

2021 MSU FLINT MED SPRING VIRTUAL RESEARCH FORUM



Flint Campus
College of Human Medicine
MICHIGAN STATE UNIVERSITY



ABSTRACT SUBMISSIONS

1) Follow-up of arthroscopic Baker's cyst decompression

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Popliteal cysts (also known as Baker's cysts) are responsible for significant activity limitation, as well as pain and discomfort, in a subset of patients. Popliteal cyst manifestation coincides with intra-articular pathology in a majority of patients. Anatomy of the Popliteal cyst, most commonly, involves joint communication between the intra-articular space and the gastrocnemio-semimembranosus bursa [Fritschy]. Communication of the two spaces was found to be through a transverse slit below the origin of the gastrocnemius tendon [Rauschnig]. This slit is also known as the posterior transverse synovial infold [Brazier]. Brazier et al. described a surgical approach for Baker's cyst decompression, in which an arthroscopic shaver and biting baskets are used to resect the posterior transverse synovial infold creating an 8-10mm opening to allow for communication of the popliteal cyst with the posterior joint capsule. Previous study on arthroscopic management of popliteal cysts showed symptom resolution to grade 0 using Rauschnig and Lindgren criteria in all 14 of the patients studied at final follow-up [Ko]. Here we present a study that aims to analyze objective clinical characteristics and treatment profiles as well as patient reported outcomes of patients treated with the surgical technique previously reported by Brazier et al

2) Epileptic seizures associated with intracranial lipoma in a 13-month-old girl

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Intracranial lipomas are congenital malformations that are usually incidental but can rarely be symptomatic manifesting as headaches or epilepsy. We are presenting a case of a previously healthy 13 month-old girl who presented with unprovoked generalized tonic-clonic seizures. She was found to have intracranial pericallosal lipoma with some areas of calcification on brain imaging studies that included an MRI and CT scan. EEG was normal on two occasions. She was started on Keppra. Trileptal then was added due to the continuation of her seizures. However, that was discontinued due to hyponatremia. Onfi was added after which she continues to be mostly seizure free. The association between intracranial lipomas and seizures has been debated, but has been reported mostly with sylvian more than pericallosal location, as in our patient. Seizures can become refractory to anti-seizure medications. Surgery is associated with morbidity and mortality due to the high vascular nature of lipoma.

3) Effect of varied insulin dosing on serum potassium reduction in acute management of hyperkalemia systematic review and meta-analysis of retrospective cohort studies.

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Hyperkalemia, is a commonly encountered electrolyte derangement in the healthcare setting. It can be managed in a number of ways. One of which is forced intracellular shift of potassium using insulin. Standard of care recommendation is ten units of regular insulin typically given with a bolus of dextrose to guard against hypoglycemia which can result from insulin administration. There are studies suggesting that a lower dose of five units will be just as effective as ten units, with a lower risk of the side effect of hypoglycemia. This will be especially advantageous in patients are higher risk of hypoglycemia such as lower weight, non diabetic, end stage renal disease and female patients. Hence we performed this meta analysis and systematic review to evaluate if lower dosing of insulin has the same efficacy as the standard ten units of insulin for the reduction of potassium in hyperkalemia.

4) Characterizing Dermatological Concerns Among Adults and Children Affected by the Flint Water Crisis

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Between April 2014 and October 2015, residents of Flint, Michigan were exposed to a myriad of contaminants and irritants in their drinking water including lead, bacteria, excessive chlorine, total trihalomethanes, legionella, and increased corrosivity. Early manifestations of water concerns included skin conditions such as rashes and hair loss, yet few studies have examined these dermatological outcomes. The Flint Rash Investigation, completed in 2016, interviewed 390 Flint residents who had reported rashes; of which, 122 were examined by dermatologists. Of the 122 patients examined, 19.7% had rashes that were determined to be unrelated to the water exposure. This leaves over 80% of skin concerns that may have been related to the water. Aims: 1) To characterize the number of self-reported dermatological issues related to water usage, specifically with bathing/showering 2) Report on open-ended responses related to worsened skin, hair, and/or nail findings.

5) Impact of COVID-19 Pandemic on the Fruit and Vegetable Prescription Program in a Pediatric Clinic

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Hospital Pediatric Public Health Initiative*

In February 2016, Hurley Children's Clinic implemented a novel fruit and vegetable prescription program. • The primary prevention-focused program has expanded to several pediatrics clinics in Flint and has successfully established a robust evidence base for its efficacy to improve nutrition intake, household food security, and nutrition access. • Utilizing the electronic medical record, all children receive \$15 prescriptions for fruits and vegetables. • The prescriptions are redeemable at either the Flint Farmers' Market or through the mobile market, Flint Fresh, for a home delivered produce box. • Turning practice into policy, the Flint-based program inspired a national nutrition prescription program supported by the United States Department of Agriculture (USDA). • In March 2020, the COVID-19 pandemic spread throughout the globe, resulting in a national decrease in pediatric clinic visits. Children missed routine well-child care and health maintenance visits, including necessary vaccinations and screenings. • The aim of this evaluation is to better understand how the COVID-19 pandemic impacted the distribution and redemption of fruit and vegetable prescriptions.

