40 of the patients did not have delayed biopsies. The lengths of stay for the patients ranged from 2 days to 34 days. Only 6 of these patients had lengths of stay less than 5 days. Conclusions: Our project aim was to look at the distribution of various biopsies being completed in the inpatient setting. The most common biopsies completed were lung and liver biopsies. Two biopsies resulted in adverse outcomes for the patients. We would like to complete a future study in order to determine whether or not these biopsies can be completed as an outpatient in order to decrease lengths of stay and increase costs paid to the hospital.

**POSTER: 5**

### **“Traacherous Transfusions: A Case Presentation of Transfusion Related Acute Lung Injury (TRALI)”**

**CATEGORY:** Clinical Inquiry

**AUTHOR(S):** Brittney Grella MD, John Jeffrey Mosko, DO, Julie Tang MD, Timothy Wu MD, J., Kenneth Kronhaus MD, Christopher Bader DO

**INSTITUTION:** Hackensack Meridian Health Ocean Medical Center

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** A 69-year-old male with an extensive past medical history including T-cell prolymphocytic leukemia (status post chemotherapy) complicated by CMV viremia presented with abdominal pain and non-bloody diarrhea. On physical examination, the patient was found to be tachycardic (heart rate of 108) with a 2/6 holosystolic murmur at the right upper sternal border. His hemoglobin was 9.1 g/dl (12.0-17.5 g/dl) on admission. An electrocardiogram (EKG) was significant for sinus tachycardia and T wave inversions. Troponins were trended every 6 hours: first 0.05, second 0.04, third 0.05, and fourth 0.03. An echocardiogram (ECHO) revealed an ejection fraction of 55%. His initial chest x-ray (CXR) revealed no focal consolidation or effusion. A CT abdomen/pelvis showed an early small bowel obstruction, iliotibial colitis, and an intramural abscess of the sigmoid colon. As the patient had prior CMV viremia and a positive CMV PCR, it was determined he likely had CMV colitis. On day 3 of admission, the patient’s hemoglobin trended down to 6.7 g/dl and he was transfused 1 unit of packed red blood cells (PRBCs). Repeat hemoglobin approximately 5 hours later was 6.8 g/dl and another transfusion was given. Due to increasing weakness and shortness of breath; a chest x-ray was obtained and showed new diffuse perihilar air space disease with a differential including pulmonary edema, acute respiratory distress syndrome (ARDS), hemorrhage or diffuse pneumonia. Additionally, the patient was found to have a rectal temperature of 102.2°F and he became hypotensive. Repeat hemoglobin later that evening was 6.3 g/dl, and an additional unit of PRBCs was given. The patient began to fail non-rebreather oxygen therapy and was placed on BiPAP. Subsequently, the patient was transferred to the intensive care unit and was intubated and sedated. He failed to maintain his mean arterial pressure (MAP) and he was started on pressors. The patient was unable to tolerate rotation of 45 degrees for ARDS because of persistent desaturation and increased pressor support requirements. Over the course of his hospitalization, his

hemoglobin continued to drop and he received a total of 24 units of PRBCs. An endoscopy was negative for a GI bleed or ulcer. The patient's family decided to not escalate care, and the patient expired shortly thereafter. TRALI is the leading cause of blood transfusion related mortality in the United States. Key features that need to be present for diagnosis include: acute onset within 6 hours of transfusion, hypoxemia ( $\text{PaO}_2/\text{FiO}_2 < 300$  or  $\text{SpO}_2 < 90\%$  on room air), bilateral infiltrates on frontal chest radiograph, no evidence of circulatory overload or left atrial hypertension, and no pre-existing acute lung injury or ARDS before the transfusion. TACO is an acute lung injury that can also occur within 6 hours of transfusion; however it usually occurs when large volumes of blood are administered. This usually results in a positive fluid balance, elevated BNP, and a significant response to diuretics, which is not seen with TRALI.

**POSTER: 6**

### "Exploring Associations between closure of a Sports Medicine Fellowship and performance on the In-Service Training Examination"

**CATEGORY:** Ed Program

**AUTHOR(S):** Joseph Joshua Perez, MD, Preethi George MD, Daniel Cruz, Ph.D., ABPP, George W. Miller, Jr., MD FAAFP CMRO

**INSTITUTION:** Hackensack Meridian Health Palisades Medical Center

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** Purpose: The potential educational consequences due to closure of a fellowship on graduate medical education has received limited attention in published studies. We explored whether losing a sports medicine fellowship at Mountainside Medical Center in 2011 correlates to ITE MSK subtest performance scores. Methods: We analyzed ITE scores along with MSK subtest questions from 2007 to 2018. We stratified the data by PGY year to explore scores varied by level of training, test questions with high failure rates, sports medicine specific questions, and adults versus pediatrics. Raw and scaled scores provided by ABFM. Scores were analyzed for trends and tested through t-tests and chi-square analyses. Results: Results revealed non-linear trends in MSK performance scores from 2007 to 2018. Scores were generally consistent and in the average range apart from 2014, the year preceding the formal removal of the sports medicine fellowship, and 2017. In 2014, MSK performance scores were significantly lower than most academic years assessed. Conversely, MSK scores assessed in 2017 indicate improvement in resident MSK related knowledge, however, this pattern was not observed in the most recent 2018 performance data. By 2014, the sports medicine fellowship had already been dissolved for three years, leaving an entire class without the benefits provided by a sports medicine faculty. Through previous research, we also know that the educational impact was not the only effect on our program, as physician prescribing and referral habits were also altered during this time frame. Conclusions: Results revealed an immediate negative impact of losing a fellowship in 2014, with considerable improvement in 2017. The study addressed resident performance over time, variance and individual differences, and program level changes beyond the MSK fellowship including a program director change. The new program director encouraged focus strategies for increasing board scores which may explain the improvement in 2017 performance scores. Significance: After loss of our fellowship, there was an initial decrease in MSK question test scores. With new leadership and focus on testing, evidence suggests that this focus led us back to scores similar to the active years of our sports medicine fellowship

**POSTER: 7**

### "A simple case of low back pain or is it more?"

**CATEGORY:** Clinical Inquiry

**AUTHOR(S):** Tayyab Malik MD, Diana Palanker MD

**INSTITUTION:** Hackensack Meridian Health Palisades Medical Center

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**ABSTRACT:** Back pain is the second most common presenting symptoms in outpatient setting prompting patients to visit the doctor. Although, serious underlying pathology is rare in patients who have back pain, early detection of malignancy or infection is critical for diagnostic evaluation. In a study of 1975 consecutive patients seeking medical care for low back pain in a walk-in primary care clinic in a public hospital, Deyo and Diehl<sup>1</sup> reported that 13 patients had low back pain related to underlying cancer. The importance of imaging with inflammatory markers such as ESR, CRP can add higher value in confirming the diagnosis. The importance of history and physical exam is critical in distinguishing musculoskeletal vs systemic etiology of low back pain. We present a case of a 37 year old male with no significant past medical history who presented with 2 day history of headaches and vomiting which consists of clear liquid and food. It was non bilious and non bloody. Pt stated he had diffuse bone pain for the last 2-3 months. He complained of diffuse pain, 8/10 located all over his body but worst in his ribs, low back and legs when he walks. He was seen by his PCP who initially treated him for muscle pain with anti-inflammatory and a muscle relaxer. However, his back pain persisted for several months which prompted his PCP to order a blood work and imaging of his back. Upon admission in ER, due to vomiting and headache, he had CT of the head done which showed lytic foci identified involving the skull base and proximal cervical spine concerning for an aggressive infiltrative process or metastatic disease. Due to the findings on CT with history of rib pain, he was sent for CT Chest which showed extensive lytic osseous metastatic disease. In search for primary source of his metastatic disease, CT Abdomen/Pelvis was ordered which showed ventral epidural tumor extension at L2, L4, and L5. He was seen by GI who performed biopsy via EGD which was negative for malignancy. Due to extensive

osseous lytic lesions, patient underwent Iliac bone biopsy which confirmed the diagnosis of Primary colorectal adenocarcinoma with metastasis. According to the journal of orthopedics Chou et. al<sup>4</sup> reported that the prevalence rate of low back pain due to cancer is approximately 0.7%, compression fracture 4%, and spinal infection 0.01% in primary care settings. If patient present later in the stages of back pain and gets initial anti-inflammatory, muscle relaxer and physical therapy, it can further delay the diagnosis. Thus, the awareness of the actual initiation of patient symptoms, ruling out red flags can prevent the delay in diagnosis as it was in our patient. Even though, the patient was less than 50 years of age in our case and suspicion was low, the early diagnosis could have prevented the metastatic disease that he presented on the initial ER visit.

**POSTER: 8**

### “Acute Compartment Syndrome Secondary to Cyst Rupture”

**CATEGORY:** Ed Program

**AUTHOR(S):** Husam Ali, MD, Megan Cho, MD, Adam Atoot, MD, Moaz Baghal, MD

**INSTITUTION:** Hackensack Meridian Health Palisades

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** Introduction: Compartment syndrome occurs when increased pressure within a compartment compromises the circulation and function of the tissues within that space causing cellular anoxia due to local ischemia. Such ischemia is thought to begin once local blood flow, restricted by the rise in compartment pressure, fails to meet the metabolic demands of local tissue. Compartment pressures capable of compromising perfusion develop when they rise to 10 to 30 mmHg of diastolic pressure; muscle oxygenation decreases as tissue pressure approaches mean arterial pressure. ACS often develops following trauma, or as a chronic syndrome, seen most often in athletes, that presents as insidious pain. ACS is a surgical emergency. Case Presentation: We introduce the case of a 48-year-old male who presented to the ED with pain in his left thigh. The patient reports a history of exogenous testosterone use for several years. Patient initially noticed pain and a mass in the left buttocks four weeks prior to admission date, which was when he last injected steroids. Two days prior to presentation, patient endorsed resolution of the gluteal mass with subsequent significant anterior thigh pain and swelling. However, patient denied fevers, chills, or night sweats. The concern for "compartment syndrome" arose due to his significant pain level. On admission, a CT of the left hip (Figure 1, Figure 2) showed signs of fluid collection from the left gluteal region to the left knee, and 2 x 2.7 cm cystic mass in the left gluteal region (figure 3). On primary survey, patient appeared to be in moderate distress. Vitals were: BP 127/78 | Pulse 61 | Temp 98.4 °F (36.9 °C) | Resp 18 | SpO2 97% | The left thigh was very tender to touch, and patient experienced pain out of proportion on passive extension of the left thigh, raising the suspicion for the diagnosis of compartment syndrome. A decision was made with orthopedic surgery to send the patient for an urgent left thigh fasciotomy of the anterior thigh compartment with excisional debridement of left lower extremity including skin, subcutaneous tissues, fascia, and muscle with an application of wound VAC (negative pressure wound therapy). Discussion: ACS rarely develops in the thigh, but usually follows major trauma. In our patient's case, the compartment syndrome was thought to be due to seeding of left gluteal abscess/cystic mass to the anterior thigh compartment, causing excessive edema and pressure. Symptoms of ACS can include the following: ●Pain out of proportion to apparent injury (early and common finding) ●Persistent deep ache or burning pain ●Paresthesia (onset within approximately 30 minutes to two hours of ACS, suggests ischemic nerve dysfunction) Examination findings suggestive of ACS include the following: ●Pain with passive stretch of muscles in the affected compartment (early finding) ●Tense compartment with a firm "wood-like" feeling Fasciotomy, to fully decompress all involved compartments, is the definitive treatment for ACS in the great majority of cases. Delays in performing fasciotomy increase morbidity, including the need for amputation.

**POSTER: 9**

### “Cytomegalovirus Infection in Refractory Ulcerative Colitis”

**CATEGORY:** Clinical Inquiry

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**INSTITUTION:** Hackensack Meridian Health Palisades Medical Center

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**ABSTRACT:** Ulcerative colitis a subcategory of Inflammatory Bowel Disease (IBD) that afflicts 1-2 million people in the US. The possibility of cytomegalovirus infection should always be taken into account in patients with ulcerative colitis who are resistant to steroid therapy. Acute CMV infection in patients with IBD is not rare and is often underestimated. CMV infection in patients with refractory or complicated IBD should be ruled out before aggressive immunosuppressive therapy is begun. The corresponding case recounts a 33-year-old male with history of Ulcerative Colitis with recurrent flares and hospitalizations that failed to control patients symptoms. On his last admission, persistent symptoms prompted a repeat colonoscopy, biopsy results were positive for CMV infection, confirmed by PCR, patient was started on Ganciclovir IV followed by Valganciclovir PO with noted symptom improvement.

**POSTER: 10**

**“Are we appropriately managing women with bacterial vaginosis according to The American College of Obstetricians and Gynecologists (ACOG) guidelines?”**

**CATEGORY:** Research

**AUTHOR(S):** Iniobong Ukonne MD, Reintine Han MD, Daniel Cruz, Ph.D., ABPP, George W. Miller, Jr., MD FAAFP CMRO

**INSTITUTION:** Mountainside Family Medicine Residency Program

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** Vaginitis is defined as inflammation or infection of the vagina and is associated with a spectrum of symptoms, including vulvovaginal itching, burning, irritation, dyspareunia, “fishy” vaginal odor and abnormal vaginal discharge. The most common causes of vaginitis include vulvovaginal candidiasis (17-39%), bacterial vaginosis (22-50%) and trichomonas (4-35%). Although Gram stain is considered the diagnostic standard, bacterial vaginosis is traditionally diagnosed using the Amsel criteria. The Amsel criteria includes thin, homogenous discharge, a positive whiff test, the presence of clue cells on microscopy and a vaginal pH greater than 4.5. Three out of the four criteria are required to make the diagnosis, with sensitivity ranging from 70% to 97% and specificity ranging from 90% to 94%, compared with Gram stain. Treatment for the most common causes of vaginitis include oral metronidazole, metronidazole gel or clindamycin for bacterial vaginosis. Fluconazole or topical azoles are used for vulvovaginal candidiasis. And trichomoniasis is treated with oral metronidazole or tinidazole. A retrospective cohort study was performed to answer the question of whether we are appropriately treating women with bacterial vaginitis. A chart review of 60 patients from a Family Medicine Residency Practice, with a diagnosis of bacterial vaginosis or who were seen for a well women exam was performed. Patients’ charts were analyzed based on ethnicity, age, empiric treatment, NuSwab performed, Nuswab results, pregnancy status and documentation of vaginal discharge on physical exam. We further investigated the results of the NuSwab, including a diagnostic result of chlamydia, trichomonas, candida and/or bacterial vaginosis. Patients who were treated empirically received metronidazole, fluconazole, terconazole, azithromycin or ceftriaxone. The antibiotic or antifungal given empirically was then compared to the NuSwab result to evaluate whether the appropriate medication was given for the appropriate diagnosis/result. Statistical analysis used to analyze the data was Chi-square. The ethnicity of the patients consisted of the following: African-American (65%), Hispanic/Latino (12%), Caucasian (3%) and Other (10%). There were 10% of patients who declined to give their ethnicity. The patients ages ranged from 17 to 46. Empiric treatment was given for 63% of the office visits – metronidazole (50%), fluconazole (18%), terconazole (7%), azithromycin (2%) and ceftriaxone (2%). A NuSwab was sent for 75% of the office visits. Majority of the patients were not pregnant (92%), whereas 8% of the patients were pregnant. Vaginal discharge was documented on physical exam for 68% of visits, whereas 32% of visits showed no documentation. NuSwab results showed bacterial vaginosis (28%), candida (24%), trichomoniasis (7%), chlamydia (8%), negative (15%) and inconclusive (8%). Data showed that the appropriate antibiotic or antifungal given in correlation with NuSwab results only occurred 23% of the time. There was a statistically significant relationship between a patient who presented with a vaginal discharge and having a NuSwab performed ( $p=0.0002$ ). There was no relationship with age regarding vaginal exam ( $p=0.978$ ), empiric antibiotics given ( $p=0.979$ ) or whether a NuSwab was performed ( $p=0.355$ ).