6) Treatment for Progressive Respiratory Distress During the COVID-19 Pandemic: A Case Series

**Virginia LaBond, MD; Kristen Hartnett, DO; Jennifer R. Hella, MPH; Roya Z. Caloia, DO;
Kimberly R. Barber, PhD**

Ascension Genesys

Purpose: Review and offer relevant clinical data on tocilizumab administration in COVID-19 illness with ARDS while awaiting further clinical trials. **Methods:** Retrospective chart review and data collection of 15 patients who received tocilizumab as part of their treatment regimen for COVID-19. **Results:** Given confounding factors, including variance of medication administration and clinical monitoring, no clear benefit or disadvantage was demonstrated to tocilizumab administration. Notably, review of the data did demonstrate a chaotic nature of medication administration and treatment variation of COVID-19 illness during a pandemic.

Conclusion: Confounding factors of this case series limit true commentary on efficacy, further clinical trials would be necessary to evaluate tocilizumab as a COVID-19 adjunct therapy.

7) Traumatic Brain Injury in the Elderly With High Glasgow Coma Scale and Low Injury Severity Scores: Factors Influencing Outcomes

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Current trauma activation guidelines do not address age as a risk factor when leveling trauma patients. Glasgow coma scale (GCS) and Injury Severity Scale (ISS) play a major role in leveling trauma patients. We studied the above relationship in our elderly patients presenting with traumatic head injury. This study was a retrospective analysis of patients who presented to the emergency department with traumatic head injuries. We classified the 467 patients into two groups. Group A was 64 years and younger, and group B was 65 years and older. Their GCS, ISS, age, sex, comorbidities, and anticoagulant use were abstracted. The primary outcome was mortality. The groups were compared using an independent student's t-test and Chi-square analysis. The Cox regression analysis was used to analyze differences in the outcome while adjusting for the above factors. Results: There were 153 patients in group A, and 139 patients in group B who presented to the ED with a GCS of 14 or 15 and an ISS of below 15. The mean ISS significantly differed between group A (6.2 ± 6.8) vs (7.9 ± 3.2) in group B ($p < 0.0001$). The most common diagnosis in group A was cerebral concussion (57.3%), while in group B was intracranial hemorrhage (55%). In group A, 52.1% presented as a level one or level two trauma activation. The mean hospital and intensive care stay for group A was 2.1 (± 1.9) days and 0.9 (± 1.32) days, respectively, versus 4.2 (± 3.04) days and 2.4 (± 2.02) days for the elderly group B. Mortality in group A was zero and in group B was 3.8%. Cox regression analysis showed age as an independent predictor of death as well as length of stay. Conclusion: Elderly patients presenting to the ED with traumatic head injury with high GCS and low ISS should be triaged as a priority.

8) Guided physician-patient discussion to improve patient compliance with colorectal cancer screening in a resident clinic

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Background: Colorectal cancer (CRC) is the third most common cause of cancer among adult males and females, excluding skin cancer. The Multi-society Task Force of Colorectal Cancer recommends either colonoscopy every ten years or annual fecal immunohistochemical testing as the first tier of the screening tests. The goal of this project will be to encourage physicians to utilize a document to help guide discussion about the importance of CRC screening and offer potential solutions to barriers that patients may face. The hypothesis is that by providing a document that is easily accessible during health maintenance visits, with answers to common questions, and options to overcome common barriers, our clinic's CRC screening compliance rate, as measured by CQS, will improve over a period of 6 months. Methods: A CRC screening

guide was placed in each clinic patient room, and was available for use by the physician to address patient concerns regarding CRC screening. The physicians were then trained to use the documents for conversations with patients regarding CRC screening. The primary data point examined is the CRC screening compliance rate as measured by EHR. This metric is calculated based on the individual patient's age, time from last CRC screening method, and record of current CRC screening method. No individual patient data was examined for this project. Results: Over the course of the quality improvement project, there was an increase in the number of patients who were compliant with CRC screening per CQS guidelines. At the end of the 6-month data collection period, there was an 8% absolute improvement in CRC screening compliance. This represents a 14.8% relative improvement in CRC screening compliance. Conclusions: Despite the limitations of this quality improvement initiative, the results are promising. This is a very inexpensive measure that can be disseminated to many clinicians that work at one clinic in a very short amount of time, and can improve colorectal cancer screening among clinic patients.

9) Impact of Duplex Ultrasound Frequency on Clinical Outcome Following Carotid Endarterectomy

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Introduction: The Society for Vascular Surgery clinical practice guidelines currently recommend early frequent duplex surveillance after carotid endarterectomy (CEA) to detect ipsilateral restenosis and progression of contralateral disease. This study details our own clinical experience and seeks to identify the utility of current SVS guidelines in the care of patients following CEA. Methods: This is a retrospective review of 246 patients who underwent 254 CEAs. Patients were evaluated for neurologic events, ipsilateral carotid restenosis, and presence or progression of contralateral carotid disease. Stenosis was categorized as none (0%), mild (<50%), moderate (50-69%), severe (70-99%), or total occlusion (100%). Demographic data for each patient was identified. Results: No perioperative strokes or deaths occurred. Moderate and severe carotid restenosis occurred in 8.1% and 1.4% of patients, respectively. Progression of contralateral disease occurred in 12.4% of patients: 7.7% to a moderate stenosis and 4.7% to a severe stenosis. Presence of ipsilateral restenosis or contralateral stenosis was not associated with the development of neurologic events. Two patients developed ipsilateral strokes within 3 months of their CEA and one patient suffered an ipsilateral TIA at 20-month follow-up; none of these 3 patients had carotid restenosis at the time of symptom development. Conclusions: Our data suggests frequent surveillance in the two years following CEA is clinically ineffective and unnecessary. We recommend revision of the SVS guidelines to match the clinical outcomes and disease patterns occurring in patients after CEA. We suggest an early baseline carotid duplex scan at 6 weeks, at 1-year follow-up, and annually thereafter. Following this practical approach would reduce the cost and resource burden associated with early frequent surveillance following CEA.

10) Acute Treatment Response in a Vitamin D Deficient 14-Year-Old Male With Severe Hypocalcemia: A Case Report

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This is a case report of a 14-year-old Caucasian male with no significant past medical or surgical history, who presented with a 3-month history of numbness, fatigue, extremity cramping and weakness. Patient also reported that on one occasion, his fingers were contracted with his thumb folded in. In the emergency department, his total serum calcium level was 6.1 mg/dL (normal 8.7 - 10.4), serum phosphorus 4.8 mg/dL, serum magnesium 2.0 mg/dL, and physical examination was positive for Chvostek sign. He received one dose of intravenous (IV) Calcium Gluconate 500 mg, which raised his serum calcium to 7.0 mg/dL, and he was admitted to the hospital. On the pediatric floor, the patient continued to appear weak and, five hours later, his repeated serum Ca was 6.3 mg/dL. Further workup revealed low urine calcium of 156 ng/mL. Patient was subsequently recommended to stop the daily vitamin D 2,000 IU and only continue the oral calcium carbonate 2,500 mg daily and vitamin D 50,000 IU weekly.

11) Management of New Onset Atrial Fibrillation with Associated reduced Left Ventricular Ejection Fraction During Index Hospitalization and Clinical Outcomes

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CONTEXT: Atrial Fibrillation (AF) can account for up to one-third of hospitalizations for heart rhythm disorders in the United States costing \$26 billion annually. In 2018, the Catheter Ablation for Atrial Fibrillation with heart failure trial looked at patients with heart failure, LVEF < 35% and symptomatic atrial fibrillation comparing catheter directed ablation versus standard medical therapy. There was less mortality and hospitalization for those who received ablation compared to medical therapy groups. The goal of this study was to determine if patients admitted to the hospital with new onset atrial fibrillation and achieving sinus rhythm at time of discharge had improved clinical outcomes and readmission rates. METHODS: This was a retrospective chart review from 2014-2019 that included patients 18 years of age or older, no history of atrial fibrillation, admitted to acute telemetry floor, and left ventricular ejection fraction (LVEF) < 50% who were discharged in sinus rhythm experienced less major adverse cardiac events. However, there was no difference in 30-day readmission rates between the atrial fibrillation and sinus rhythm groups. KEYWORDS: New onset atrial fibrillation, LVEF < 50%, readmission, MACE

12) Impact of COVID-19 on Emergency Department Utilization

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Abstract/Synopsis: This research project seeks to identify and analyze changes in medical presentations and disease severity within the emergency department (ED) at Hurley Medical Center (HMC) due to the COVID-19 pandemic. By further investigating changes in the number of encounters, presenting complaints, disease severity, and hospital admission rates at HMC, we seek to better understand the impact COVID-19 has on patients in Flint, MI. This will allow us to investigate which populations and aspects of medical care are impacted most.

Subsequently, we can identify methods to incorporate this information to improve healthcare delivery and patient outcomes amidst an ongoing pandemic. **Introduction:** As the COVID-19 pandemic continues, there is a need to elucidate its impact on patients accessing services in the emergency department. Current investigations highlight trends in volume, diagnoses, and disease severity. Ultimately, the current data demonstrates how COVID-19 has affected who is presenting to the Emergency Department and when. The National Syndromic Surveillance Program (NSSP) suggests the number of emergency department visits declined by 42% during the early months of the COVID-19 pandemic; visits decreased from 2.1 million per week in March and April 2019 to 1.2 million per week in March and April of 2020 (Hartnett et al, 2020).

Literature Review: While it is clear that COVID-19 has altered the number of patients utilizing the ED as well as impacted what complaints people are willing to come to the ED for, data also suggests COVID-19 has impacted the severity of presentations. Despite the robust data collection by NSSP, several gaps remain in the knowledge regarding COVID-19 and emergency department changes. Current studies have not detailed the effects of the COVID-19 pandemic on emergency department visits in Michigan, nor communities in Michigan like Flint. Although data elucidating the changes in severity for emergency department visits suggests an increase in severity, some studies internationally suggest that there has been no increase in severity, perhaps indicating that severity changes are more specific to geographical locations.

Methodology: This is a retrospective chart review study on Hurley Medical Center's emergency department encounters focusing on adults 18 years and above in Flint/Genesee County in Michigan. Data collected for the study will be obtained from existing information recorded in charts from February 1 st, 2019 to July 31st, 2019 and from February 1st , 2020 to July 31st, 2020. We will compare aggregate data on demographic variables, diagnoses, severity, and other disease and/or outcome variables in 2019 versus 2020. We will compare variables using a combination of independent t-test, chi-square analysis, and regression modeling to analyze the data. Descriptive statistics will be done.

13) Diabetic Aspirin Users Versus Non-Users and their Risk of NASH and Liver Disease J
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Non-alcoholic fatty liver disease (NAFLD) has been estimated to have a prevalence of 70% in the type II diabetic population. It increases their risk for serious hepatic diseases, such as non-alcoholic steatohepatitis (NASH), cirrhosis, and hepatocellular carcinoma. Recent evidence has shown that daily aspirin use is associated with a lower risk of NASH and disease progression over time compared with non-aspirin use in the general population and may have a protective hepatocellular effect. The goal of this study was to determine whether or not there is a protective hepatocellular effect of daily aspirin use in type II diabetics as related to their risk of developing NASH and serious liver disease.