**POSTER: 11**

**“Are we appropriately managing patients with hypertensive urgency according to the American College of Cardiology (ACC) and the American Heart Association (AHA) guidelines?”**

**CATEGORY:** QI

**AUTHOR(S):** Fheza Saleem MD, Iniobong Ukonne MD, Daniel Cruz, Ph.D., ABPP, George W. Miller, Jr., MD FAAFP CMRO

**INSTITUTION:** Hackensack Mountainside Hospital

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** An estimated 1.13 billion people worldwide have hypertension, most (two-thirds) living in low- and middle-income countries. The prevalence of hypertension in U.S. adults has continued to increase. In 2018, the American Heart Association (AHA) heart disease and stroke statistics update reported that about 34% of U.S. adults had hypertension. Today, of the hypertensive adults living in the U.S., 20% are Caucasian and 30% are African Americans. Hypertensive emergencies (or severe hypertension) are defined as severe elevations in blood pressure (greater or equal to 180/120 mm Hg) associated with evidence of new or worsening target organ damage. Hypertensive urgency can be considered acute severe hypertension without acute target-organ damage, which is usually not associated with adverse outcomes and can be managed in the outpatient setting. Hypertensive urgencies should be managed with oral medications and prompt follow-up. A retrospective cohort study was performed to answer the question of whether or not we are appropriately treating office patients with hypertensive urgency. Sixty patients of the Family Medicine Residency Practice, with a diagnosis of benign hypertension, hypertensive urgency and/or hypertension-unspecified met the criteria of the study. Patients’ charts were analyzed based on ethnicity, age, gender, blood pressure reading [systolic blood pressure (SBP)/diastolic blood pressure (DBP)], whether or not the blood pressure was repeated, if the patient was symptomatic and whether or not the patient was compliant with their medication. The criteria to qualify for hypertensive urgency was a SBP equal or greater than 180 and/or a DBP equal or greater to 110. Statistical analysis used to analyze the data was ANOVA and t-tests. The study showed the following distribution regarding ethnicity of the patients: African-American (56%),

Caucasian (17%), Hispanic/Latino (12%) and Other (10%). There were 5% of patients who declined to give their ethnicity. Females represented 58% of the patients and men represented 42%. The patients ages ranged from 22 to 59, with a mean age of 45. SBP ranged from 150-230, with a mean of 180. DBP ranged from 89-152, with a mean of 112. The blood pressure reading was repeated in 68% of the patients. Data showed 77% of patients were asymptomatic on presentation, whereas 23% of patients were symptomatic. Medication compliance was reported in 46% of patients, whereas 54% of patients were non-compliant. The study concluded that ethnicity was not statistically significant regarding age ( $p=0.514$ ), SBP ( $0.197$ ) or DBP ( $p=0.794$ ). There was no difference in SBP ( $p=0.797$ ) or DBP ( $p=0.572$ ) when blood pressure readings were repeated. Gender showed no difference in SBP ( $p=0.969$ ) or DPB ( $p=0.110$ ) readings. There was a statistically significant difference between symptomatic and asymptomatic patients. Symptomatic patients tended to have an elevated SBP ( $p=0.005$ ), with no difference in DBP ( $p=0.071$ ). Regarding compliance with medication, data showed it had no effect on SBP ( $p=0.732$ ) or DBP ( $0.214$ ).

**POSTER: 12**

### **“A rare case of Median Arcuate Ligament Syndrome”**

**CATEGORY:** Clinical Inquiry

**AUTHOR(S):** Andrew Haddad, MD, Nicole Babushkin MD, Ken Kronhaus MD, FAAFP, Christopher Bader, DO, Meha Halari MD

**INSTITUTION:** Ocean Medical Center

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**ABSTRACT:** Case Summary: 33-year-old female with a past medical history of Chron's disease status post hemicolectomy, lumbar disc protrusions with radicular pain, asthma and migraines who presented to the emergency department complaining of left upper quadrant pain. Patient described the pain as a burning sensation below the ribs on the left side radiating around to her back. Patient was having recurrent visits to the emergency room for the same pain and was previously attributed to her colitis. She took antibiotics which did not relieve her pain. A week prior to this admission she called her primary care doctor complaining of epigastric discomfort and a strong pulse in that region which she had never experienced before. She had an ultrasound of the abdomen done at that time which did not reveal an abdominal aortic aneurysm. Patient was following up with her gastroenterologist outpatient and just recently had a colonoscopy done which was unremarkable with benign findings. Her vital signs in the emergency room were as follows: blood pressure 140/57 mmHg, pulse 73 beats per minute, respiratory rate 18 breaths per minute, saturating 95% on room air, temperature 98.6 degrees Fahrenheit. Physical exam was significant for tenderness to palpation in the left upper quadrant. LABS: BUN 7 mg/dL (5-25), creatinine 0.57 mg/dL (0.61-1.24), total bilirubin 0.7 mg/dL (0.2-1.3), lipase 41 U/L (20-55), WBC count 7.4 k/uL (4.5-11), neutrophil percent 89.3% (50-70). IMAGING: CT of the abdomen showed No acute intra-abdominal disease. Chest x-ray was negative for acute infiltrates. Upon further evaluation, the patient described pain with eating with a decreased appetite and weight loss. A CT angiogram of the of the abdomen was ordered, and it was reported that there is mild inferior displacement of the origin of the celiac axis which may represent mild median arcuate ligament syndrome. The report also mentioned that there is probable 33% stenosis at the origin of the celiac axis with mild post stenotic dilatation. Patient was informed of her diagnosis and was instructed to follow up with her surgeon and gastroenterologist outpatient for the next steps in treatment. Conclusions: Celiac artery compression syndrome is defined as chronic, recurrent abdominal pain related to compression of the celiac artery by the median arcuate ligament. It is an uncommon disorder that is characterized clinically by the triad of postprandial abdominal pain, weight loss, and sometimes an abdominal bruit. The etiology and pathophysiology of celiac artery compression syndrome are incompletely understood but may be related to both ischemic and neuropathic mechanisms. While both lab work and imaging are helpful in the diagnosis, a confirmatory diagnosis is made with a celiac nerve block. The standard treatment of celiac artery compression syndrome is surgical release of the celiac artery from compression with simultaneous removal of the nerves that are being compressed as well.