Methods: Retrospective chart review from July 1, 2012 to June 30, 2019, included patients who were 18 years and older who had diabetes mellitus type II. Those who took aspirin daily were assigned to the Exposure Group, and those who did not take aspirin were assigned to the Control Group. Patients' most recent set of labs were used to calculate their NAFLD fibrosis score. A score ≤ -1.455 indicated that fibrosis could be excluded with high accuracy, and a score ≥ 0.676 indicated that the presence of fibrosis could be diagnosed with high accuracy. Once this score was calculated for each patient, the two study groups were compared to see if diabetics who took aspirin daily had a lower NAFLD fibrosis score than those who did not.

Results: There were 152 (50.7%) patients who reported aspirin use (Exposure Group), and there were 148 (49.3%) patients who reported no aspirin use (Control Group). Exposure Group revealed 6 (3.9%) patients who had a NAFLD fibrosis score ≤ -1.455 , 70 (46.1%) patients who had an indeterminate score, and 76 (50%) patients who had a score ≥ 0.675 . The Control Group revealed 23 (15.5%) patients who had a score of ≤ -1.455 , 56 (37.8%) patients who had an indeterminate score, and 69 (46.6%) patients who had a score ≥ 0.675 . Chi square analysis revealed a significant association between the NAFLD fibrosis score and whether or not the patient uses aspirin, $p=0.002$. Those in the Exposure Group are 0.24 times less likely to have a score of ≤ -1.455 than those in the Control Group, and those in the Control Group are 4.2 times more likely to have a score of ≤ -1.455 than those in the Exposure Group.

Conclusion: Diabetic non-aspirin users have higher odds of not developing NASH and serious liver disease compared to their aspirin user counterparts. It appears that aspirin use actually portends a worse NAFLD fibrosis score compared to non-aspirin use (i.e., mean NAFLD fibrosis score 1.0 (SD: 1.7) and mean NAFLD fibrosis score 0.59 (SD: 2.02), respectively). As such, aspirin in the diabetic population may not render a protective hepatocellular effect.

14) The Sleight of Hand: Paraneoplastic Acral Vascular Syndrome

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Paraneoplastic acral vascular syndrome is a condition that may range from Raynaud's phenomenon to gangrene and can change throughout the course of a patient's malignancy. Although due to small vessel disease, the exact mechanism is still unknown. A suspicion for this condition should be considered when a patient presents with new onset digital ischemia without cardiovascular or rheumatologic risk factors. A 58-year-old man with a history of newly diagnosed metastatic rectosigmoid adenocarcinoma presented to the hospital with generalized anasarca and pain. The patient also had erythematous discoloration of multiple fingers and two small non-tender areas of dry gangrene on his right third and left fourth digits. He was diagnosed with colon cancer three weeks prior and that same week began noticing discoloration of his fingers. He was seen by his primary care physician for the discoloration and was given an antibiotic. However, his symptoms did not improve even after completing the course of antibiotics. He underwent bilateral upper extremity arterial doppler which revealed a normal arterial doppler study of the bilateral upper extremities with evidence of small vessel disease and possible vasospasm. During his initial hospitalization, the patient was diagnosed with bilateral pulmonary emboli and left lower extremity DVT for which he was started on a heparin drip and later transitioned to Eliquis. It was determined that the tumor was causing near obstruction of the distal colon and would be nonresectable due to its adherence within the pelvis. Over the course of the next two months, his condition rapidly declined and he transitioned to hospice care. The patient's digital lesions continued to progress with acrocyanosis of all digits and three lesions of gangrene. Paraneoplastic acral vascular syndrome is a very rare condition that has been noted to be associated with different neoplasms, but most frequently with adenocarcinoma. Although the presentation of paraneoplastic acral vascular syndrome often occurs at the same time as the diagnosis of malignancy or shortly after, as was the case with our patient, there have been cases where the digital ischemia presents before the diagnosis of malignancy. The highest value from this condition comes in these situations where a patient exhibits new onset digital ischemia without obvious cause. Lack of cardiovascular or rheumatologic risk factors and the presence of other features of hypercoagulability should further lead one to consider the possibility of undiagnosed malignancy as the cause for digital ischemia. This case highlights the importance of considering underlying malignancy with the presence of acral vascular syndrome.

- 15) Prevalence of venous or arterial thrombosis in hospitalized patients with Sickle cell disease
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Background: Sickle cell disease (SCD) is a systemic disease, and, in itself, is a prothrombotic condition. Patients who are hospitalized due to pain crises are invariably immobilized, which is an additional risk factor for thrombosis. Thrombosis is one of the most common complications in patients with sickle cell disease. However, little is known about the prevalence, variety and severity of thrombus particularly in the different genotypes of sickle cell patients hospitalized with vaso-occlusive crisis. **Objective** In order to adequately address the complications associated with the procoagulant state, we first need to know its prevalence and severity particularly in patients hospitalized with vaso-occlusive crisis. The objectives of this study are to find the prevalence of thrombosis in patients with SCD that developed during the hospital stay, and to compare it with that of control non-sickle cell patients. **Methods** We made a retrospective chart review of patients admitted with sickle cell disease at Hurley Medical Center (Flint, Michigan) and was diagnosed with a thrombotic event between April 2012 and April 2020. We identified all patients with the final discharge diagnosis of thrombosis (ICD-9 or ICD-10 code indicating any thrombosis, such as DVT, arterial thrombosis, catheter-related thrombus, pulmonary embolism, and stroke), combined with the diagnosis of sickle cell disease. **Results** Of a total of 137 patients with sickle cell disease (Age range 20-76 median: 36) who were hospitalized during this period, thirty-seven patients were discharged with a diagnosis of some type of thrombosis. 17 of 37 were venous thrombosis and 20 were arterial thrombosis. According to this study, the prevalence of non-sickle cell patients to develop a thrombotic event was only 4.5% ($p < 0.001$, chi square= 167.64). Homozygous patients (Hb-SS) had a higher rate of this complication (25/68=37%) compared with those with Hb SC disease patients (12/49=24%) ($p < 0.01$, chi square= 10.47). There were no thrombotic events reported in patients with Hb S/beta thalassemia+, or in patients with Hb SS with HPFH. **Conclusion** The risk of a thromboembolic event in patients with SCD is high, especially in patients with the Hb-SS disease. This study shows that different levels of thrombosis risk depending on the genotype. Even though the steady state hemoglobin is significantly higher in SC disease, thrombotic events are lower. More research is required to determine if universal preventive measures during vaso-occlusive crisis may be effective.

- 16) Rhabdomyolysis, Acute Renal Failure and Hypertension as leading manifestations in a COVID-19 positive Adolescent male
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The current raging COVID-19 pandemic, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), continues globally with an increasing number of cases worldwide. The burden of disease is higher in the adult population with a low percentage of children needing hospitalization due to severe illness. Presentation in infected patients can vary from

asymptomatic disease to severe acute respiratory disease and extrapulmonary complications with high morbidity and mortality. However, only a handful of cases to date have reported extra respiratory manifestations of COVID-19 among pediatric patients. We describe the case of a 17-year-old African American male who presented to the pediatric intensive care unit with a cough, generalized myalgia and subsequent hematuria, tachycardia and elevated blood pressure level. A diagnosis of COVID-19 was confirmed by polymerase chain reaction. Notable labs included markedly elevated CK level 549,658 with BUN of 22, creatinine of 1.8, total bilirubin of 1.5, AST of 2130 and ALT of 435. An evaluation of his past medical history was significant for rhabdomyolysis following influenza infection which had progressed to renal failure requiring dialysis 5 years prior. During this admission, he developed hypoxia requiring oxygen support and was treated with antivirals, corticosteroids and anticoagulants for COVID-19 pneumonia with respiratory failure. He was also managed with aggressive intravenous fluids for rhabdomyolysis and myoglobinuria with acute renal failure; and placed on antihypertensives for his elevated blood pressure. Due to the patient's previous history of renal failure requiring hemodialysis, and nephrotic-range proteinuria noted during this admission, he required outpatient management with nephrologists. This case contributes to the growing body of literature on the variety and severity of unique complications of COVID-19 and highlights the importance of the optimum management needed to arrest the progression of these complications.

17) Barriers to the Breast for Babies: A Flint Public Health Crisis

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The AAP supports breastfeeding as the optimal nutrition in infants up to 6 months of age, subsequently continued for up to 1 year as mutually inclined by mother and infant. Research surrounding the benefits and protective effects of breastfeeding are well known such as, decreased maternal postpartum blood loss, rapid involution of the uterus, decreased pediatric hospitalizations for respiratory or GI infections, reduced incidence of SIDS and allergic diseases. Public health benefits are reduction in chronic diseases including hypertension, cardiovascular disease, leukemia, lymphoma and obesity. Despite these benefits, many families are still partial to formula feeding over breastfeeding. In 2020 Healthy People, the national target goal of breastfeeding rates were 81.9%. As of 2019, Flint community's breastfeeding rates at Hurley Medical Center (HMC) were 69.1%. Our research study's aim is to analyze this discrepancy and identify the barriers that may interfere with the mothers of Flint regarding their choice for formula in lieu of breastmilk. Some of these suspected barriers include reliance on free formula from organizations such as the *Women Infant Children's (WIC)* Nutrition program, lack of robust education regarding breastfeeding, inadequate support, or transitioning to full formula feeding after initial supplementation due to a medical indication such as neonatal hypoglycemia. Over 200 anonymous surveys were distributed at HMC to mothers at varying stages of pregnancy or the newborn period to identify barriers which may influence infant nutrition choices in Flint

communities. While it is known that the Flint community has faced ongoing adversity since the Flint water crisis of 2014, the goal of this study is to understand the unique barriers this resilient community faces. The goal being better public education, resources, support and ultimately improve breastfeeding rates within the community of Flint, Michigan to optimize the nutritional health in the children of this population. **Learning Objectives:** 1) Assess the barriers preventing successful breastfeeding in the Flint community 2) Identify socioeconomic disadvantages that deter Flint mothers to choose breastfeeding. 3) Design a framework in which mothers of Flint communities will be better supported based upon identified barriers.

18) Prevalence and Identification of Intracranial Hemorrhages Necessitating Emergent Treatment at a Community Hospital

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Introduction: Endovascular coiling of aneurysms has become the mainstay of treatment for most aneurysmal subarachnoid hemorrhages and are performed by neurointerventionalists. The same neurointerventionalists also perform thrombectomies for ischemic strokes. However, there is a lack of specific and time sensitive protocol for aSAH diagnosis and treatment in the emergent setting, which is currently established for ischemic strokes. This study aims to provide supporting data from a community hospital, that a lack of protocol affects time to diagnostic imaging and treatment for this patient population, which will in turn affect patient outcomes. Methods: A retrospective analysis of 1825 patients presenting to Ascension Genesys Regional Medical Center between 2017-2020 that are within the hospitals previous Stroke database. Intracerebral and subarachnoid hemorrhages with an aneurysmal etiology were further investigated for their presenting symptom. Further data analysis will focus on the average “time to” diagnostic study and treatment initiation between aSAH and ischemic stroke patients. Preliminary Results and Discussion: Preliminary results show that 35.7% of subarachnoid hemorrhages were aneurysmal in nature and 80% of those patients’ presenting symptom was headache. Headaches remain one of the top 5 most common chief complaints that present to the emergency department. Further analysis must be done to determine how this may confound the screening and diagnostic process of aSAH, as early identification of aSAH and their inclusion into the stroke imaging and therapeutic pathway can significantly reduce morbidity and mortality.