**POSTER: 13**

### **“An atypical presentation of Giant Cell Arteritis: a case report and review of literature”**

**CATEGORY:** Research

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**INSTITUTION:** St. Luke's Warren Family Medicine Residency

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** Abstract: Giant Cell Arteritis is a chronic inflammatory vasculitis, typically present in medium and large sized vessels. Peak incidence occurs in ages 70-80 with Northern European Ancestry (1,2). According to The American College of Rheumatology, in order to establish the diagnosis of Giant Cell Arteritis three of the following criteria must be present: Age greater than 50 years old, new headache, erythrocyte sedimentation rate greater than 50 mm/hour, abnormal temporal artery biopsy, and decreased pulsation of temporal artery or tenderness (1). Presenting symptoms typically include new-onset headache, scalp tenderness of temples and occiput, visual loss, weight loss, or fever (5). The diagnosis of Giant Cell Arteritis, however, can be challenging as presenting symptoms are frequently unusual and inconsistent. Unusual manifestations of this vasculitis may include fever, weight loss, myalgia and arthralgia, scalp nodules, or smell or taste abnormalities (5). In this report, a case is described that was more reminiscent of flu than giant cell arteritis

with symptoms including cough, fever, and myalgias. Case Presentation: A 70 year old Indian male was admitted to our hospital with a one week history of fevers, worsening myalgias, productive cough, generalized weakness, and a dull aching headache. Physical exam at the time of admission was unremarkable, except that the patient was febrile with a temperature of 101.3 F. Laboratory findings were significant for leukocytosis, chronic microcytic anemia, chronic hyponatremia, elevated inflammatory markers, and a chest x-ray without any evidence of acute cardiopulmonary disease. Ultimately a left temporal artery biopsy was performed which revealed intimal thickening, mural calcifications, and a stenotic lumen with chronic inflammation of media/adventitial interface consistent with Giant Cell Arteritis. The patient was treated with oral Prednisone 60 mg daily, and eventually transitioned to Actemra weekly injections. At his follow-up appointment, the patient was weaned off steroids entirely, and had no remaining symptoms. Conclusion: Giant Cell Arteritis often has atypical subtle presenting symptoms, and a delay in diagnosis could result in significant morbidity including vision loss, stroke, and aortic dissection. Being aware of the potential atypical presenting symptoms in a patient greater than 50 years old is crucial in the prompt diagnosis, treatment, and complete resolution of symptoms associated with Giant Cell Arteritis.

**POSTER: 14**

### **“Pulmonary Embolism as the Presenting Feature in a CMV-Positive Immunocompromised Patient”**

**CATEGORY:** Clinical Inquiry

**AUTHOR(S):** Sydney Asselstine, MD, Kevin Ly, MD, Shirlynn Althea Chu, MD Sean Sussman, DO Arthur Kwok, MD Tomi Olaniyan, MD Anand Shah, MD Mahvish Qazi, MD Robert Kim, MD Zeeshan Khan, MD Maria Ciminelli, MD

**INSTITUTION:** Rutgers RWJMS at CentraState Medical Center Family Medicine Residency

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** Introduction: Pulmonary embolism is a serious condition with an incidence of 60-70 cases per 100,00 and a significant mortality rate even if treated. Patients are often screened for common risk factors of emboli, such as cancer, venous stasis, anticoagulation disorders, and oral contraceptives. There are, however, lesser known risk factors for pulmonary emboli that must be acknowledged. Case Presentation: Our case involves a 31 year-old male with no pertinent medical history, and a social history significant for sexual activity with males and females, presenting with a chief complaint of fevers and diarrhea for three weeks. He failed outpatient treatment and his symptoms broadened to include night sweats, difficulty breathing, and lower extremity pain. On presentation he was septic with tachycardia and tachypnea. He had lactic acidosis, elevated CRP and ESR, and transaminitis. A CXR was unremarkable, however given his lower extremity pain a doppler ultrasound was performed that showed extensive venous thrombosis of the left popliteal and calf veins. A CTA-Chest was performed that identified a seemingly unprovoked extensive pulmonary emboli in the left main pulmonary artery. Further workup identified that the patient was positive for CMV colitis, in addition to HIV. His CD4 count was 546 cells/uL, and viral load was 571,000 copies/mL. He was treated with an aggressive heparin drip for the embolism and tPA was administered, however he continued to be significantly symptomatic and required transfer to an outside hospital for embolectomy. He also received a course of valacyclovir for his colitis. He has since followed up outpatient for management of his HIV and has been stable since. He will be on lifelong anticoagulation for his unprovoked embolism. Discussion: CMV is a common infection seen in immunocompromised or immunosuppressed patients, and symptoms are often absent in immunocompetent hosts. Pulmonary embolism is a rare complication of CMV infection. Those that are immunocompromised with HIV are at further increased risk for embolism. HIV is a prothrombotic condition for multiple reasons, with the primary theory being that it ultimately leads to opportunistic infections activating inflammatory markers. This, in turn, results in endothelial dysfunction that limits the antithrombotic potential of the venous wall. Treatment options include managing the underlying infection and treating the HIV with HAART medications. Patients require lifelong anticoagulation for the emboli. Close monitoring is required as there is an 8-15% chance of recurrence of thromboembolism in HIV infected patients.

**POSTER: 15**

### **“A Curious Case of Clavicular Pain”**

**CATEGORY:** Clinical Inquiry

**AUTHOR(S):** Sydney Asselstine, MD, Steve Weintraub, DO

**INSTITUTION:** Rutgers RWJMS at CentraState Medical Center Family Medicine Residency

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** A 10 year-old female dancer with a history of alopecia areata and spondylosis presented with 3-months of a mildly painful bony protrusion on her left clavicle. She denied any trauma to the area. She had been seen as outpatient by orthopedics and a CT scan showed a mass over the left clavicle. Bone culture of the mass grew coagulase negative Staphylococcus and E. faecalis, later thought to be contaminants by ID specialists. She received a PICC line for IV antibiotics, suspecting chronic infectious osteomyelitis. After 3 weeks of antibiotics she presented again with a diffuse, pruritic drug rash and a 1-month history of pain in her right foot, acutely worsening over the week prior. There was associated swelling of the foot and intermittent fevers, but she denied neurological symptoms or pain elsewhere. Her pain was mildly relieved by Motrin and rest. On initial exam she was afebrile with stable vitals. She was a healthy appearing age-appropriate female with noticeable alopecia and a diffuse maculopapular drug rash. A nontender mass over left clavicle

with healing scar was noted. She had full ROM in all extremities. Tenderness over right metatarsals with mild nonpitting edema was appreciated. A left arm PICC line was in place with no erythema or tenderness. There were no gross neurological deficits. Initial differentials included chronic infectious osteomyelitis, Langerhans cell histiocytosis, traumatic injury, and chronic recurrent multifocal osteomyelitis (CRMO). Lab workup showed unremarkable levels of ESR, CRP, and leukocytes. Biopsy of the clavicle mass revealed marrow fibrosis, but no necrotic bone or CD1a, making Langerhans a less likely diagnosis. A radiograph of the right foot identified a lytic lesion of the 2nd metatarsal, and follow-up MRI identified it as a rim enhancing intraosseous lesion. A whole-body scan was performed that again identified enhancement of the medial left clavicle and right 2nd metatarsal, in addition to the right medial cuneiform/navicular bones. Bone culture of right 2nd metatarsal had no growth. After evaluation of the evidence, the most likely diagnosis was determined to be CRMO. CRMO is a rare inflammatory bone disease that presents as localized tenderness and edema over affected bones, with clavicular lesions being pathognomonic. Many other differentials must first be excluded before treatment. MRI is the best modality to evaluate for local lesions, and whole-body bone scans can identify the extent of lesions that have not declared themselves. Inflammatory markers are often normal or mildly elevated. Biopsies can be done to exclude other pathologies. NSAIDs are first line, however unresponsive cases can be treated with DMARDs, anti-TNF agents, or bisphosphonates. Disease prognosis is highly variable but typically it is self-limiting regardless of intervention. Our patient was initiated on weight-based indomethacin (1mg/kg BID) and was able to fully weight-bear a week later. Given the initial response of her disease to NSAIDs her prognosis is promising, and it is anticipated she will be able to return to dance class within several months. There is concern for possible relapse, and so she will continue to have close follow up with rheumatology.