19) Does timing of hydrocortisone initiation in septic shock protocol decrease a patient’s levophed drip duration?

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Background Sepsis as defined clinically has a reported death rate in hospitalized patients ranging between 30-45%, thus sepsis irrespective of shock requires swift diagnosis for the

further prevention of shock. It has been identified by the World Health Organization as a 'global health priority'. Based on guideline recommendations, treatment of sepsis should be initiated within 1 hour of hospital diagnosis because of the high mortality rate. The role of glucocorticoids in septic shock management has evolved since the 1900s. The research behind the administration of such is to restore the HPA axis from a state of adrenal insufficiency. Currently the use of glucocorticoids in the treatment of septic shock is considered a weak recommendation (2B) on the bases of low-quality available evidence and is administered on a case-by-case basis for refractory shock after IV fluids and vasopressors failed to restore hemodynamic stability. The goal of this study was to determine if timing of hydrocortisone initiation in septic shock decreased length of IV levophed drip duration. Methods This was a retrospective, database study conducted in the medical, surgical and neurological intensive care units at Ascension Genesys Hospital in Grand Blanc Michigan. Patients admitted from July 2014 to July 2019 with the discharge diagnosis of septic shock with corresponding ICD-10 code were screened for the study. Patients must have received IV administration of vasopressor levophed and hydrocortisone. Patients were divided into two groups, those who received hydrocortisone on the day of septic shock diagnosis and those with delayed administration of hydrocortisone (2+ days). These two groups were compared for the primary outcome of duration (days) of levophed administration. Results There were a total of 120 patients enrolled in the study; 63 (52.5%) patients had hydrocortisone administered the same day of septic shock diagnosis and 57 (47.5%) patients had delayed administration of hydrocortisone (day 2+) after the diagnosis of septic shock. In the hydrocortisone at diagnosis group, the mean length of levophed administration was 2.7 days (SD: 1.7). In the delayed hydrocortisone group, the mean length of levophed administration was 5.3 days (SD: 4.2). There is a significant difference in the length of levophed administration between the 2 groups, p administration between the 2 groups, $P < 0.001$. Conclusions: Current practice of steroids in septic shock is administered on a case-by-case basis. It appears that early administration of hydrocortisone in patients diagnosed with septic shock shows a shorter levophed requirement compared to delayed hydrocortisone use. As such this decrease in the length of vasopressor use, could ultimately spare many adverse effects of levophed use.

20) A Rare and Difficult Case in Anesthesia: Moebius Syndrome

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A 56-year-old male with history of Moebius Syndrome presented with worsening epigastric pain over a 3 day period with obstipation. CT scan and small bowel follow-through revealed a high-grade small bowel obstruction in the distal jejunum. Patient was then scheduled for an exploratory laparotomy. PMHx: Moebius Syndrome, IBS, Diverticulosis, Hypertension, Hyperlipidemia, GAD PSHx: Adenoidectomy, Uvulectomy, Right Jaw Skin Graft Meds: Atenolol, Rosuvastatin, Gemfibrozil, Prilosec, Xanax, Norco 7.5, Gabapentin, Bentyl Allergies: NKDA SocHx: No drugs, alcohol or tobacco use Anesthesia: ASA 3, Mallampati Class 4. This case as well as all cases of Moebius Syndrome provides a unique challenge to anesthesia care. As with this

case, craniofacial abnormalities can provide for difficulty in mask ventilation and tracheal intubation. It is important to prepare difficult airway equipment in case of difficulty. In this case, the patient had a very small mouth opening and poor dentition. To address this problem, awake fiberoptic intubation was performed without difficulty. In addition these patients are at increased risk for regurgitation and aspiration of oral secretions or gastric contents due to the cranial nerve deficits. This problem was addressed by using Robinul to decrease salivary secretions. Patients should be monitored closely in the post-operative period for acute or chronic pulmonary complications due to aspiration. Lastly, paralysis of the facial nerve places these patients at higher risk for keratopathy and corneal ulcerations. Tapping the eyes shut, as is standard care, was used in this case but a more meticulous attention to eye care in cases of Moebius Syndrome is warranted.

21) Reducing Refracture Rate in Postmenopausal Women: Review of Fracture Liaison Service Program Outcomes

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Introduction: Fragility fracture management and care remains one of the most demanding resources on the health care system today, with postmenopausal women compromising 70% of the costs incurred. Programs such as the Fracture Liaison Service program may reduce the recurrence of fractures and their associated costs, significantly. Methods: Data was taken of postmenopausal women with vertebral compression fractures, who were also treated with vertebroplasty or kyphoplasty. They were divided in to two groups, Group A from 2012-2014 had patients who were not enrolled in an FLS program, Group B from 2015-2017 had patients who were enrolled in an FLS program started in 2015, both groups were followed for 2 years. Variables collected include age, sex, comorbid conditions, serum calcium and vitamin D levels, dual-energy X-ray absorptiometry (DXA) T-scores, Fracture Risk Assessment Tool (FRAX) score (calculated as 10 year fracture risk) and the two year refracture rate. Results: Group A had 103 females analyzed with a vertebral refracture rate of 26.3% and Group B had 153 females analyzed with a vertebral refracture rate of 19.5% ($p = 0.003$). Total refracture rate was significantly less in post FLS group, Group B compared to Group A; 37.3% vs 55.2% ($p = 0.0001$). No statistically significant difference was found between Group A and B, for all other variables analyzed. Conclusion: Fracture Liaison Service programs offer a multidisciplinary systemic approach to reducing refracture rates in patients with recent fragility fractures, specifically in postmenopausal women; while also reducing healthcare costs.