**POSTER: 16**

### **“Electronic Medical Records and the Affect on Routine Prenatal Vaccination Educational Counseling”**

**CATEGORY:** QI

**AUTHOR(S):** Judith Albert MD, George W. Miller, Jr., MD, FAAFP, CMRO, Adam Kunkis MD MBA, Melissa Gonzalez, MD

**INSTITUTION:** Mountainside Medical Center

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** Studies have consistently shown the efficacious prophylactic safety net that vaccines provide to the persons that receive them. Certain populations have higher levels of evidence of the necessity to be immunized against specific inoculable diseases. One such population is that of the pregnant mother, as immunizations protect both herself and her unborn child. The recommended routine vaccinations for the pregnant mother include the Tdap and influenza vaccines. Concurrently, the communication tools which healthcare professionals use to document and distribute information, commonly known as EHRs (electronic medical records), have made great advancements in recent years. A commonly used EMR which has shown to cover many healthcare needs, a cloud-based EHR solution caterinto to a number of specialties, is the Epic EHR Solution System. Little research has been done to explore Epic’s effect on the ability to aid healthcare providers to encourage their pregnant patients to receive properly timed and dosed immunizations, and how the EHR may affect the number of patients that were educated on proper vaccination scheduling. This project derives from an in-depth quality improvement research method, validating adherence to American College of Obstetricians and Gynecologists and American Academy of Family Physicians guidelines. 30 patients’ charts were reviewed using an older EMR system, eMDs, compared to 30 patients’ charts which were reviewed during the subsequent year after implementation of the Epic EMR system. The adherence to guidelines, noted by the documentation of educating patients on the importance of routine pregnancy vaccinations was observed. The hypothesis is thus that the new EMR has an increased capability to educate and remind the healthcare provider to vaccinate at appropriate intervals, so that subsequently the vaccination rate will theoretically increase as well. The results of our quality improvement project subsequently have shown that compared to the amount of patient’s educated and subsequently vaccinated in the older EHR, there were a greater amount of patients educated about vaccine necessity with the new Epic EHR system.

**POSTER: 17**

### **“Back pain and paresthesias after pregnancy: a spinal abscess or something more?”**

**CATEGORY:** Clinical Inquiry

**AUTHOR(S):** Brittney Grella MD, Timothy Wu MD, Susan K Passarella, DO, FACOOG, Kelly Ussery-Kronhaus MD

**INSTITUTION:** Hackensack Meridian Health Ocean Medical Center

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** A 38-year-old G1P1001 female presented to her orthopedic physician with back pain, and paresthesias of the buttocks, bilateral hips, and thighs. The patient had a successful single cycle of intrauterine insemination and delivered a baby via Caesarean section 3 months ago when her symptoms began. A spinal epidural was completed prior to the Caesarean section without complication. The patient denied sexual intercourse over the past 3 months and had been taking LoLoestrin for birth control since 6 weeks postpartum. On physical examination, the patient had tenderness of the lower lumbar spine, decreased sensation along the L3 dermatome, and 4 out of 5 hip flexor strength. An MRI of the lumbar spine revealed an epidural mass measuring 2.4 cm x 0.9 mm x 0.6 mm behind the L2 vertebral body, and high signal area behind the uterus suspicious of a cyst or solid ovarian mass. The concern for spinal compression



secondary to a spinal epidural abscess or a malignancy with metastases to L2 was high and therefore the patient was scheduled for urgent surgery. Pre-operative laboratory results included a positive qualitative serum urine pregnancy and an elevated serum  $\beta$ -hCG titer of 76,821.6 mIU/ml. A pelvic ultrasound showed a complex left ovarian cyst, a small amount of free fluid in the left adnexa, and no evidence of retained products of conception. A decision was made to proceed with surgical intervention and the patient underwent a posterior spinal segmental instrumentation from L1-L3, a posterior spinal fusion from L1-L3, an L2 laminectomy, a complete facetectomy and decompression of the L2 epidural mass. During the procedure, the L2 epidural mass was found to be hypervascular and thought to be originating from the bone, suggesting it was more consistent with malignancy rather than infection. A CT chest, abdomen, and pelvis with contrast showed multiple bilateral pulmonary nodules and a rim-enhancing lesion in the left adnexa representing a hemorrhagic or involuting cyst. The L2 epidural mass pathology was significant for 3 small fragments of fibroconnective tissue, a tiny focus of crushed hyperchromatic and slightly atypical cells. The patient was diagnosed with stage IV high-risk gestational trophoblastic neoplasia with metastases to the epidural space and vertebral osseous metastases and she was started on chemotherapy. The term gestational trophoblastic disease is an umbrella term used to describe a variety of pregnancy related tumors, which can be benign or malignant. The patient in this case was diagnosed with stage IV high-risk gestational trophoblastic neoplasia (GTN) with vertebral osseous metastases and metastases to the epidural space. The unusual presentation of this case makes it unique. Very few cases of GTN with spinal metastases have been published. Therefore, this case aims to encourage physicians to have a high clinical suspicion for GTN with spinal metastases in patients with recent intrauterine or ectopic pregnancy who present with back pain and paresthesias.

**POSTER: 18**

### **“Impact of Study Resources and Rotations on Family Medicine Shelf Exam Scores of Medical Students”**

**CATEGORY:** Research

**AUTHOR(S):** Marwah Tareen, MD, Preethi George MD, Miriam Hanna, MD, Daniel Cruz, Ph.D., ABPP, George W. Miller, Jr., MD FAAFP CMRO

**INSTITUTION:** Mountainside Hospital

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** The Family Medicine NBME subject exam is designed to measure a medical student’s knowledge and to understand how their performance compares to others. Many different resources are available for medical students to prepare for this exam which include, but are not limited to, question banks, textbooks, online programs, etc. Other factors which may also impact the Family Medicine shelf exam include the number of rotations completed by medical students prior to starting/taking the Family Medicine Shelf exam. This was a randomized prospective cohort study which included 40 subjects, medical students from St. George School of Medicine. These subjects were in their 3rd and 4th year of medical school and rotated through Mountainside Family Practice, a suburban Family Practice Clinic in Verona, NJ. This study sought out to evaluate the impact of study resources on the Family Medicine Shelf Exam Scores. Data was collected by using pre and post surveys. The pre-survey consisted of questions including the use of resources, question banks and rotations completed. The post-survey included questions such as which resources the students ended up using, hours spent on questions, and interest in a future in Family Medicine. The data was organized into a spreadsheet and then analyzed with the results of his/her Family Medicine NBME shelf exam scores. We hypothesized that the greater number of clerkships a student had completed prior to their Family Medicine shelf exam would yield a higher shelf exam score. We also hypothesized that all of the question banks available to a medical student, using USMLE Qbank would have the most positive impact on Family Medicine Shelf Exam. Based on the findings of this research, it was found that the more time studying a medical student spent studying for the NBME Family Medicine shelf exam, the better shelf exam scores. Furthermore, students who had completed more clerkships also yielded higher scores. However, we were surprised to find that an interest in a future in Family Medicine resulted in lower scores. Based on our findings in this research, students should be encouraged to use question banks such as USMLE Qbank in preparation for the Family Medicine NBME shelf exam. Finally, it was found that students should spend more time studying and should have completed more clerkships in order to yield higher results.

**POSTER: 19**

### **“Assessing the Confidence of NJ Family Medicine Residents in Diagnosis and Management of Common Musculoskeletal Complaints”**

**CATEGORY:** Research

**AUTHOR(S):** Sean Sussman, D.O., PGY-III, Sydney Asselstine, M.D., PGY-I, Zeeshan Khan, M.D.

**INSTITUTION:** Rutgers Robert Wood Johnson Medical School at CentraState Medical Center

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** Primary care physicians must be prepared to see a range of medical concerns in their offices, a great deal of which are musculoskeletal in etiology. The foundation of this knowledge ideally would begin early in training; however, it has been shown that there is inadequate focus in this field during medical school as evidenced by this being the weakest areas of performance on the Step 2CK exam. This underrepresentation continues throughout residency training, leading to a lack of confidence in the field. To address this knowledge gap, it is important to understand the particular areas of concern for the residents. This study aims to understand the level of

confidence that New Jersey family medicine residents have in managing musculoskeletal conditions and identify areas for improvement.

First, a voluntary focus group of residents from the local program was held to discuss ways to assess these knowledge gaps and better collect data from our colleagues. An online survey was distributed amongst the 19 family medicine residency programs in New Jersey. Data was analyzed using One-way ANOVA, unpaired T-tests, and Pearson correlations. We found that there was a significant increase in confidence with performing a MSK exam with each year of training. Presence of a dedicated sports medicine faculty member and association with a fellowship also correlated with increased confidence. There was a strong positive correlation between exam confidence and diagnosis of conditions, as well as between confidence in diagnosis and treatment of musculoskeletal conditions. In total, residents reported a confidence level of less than 75% with performing a musculoskeletal exam. This data identified that there are training gaps in musculoskeletal medicine, and residents feel they could benefit from more teaching in this field. Common barriers listed as contributing to lack of confidence in this field included too few hands-on didactics. Potential areas to help resolve this knowledge gap would include sports medicine bootcamps, the option to do a sports medicine track, and increased exposure to sports medicine through dedicated office hours. Future studies hope to implement and evaluate specific solutions to close these knowledge gaps, especially as residents graduate and start to practice independently.

**POSTER: 20**

### **“Analysis of Residency Engagement Within the Hospital’s High Reliability Organization (HRO) to Promote a Culture of Patient Safety”**

**CATEGORY:** QI

**AUTHOR(S):** Paul Kang, MD, Laura Ruhl MD, Julianne Lucco, MD, Angela Lee DO, Colleen Little, DO, Lauren Bischoff MD

**INSTITUTION:** Hunterdon Medical Center

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** Introduction In 2017, Hunterdon Medical Center (HMC) was one of 10 hospitals in NJ to be selected to participate in NJ Hospital Association’s High Reliability Collaborative. As part of HMC’s involvement in the collaborative, a High Reliability Organization (HRO) was established via a daily administrative interdepartmental “safety huddle” to discuss patient safety concerns & operational challenges from the day prior. Additionally, the ACGME CLER program evaluates resident involvement in patient safety and quality care. As an unopposed Family Medicine Residency program at HMC, residents are heavily involved in patient care throughout the entire hospital system, and therefore able to provide a unique perspective in hospital operations for risks and patient safety concerns. Objective As resident physicians, to increase patient safety culture by actively reporting safety events and concerns at daily HRO huddles and following up resolutions. Methods Consistently utilizing electronic intranet reporting of safety concerns Compiling safety concerns brought up during daily HRO meetings over a 2-year period Post survey of HRO members on effects of residency involvement in HRO Results Several safety concerns and issues that were brought up at HRO huddle by residents are outlined below. Overnight admitting residents experiencing high admit volume & grouped close together Lack of signout to the night team from Hospitalists and transfers out of PACU/ICU Carbon monoxide level measured at 42ppm. OSHA requirement is <50ppm in 8-hr period Chart 1: HRO resident involvement survey results Additional comments: “Residents have reported out precursor events...” “Residents have contributed significantly towards identifying potential patient safety concerns...” “Residents are on the front lines of care and are a necessary part of keeping patients safe by examining care processes and reporting on events.” Table 1: Resident perceptions and self reported behavior per CLER (ACGME clinical learning environment) reports Discussion Over 35 safety events or potential near misses were brought up by residents as a safety issue that were recorded and followed up on to the resolution. Due to the nature of our unopposed program, residents are heavily involved in all aspects of patient care in the hospital, which gives a unique perspective in the front line of providing patient care. We were able to utilize our experiences to bring various safety concerns that would have otherwise gone unnoticed or underreported. Additionally, each resident also participated in the daily HRO huddles which gave an opportunity for individuals to promote the safety culture as they would seek to recognize and identify system failures. From this review, we were able to conclude that resident involvement in HRO serves as a potential solution to the issue of lower resident engagement/satisfaction in patient safety brought up by ACGME CLER reports.

**POSTER: 21**

### **“One Tick Hit: Rocky Mountain Spotted Fever Associated Myocarditis”**

**CATEGORY:** Research

**AUTHOR(S):** Nicole Babushkin MD, Kimyetta Robinson, DO, Christopher Bader, DO, Kelly Ussery-Kronhaus, MD, Ken Kronhaus MD, FAAFP

**INSTITUTION:** Hackensack Meridian Health Ocean Medical Center

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** A 40-year-old male with a past medical history of psoriasis presented to the ED during the summer with a rash, fever, facial swelling, body aches, and shortness of breath. He was diagnosed with tonsillitis and started on amoxicillin 3 days prior to admission (PTA). Two days PTA, he developed a rash that started on his hands and spread to his extremities and trunk. His PCP switched his antibiotic to azithromycin and started him on prednisone. He denied sick contacts, recent travel, and insect bites. However, he did report

exposure to a wooded area 1 week pta. Vital signs: heart rate (HR) of 122 and temperature of 101.3°F. Physical exam was significant for diaphoresis, tachycardia, distant heart sounds. The rash was erythematous, macular varying from 0.5-4.0 cm, non-tender, and non-pruritic located on the hands, upper and lower extremities, and trunk. Significant laboratory studies include: WBC 23.7, Neutrophil % 81.1, Sodium 133, Creatinine 1.26, Troponin 2.66, and BNP 823. EKG revealed sinus tachycardia (HR 123). CTA was negative for pulmonary embolism, but revealed mild fluid overload. The patient's clinical presentation was concerning for myocarditis secondary to rocky mountain spotted fever, so he was started on empiric Doxycycline for possible tick-borne illness. Rapid strep, rapid mono, RSV, Influenza A and B, C. difficile PCR, stool cultures, and blood cultures were negative. IgM tick related serologies for Rocky Mountain Spotted Fever, Lyme, Babesia, and Ehrlichia were negative. Additionally, a respiratory panel, EBV, HIV, CMV, Coxsackie A, and RPR were negative. An echocardiogram revealed a mildly reduced ejection fraction of 46-50%. A stress test was negative for ischemia. The patient improved clinically after receiving Doxycycline. He was discharged home and advised to have repeat RMSF titers in 2 weeks. Rickettsia rickettsia is a gram-negative, obligate intracellular bacterium that is responsible for majority of cases of RMSF. In the eastern United States, transmission to humans occurs via a bite from the Dermacentor variabilis tick (American Dog tick). Most cases occur in the spring and early summer months, in patients who have frequent exposure to dogs, reside near wooded areas, and/or areas with high grass. Patients typically present with fever, headache and malaise. They develop a rash between the 3rd and 5th day of illness. The rash usually begins palms and soles and spreads to the trunk. The bacterium has a tropism for vascular endothelial cells which leads to increased vascular permeability. In response to this damage, the host responds resulting in a variety of clinical manifestations including encephalitis and myocarditis. Patients may also present with thrombocytopenia and acute kidney injury. The diagnosis is mostly clinical given that an antibody response is not detectable via serologic testing during the first 5 days of symptoms. It is imperative to make this diagnosis and empirically treat with doxycycline, given that the disease severity can range from mild to lethal. A definitive diagnosis requires good follow up, with skin biopsy or antibody titer at 14 to 21 days after symptom onset.

**POSTER: 22**

### **"Vaping Associated Lung Injury"**

**CATEGORY:** Clinical Inquiry

**AUTHOR(S):** Erica De Clemente MD, Kelsey Gallagher DO, Kelly Ussery-Kronhaus MD

**INSTITUTION:** Ocean Medical Center

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** Learning Objectives: 1.