22) A Retrospective Study of First-Line Analgesics for Distal Radius Fractures with Age Stratification

Hal Anderson M.D., Virginia Labond D.O., Chris Moore D.O.

Ascension Genesys

Objective: The objective of this study was to determine the first analgesic choice among Emergency Department patients with non-displaced distal radius fractures and to stratify this choice by age. Our primary question was to determine the prevalence of emergency department use of opioids as first-line analgesics within varying age groups of this patient population. Methods: This study is a retrospective chart review performed on all patients with a diagnosis of distal radius fracture from 2015-2019 who presented to one midwestern suburban emergency department. Patients were excluded if they required manipulation or reduction of the fracture. We then determined the first analgesic given (opioid or non-opioid analgesia) and stratified the data by age groups. Results: Patients were organized into subgroups by age. The two subgroups were children and adolescents (age 1-19 years) which comprise the younger age group (YAG), and young and older adults (age 20-95 years) which comprise the older age group (OAG). Patients in the younger age group received opioids 50 % of the time, and patients in the older age group were received opioids 80% of the time. The age groups were compared to determine if there was a difference in the type of medication chosen as first-line treatment. there was a significant difference when comparing the two younger age groups and the two older groups(p=0.002). Conclusion: At this study sight, there was a surprisingly high percentage of patients receiving opioids as first-line analgesia for the diagnosis of distal radius fracture. This trend was observed in all age groups, particularly adults.

23) The Glasgow Blatchford Score Is Associated With the Need For Endoscopic Intervention and Blood Transfusion in Patients With Upper Gastrointestinal Bleeding

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At an incidence of 48-160/100,000 individuals, upper gastrointestinal bleeding (UGIB) is the most common gastroenterological emergency, in the United States,¹ accounting for 300,000 hospitalizations and \$3.3 billion in healthcare spending, yearly. ² GBS, a quick tool that uses non-endoscopic criteria³ for clinical stratification of UGIB,⁴⁻⁶ allows for early diagnosis and outcome prediction, including need for intervention. The goals of this study are to determine the GBS scores of patients who underwent esophagogastroduodenoscopy (EGD) and if the need for endoscopic intervention and blood transfusion are related to GBS in patients with UGIB. Methods This is a cross-sectional retrospective study that included patients ≥ 18 years, who were admitted for UGIB to McLaren Macomb Medical Center (MMMC) and underwent EGD between July, 2018 and July, 2020. The patient encounters of interest were identified using international classification of disease (ICD 10) procedure codes for EGD. Demographics and the need for intervention or blood transfusion, variables comprising GBS, and other explanatory variables were extracted. Frequencies, percentages, and student T-test were used when

appropriate. A stepwise regression analysis was performed to determine predictors of GBS. SPSS version 25 was used to analyze the data. Statistical significance was set at a $p < 0.05$. Results A total of 130 observations were included in this analysis. No patients were noted to have a $GBS \leq 2$, indicating successful evidence-based allocation of resources, as a $GBS \leq 1$ to ≤ 2 is associated with safe outpatient management. We found that GBS was statistically significantly related to the need for intervention, blood transfusion, and age group. Additionally, those who needed intervention and blood transfusion scored 1.493 [mean GBS 13.12 ± 2.68 versus 9.16 ± 3.8 ($P=0.045$)] and 3.486 [mean GBS 13.13 ± 2.68 versus 10.62 ± 3.83 ($P=0.00$)] higher, respectively. Also, those who are ≤ 60 years-old scored 1.657 [mean GBS 9.38 ± 4.11 versus 11.7 ± 3.57 ($P=0.009$)] less. Conclusions Our study is among a few that investigated and found a mean GBS associated with need for intervention and blood transfusion. Even at higher GBS, we may be able to further stratify patients' risk and predict need for intervention and blood transfusion. Further research is needed to investigate this nuance.

24) Cutaneous Scarring and Hyperpigmentation at Birth: Congenital Herpes Simplex Infection Resembling Incontinentia Pigmenti

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Congenital herpes simplex virus (HSV) infection is a rare infection associated with severe morbidity and mortality. It typically results from perinatal exposure to HSV from maternal genital lesions. Most newborns with neonatal HSV infections are asymptomatic at birth but become ill within a few days. On the other hand, in utero exposure to HSV can cause congenital infection and can present with lesions at birth. These lesions consist of skin scarring and hyperpigmentation and resemble other cutaneous conditions. Characteristic vesicles are commonly absent. We report the case of a well appearing full term male newborn who had hyperpigmented patches with mild scaling and skin scarring at birth. Mother did not have a known history of genital herpes. Initial blood count and liver enzymes were normal. Presumptive diagnosis of Incontinentia Pigmenti was made and the patient was discharged home to follow up with dermatology. Because one vesicular lesion was noted on his right hand before discharge, HSV polymerase chain reaction (PCR) swabs from the lesion and the mucous membranes, along with blood, were collected before discharge. Subsequently, the newborn developed generalized vesicular rash on day 3 of life. The HSV PCR came back positive from the lesions, mucous membranes, and the blood. Thus, the newborn was admitted for further work up and intravenous acyclovir therapy. HSV PCR from the cerebrospinal fluid (CSF) was negative. Head ultrasound revealed nonspecific hypoechoic lesions concerning for calcifications. The newborn was treated with intravenous acyclovir treatment for 21 days and was continued on suppressive therapy with acyclovir for 6 months to prevent recurrence of vesicles. Our case highlights the importance of maintaining a high index of suspicion of any neonatal skin lesion despite absence of concerning maternal history or characteristic vesicular lesions. Skin scarring and hyperpigmentation at birth can be a sign of in utero infection

25) Comparison of clinical outcomes in patients diagnosed with submassive pulmonary embolism whom were treated with systemic alteplase, catheter directed alteplase or anticoagulation alone.