**POSTER: 23**

### **"Review of National Guidelines for COVID19 Prevention in Long Term Care Facilities at the Beginning of the Pandemic"**

**CATEGORY:** QI

**AUTHOR(S):** Jacey Pudney MD, MSPH, Joshua J. Raymond MD, MPH, Maria Ciminelli MD, Jamie Cherian DO, Mahvish Qazi MD, Raahi Upadhyay MD, Sydney Asselstine MD, Robert Kim MD

**INSTITUTION:** Rutgers at RWJ At CentraState

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** COVID19 virus has affected the entire world causing great morbidity and mortality, it is highly infectious and has spread rapidly, affecting all populations but having a greater impact in persons age 65 and older. As of March 19, 2020 people aged 65 and older made up 30% of the total cases in the USA however were 45% of all hospitalizations, 53% of ICU admissions and 80% of the deaths. Long term Care (LTC) facilities have a population of people at great risk of morbidity and mortality of the disease, due to living in a confined area and having residents with weaker immune systems or comorbid conditions. This quality improvement project is a summary of the guidelines created by the CDC, other LTC organizations and recommendations from LTC facilities across the country to help other facilities know how they should respond in this crisis. There are 2 main goals of these recommendations: to prevent introduction of COVID 19 to facilities and to stop the spread if residents become infected. To decrease the introduction to the facilities all visitor and nonessential personal should not be allowed to enter. Staff that do come in should be screened every day for signs and symptoms, taking temperature, monitoring for cough or shortness of breath. Facilities should also allow sick staff members to do stay at home. Also monitor for potential exposures as many HCP work at multiple facilities. Staff and residents need to be educated on proper hand washing techniques, the use of proper sanitizing equipment when going room to room. Having personal protective equipment and education on the proper way to don and doff. Guidelines on accepting a new resident: keep all new residents in one separate section of the facility and keep selected staff only on that location. New residents need to be isolated in their rooms for 72 hours, staff use PPE and monitor for signs and symptoms. After 72 hours can stop isolation but keep new residents for a total of 2 weeks in separate section before moving. To help stop the spread of COVID 19 in a facility: communal activities such as dining should be stopped. If residents need to be moved from their rooms, they should wear masks. If someone is found to have symptoms, isolate that resident, have them wear a mask, do not send them out to a hospital to be tested if stable and stop nebulizer treatments. When taking in residents who

have had COVID 19 or suspected to have, there are different' guidelines based on if there is a test available or not. Testing method of 2 negative test 24 hours apart is preferred but symptomatic monitoring can also be used. It is also important to keep staff well informed and to try to keep up the moral to prevent panic. With these guidelines it is the goal to keep residents safe and to help flatten the curve as older patients make up almost half of hospital admissions for COVID 19.

**POSTER: 24**

### **"End of Life Care Through Telemedicine During the COVID-19 Pandemic"**

**CATEGORY: QI**

**AUTHOR(S):** Jamie Mathew Cherian, D.O., Joshua J. Raymond, MD, MPH, Maria F. Ciminelli, MD, FAAFP

**INSTITUTION: Rutgers Robert Wood Johnson Medical School at Centrastate Medical Center**

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** Quality Improvement: End of Life Care Through Telemedicine During the COVID-19 Pandemic Objective: Explore end of life care discussions with patients and families, most notably in the current setting of the COVID-19 pandemic. Discuss the utility of telemedicine in facilitating these difficult conversations at this time of limited social interaction. Background: End of life care is a difficult yet necessary conversation that should occur with patients and their families at some point in their lives. In many scenarios, end of life is something that can be anticipated sometime in advance. However, in many other cases, risk of or impending death is something that may be completely unexpected, therefore further reinforcing the importance of early conversations regarding patient and family wishes regarding goals of care. In the environment currently produced by the COVID-19 Pandemic, we are faced with vast limitations to social interactions, necessitating an increased need for telemedicine and remote goals of care discussions. In addition, the potentially rapid and unpredictable decompensation seen in COVID positive patient's makes early conversations regarding this topic critical to preventing unwanted outcomes and unnecessary suffering for the acutely ill patient. Cases: Three cases will be presented of geriatric patients for whom remote conversations via telehealth were required to reach decisions regarding end of life care. The first case discusses a patient with dementia and multiple comorbidities for which management of one medical condition would exacerbate another. Patient's wife would defer decisions to other family members, who were consulted remotely in order to collaborate care, ultimately leading to palliative care measures and a comfortable death at home with family. The second case discusses a patient with progressive COVID-19 Pneumonia for whom a do not resuscitate order and explanation of it's benefits to the patient and family required remote collaboration between the patient, his son and clinicians. The third case outlines a patient with dementia who experienced failure to thrive and was unable to make her needs known. Patient evaluated and determined to benefit from hospice, however, the patient's son refused this persistently. Son was by default the decision maker, however was unsure of patient's true wishes. Discussion: The first two cases highlight situations in which telemedicine was integral in reaching outcomes beneficial to the patient and desired by all parties. The third case demonstrates why it is important to have end of life discussions early. From these cases, the presentation will delve into the various aspects of end of life care, along with guidelines on how to approach this delicate subject with patient's and families, particularly in the unique and evolving realm of telemedicine during the COVID crisis. Conclusions: The goal of the presentation is to outline the importance of end of life discussions in facilitating desirable patient outcomes, particularly in the midst of the current challenging landscape of restricted interaction. The presentation serves to demonstrate that even in the absence of direct physical interaction during the COVID-19 pandemic, desirable patient outcomes in end of life care are possible through telemedicine.

**POSTER: 25**

### **"Complications Post Severe Chronic Traumatic Brain Injury Including Seizure"**

**CATEGORY: Clinical Inquiry**

**AUTHOR(S):** Charles Eke MD, Ken Kronhaus MD, FAAFP, Christopher Bader, DO

**INSTITUTION: Hackensack Meridian Health Ocean Medical Center**

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** Complications Post Severe Chronic Traumatic Brain Injury Including Seizure Charles Eke, MD; Christopher Bader, DO; Kenneth Kronhaus MD Department of Family Medicine, Ocean Medical Center, Brick, NJ Learning Objectives: 1) Determine whether the complications of a chronic traumatic brain injury include late-onset seizures and/or epilepsy. 2) Management of seizures and epilepsy from post-traumatic brain injury. Case Summary: A race car driver in his 50's was involved in a crash during one of his races in 2018 which resulted a severe head injury, intracranial hemorrhage, and transection of his left carotid artery. Following the accident, the patient was paralyzed on the left side and remained in a coma for two weeks. After several months, the patient partially recovered strength on his left side. 1-2 years following the accident, the patient was found by family a member in a state of confusion, on the floor drooling, and with a blank stare in a post ictal-like state for several minutes. The patient presented to the emergency room after experiencing this unwitnessed syncopal episode. EXAM: speech: expressive dysphagia (at baseline). HEENT: indentation of teeth on tongue. LABS: complete blood count and electrolytes. EEG during the patient's hospital stay was normal. Patient eventually returned to baseline and with no seizure activity observed for 48 hours, and the patient was subsequently discharged. The patient returned for a similar complaint several months later. An MRI showed left MCA territory encephalomalacia with no other abnormalities noted. 24 hour

video EEG completed did not show any signs of epileptic activity. Conclusion: Although epilepsy is an important consequence of TBI, which affects 25% of patients who suffered from a severe brain injury, seizure was properly ruled out of this patient on his second hospital admission via video EEG. Although the patient in this case had multiple risk factors which would predispose him to late post traumatic epilepsy (which occurred 2 years after his initial injury) such as the severity of the brain injury, intracranial hemorrhage at the time of the brain injury, and initial Glasgow coma scale score at the time of injury, the inability to identify his syncopal episode as a seizure means he is unlikely to suffer from epilepsy. Had this been an epileptic episode, management would include prophylaxis with antiseizure medications such as phenytoin within one day of the severe TBI, as it has been shown to prevent early seizures (occurring within one week of TBI). Regardless, prophylaxis has no effect on the development of post-traumatic epilepsy or late post-traumatic seizures (occurring one week after TBI). Other long-term complications of traumatic brain injury include progressive brain atrophy, chronic traumatic encephalopathy, and Alzheimer's disease.

**POSTER: 26**

### **“Insulin as a Treatment for Hypertriglyceridemia Induced Acute Pancreatitis”**

**CATEGORY:** Clinical Inquiry

**AUTHOR(S):** Erica De Clemente MD, Kimyetta Robinson, DO, Christopher Bader, DO, Kelly Ussery-Kronhaus, MD, Ken Kronhaus MD, FAAFP

**INSTITUTION:** Ocean Medical Center

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** Learning Objectives: 1. Diagnose hypertriglyceridemia induced acute pancreatitis 2. Recognize that insulin is an important part of the treatment regimen Case Summary: A 64-year-old male with a past medical history of uncontrolled type II diabetes mellitus, hypertension, and hyperlipidemia, presented to the ER with complaints of chest pain that began the night prior to admission. He was at home resting when it began, though he had two beers and a “rack of ribs” earlier that night. He reported that the pain was located mid-sternally and described it as a combination of constant sharp pain associated with nausea and shortness of breath. The patient denied radiation of the pain, vomiting, diarrhea, diaphoresis. EXAM: BP 139/88 mmHg; abdomen distended, tenderness to palpation in the epigastric area and left upper quadrant. LABS: Creatinine 1.4 mg/dL (0.61-1.24), Glucose 445 mg/dL (70-99), AST 84 U/L (10-42), Lipase 3390 U/L (20-55), Amylase 1740 U/L (28-100), Triglycerides 1022 mg/dL (0-150), Total Cholesterol 386 mg/dL (<200), LDL 153 mg/dL (<100). EKG did not show any significant ST changes. CT abdomen/pelvis with contrast showed fatty liver, hepatic lesions, acute superimposed upon chronic pancreatitis, and gallbladder wall thickening. Patient was made NPO and was started on IV fluids. He was also started on a weight based basal/bolus insulin regimen and a moderate dose sliding scale regimen. After one day of treatment, triglycerides trended down to 733 mg/dL (0-150), and lipase trended down to 219 U/L (20-55). Accuchecks ranged from 111-407 mg/dL (70-99). He was started on fenofibrate 145mg and a high intensity statin. The patient improved clinically, and his triglyceride levels continued to trend down to 231 on day 5 when he was discharged. Conclusion: Hypertriglyceridemia induced pancreatitis (HTGP) causes 1-14% of cases of acute pancreatitis. Severe hypertriglyceridemia is defined as serum triglyceride levels of 1000 to 1999 mg/dL. The risk of acute pancreatitis is 5% with triglyceride levels of over 1000 and rises to 10 to 20% with levels greater than 2000 mg/dL. Patients with HTGP tend to have a more severe presentation, when compared to other causes of acute pancreatitis. When triglycerides are broken down into free fatty acids (FFA), they are toxic to the pancreas. Uncontrolled diabetes can cause HTGP because lack of insulin results in lipolysis in adipose tissue which releases FFA. FFA are delivered to the liver leading to a high output of VLDL and in combination with the inhibition of lipoprotein lipase in peripheral tissues, triglyceride levels increase in the blood. Insulin is an important treatment in patients with HTGP. Insulin can lower triglyceride levels. More importantly it helps to reverse the release of fatty acids from adipocytes in the response to stress and can promote fatty acid metabolism in insulin sensitive cells. It is important to utilize insulin as a treatment in all cases of HTGP because its effects can expedite clinical improvement. It is imperative to start patients on fat and simple sugar restrictions, exercise regimen and pharmacologic therapy for maintenance and to prevent recurrence.

**POSTER: 27**

### **“A rare case of acute cholecystitis caused by Raoultella ornithinolytica, an emerging pathogen”**

**CATEGORY:** Clinical Inquiry

**AUTHOR(S):** Erica De Clemente, MD, Andrew Haddad, MD, Ken Kronhaus MD, FAAFP, Christopher Bader, DO, Charles Rutkowski, MD, Kelly Ussery-Kronhaus MD

**INSTITUTION:** Ocean Medical Center

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**ABSTRACT:** Learning Objectives: 1. Recognize Raoultella ornithinolytica as a potential cause for acute cholecystitis. 2. Understand how to treat acute cholecystitis in a nonsurgical patient. Case Summary: 70-year-old male with past medical history of depression, alcohol abuse, and subdural hematoma presented to his PCP's office with the complaint of dizziness and weakness. Upon initial assessment he was found to be hypotensive with a blood pressure of 84/52 mmHg. Patient was sent to the emergency room for further evaluation and IV fluids. Upon presentation to the hospital, the patient also began complaining of upper abdominal pain. His vital signs in the

emergency room were as follows: blood pressure 90/61 mmHg, pulse 85 beats per minute, respiratory rate 17 breaths per minute, saturating 99% on room air, temperature 97.8 degrees Fahrenheit. Physical exam was significant for a positive Murphy sign. LABS: BUN 26 mg/dL (5-25), creatinine 2.14 mg/dL (0.61-1.24), total bilirubin 2.9 mg/dL (0.2-1.3), lipase 18 U/L (20-55), WBC count 15.7 k/uL (4.5-11), neutrophil percent 84.7% (50-70). IMAGING: Gallbladder ultrasound showed gallstones with marked wall thickening and pericholecystic fluid, suggestive of acute cholecystitis. CT head was also completed, which showed acute on chronic left sided subdural hematoma. Given hemodynamic instability and acute brain bleed, patient was admitted to the intensive care unit. Surgery was consulted, but it was decided that patient was a poor surgical candidate given acute brain bleed. A percutaneous cholecystostomy tube was placed and patient was maintained on IV fluids and IV piperacillin/tazobactam. On the day of discharge, fluid cultures from the gallbladder grew *Raoultella ornithinolytica*. The organism was sensitive to cefuroxime, so patient was discharged on PO cefuroxime 500 mg BID for 7 days and advised to follow up with general surgeon for removal of cholecystostomy tube in one week and to set up elective removal of his gallbladder. Conclusions: *Raoultella ornithinolytica* is an encapsulated, gram-negative aerobic bacillus within the Enterobacteriaceae family. This bacterium has been isolated from the gut of fish, ticks and termites. It has also been shown to be histamine producing, causing scombroid syndrome. Infections with these bacteria are usually present in hospitalized patients with multiple comorbidities. Here, we have a case of community acquired *Raoultella ornithinolytica* causing acute cholecystitis. There have been reports of this bacterium being clinically isolated in humans in sputum, stools, wounds, and urine but it is a rare cause of invasive human infections. Most notably, this bacterium has been historically identified in cases causing ascending cholangitis as well as appendicitis. To date, there has not been a reported case of *Raoultella ornithinolytica* causing acute cholecystitis. There has been one reported case of cholecystitis being caused by another bacterium of the same species, *Raoultella planticola*.

**POSTER:** 28

**“Rugby Athletes Attitude towards a Standardized Concussion Training Program”**

**CATEGORY:** Research

**AUTHOR(S):** Ellexis Khan, MD, Jason Womack, MD, Carrie Esopenko, PhD

**INSTITUTION:** Rutgers-Robert Wood Johnson University Hospital

**DISCLOSURE:** The author(s) have no relevant financial conflicts pertaining to this poster. **FINANCIAL SUPPORT:** None

**ABSTRACT:** Introduction: Contact sports are a cause of concussions in the adult population. Our clinical observations suggested the hypothesis that of these adults very few have participated in a formalized concussion training program such as the “CDC Heads up.” Methods: An anonymous survey document was distributed to adult rugby athletes in the US in which they were asked to report on his/her previous participation in any formalized concussion training program. We analyzed further information on each patient's attitude towards a formalized concussion training program. Results (preliminary): Ninety-eight rugby athletes participated in the survey study (35 male, 59 female). 50% of the rugby athletes have not participated in a formalized concussion training program. However, of those that have participated in a training program 94.5% believes that the training was beneficial and 90.6% believe this has helped them to better recognize concussion signs and symptoms in themselves and teammates more readily. Of the athletes that have not participated in a formalized concussion program, 47% would like to participate in one and approximately 92% believe that it would be beneficial. Conclusions: The athletes that have participated in a formalized concussion training program believe it was beneficial. Those that have not participated in a formalized concussion training program think it would be beneficial.