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Choice of treatment regimen in a patient diagnosed with submassive pulmonary embolism (PE) is controversial. While massive PE treatment is based on defined clinical guidelines, treatment of submassive PE is typically based on the clinical picture of each individual patient and the determination of the provider. The question providers have to ask themselves is whether the risk of morbidity from the submassive PE outweighs the risk of morbidity from thrombolytic therapy. The lack of evidence needed to answer this question can lead to uncertainty regarding the correct treatment plan and patient outcome. Methods: A retrospective chart review was performed between March 2016 and March 2019 on patients over the age of 18 who were diagnosed with a submassive PE. Diagnosis was defined by evidence of right ventricular (RV) strain. The patients were divided into subgroups based on the treatment regimen prescribed: heparin drip alone, systemic alteplase (tPA) in addition to heparin drip or catheter directed tPA in addition to heparin drip. A descriptive analysis was performed outlining the differences in demographic data and adverse effects that resulted from each treatment modality. The adverse effects of interest were massive bleed, development of shock, need for blood transfusion and death. Results: There were 150 charts reviewed that met criteria for submassive PE. The mean age was 66.5 years (SD: 14.9) and the majority were Caucasian (n=136, 90.7%). The mean ICU length of stay (los) was 1.9 days (SD: 3.0). Fourteen patients developed shock (9.3%) and 6.0% (n=9) developed massive bleed. There were 117 patients in the heparin drip only group with an average ICU los of 1.6 days (SD: 4.7). Seven (6.0%) in this group developed shock and 7.7% (n=9) had a massive bleed. In the group that received systemic tPA in addition to heparin drip the average ICU los was 2.9 days (SD: 4.3). Six patients (27.3%) in the systemic tPA group developed shock and none had a massive bleed. Patients in the group that received catheter directed tPA in addition to heparin drip had an average ICU los of 3.5 days (SD: 2.3). One (9.1%) of the patients in the catheter directed tPA subgroup developed shock and none developed a massive bleed. The difference in the ICU los between the heparin only group (1.9 days) and the heparin plus catheter directed tPA group (3.5 days) is approaching significance, $p=0.07$. Conclusions: This study revealed some similarities and discrepancies with current literature. This includes the expected higher rate of shock and younger age in those treated with systemic tPA, but there was also an unexpected increased occurrence of massive bleed in the heparin drip group and longer ICU los in the catheter directed tPA group.

26) Survey of Emergency Physician Satisfaction Based on Residency Length

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Ascension Genesys

Since the inception of emergency medicine as a recognized specialty, the 2-year training program with 1-year internship training program has developed into one of two program models; 3-year and 4-year programs. Each program model is tailored to reflect their specific timeline. Prospective residents are able to choose between the two program lengths when applying to the specialty and ultimately assimilate the training into their practice. This study was designed to determine if the length of a clinician's program was a factor in a clinician's preference and overall satisfaction after residency. More specifically, was one of the two lengths of training preferable to the other regarding comfort and satisfaction as measured by the responses to an 18-question survey.

An 18-question survey was sent out to the EM Docs Facebook page to question its members regarding their perceived level of comfort and satisfaction with the length of their chosen residency program. Factors contributing to clinician satisfaction were asked, such as MD vs DO, 3-year or 4-year residency training graduate, participants age, hospital volume during and after residence etc. Opinions of preparedness in the areas of board exam success, litigation and anxiety levels were asked. Of the 19,744 active members who visited the website, 189 members participated in this study. The answers provided were then analyzed and compared to determine which of the two educational models was preferred for training. It was found that apart from 4-year graduates obtaining their first attending positions at larger, higher volume emergency departments, there were no significant differences between the answers provided by 3-year graduates and 4-year graduates regarding the other areas of this survey. In general, there was no significant difference of opinion regarding practice preparedness between 3 and 4 year trained EM physicians, Although 4 year program graduates were found to practice more often in higher volume departments, the small sample size prevents us from drawing definite conclusions

27) Outcomes Related to the Initial Fluid Resuscitation Strategy in a Congestive Heart Failure Population Treated for Sepsis

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Introduction: According to the CDC, nearly 270,000 people die with sepsis every year. Sepsis remains a very deadly condition, carrying upwards of 40% mortality rate. A core component of treatment is rapid and early fluid administration, however, certain populations can be at increased risk of fluid overload, such as those with congestive heart failure. There exists conflicting data regarding fluid administration in this population. Excess fluid administration in these patients can lead to significant symptoms related to vascular congestion and fluid accumulations in the lungs, abdomen, or extremities, all of which have been shown to lead to increased use of medical interventions and increased hospital mortality. This study seeks to determine whether patients with preexisting congestive heart failure admitted to the hospital for sepsis have significantly different lengths of stay or mortality with respect to an aggressive versus conservative initial fluid resuscitation strategy. Methods: Study was a retrospective analysis via electronic medical record data extraction from 2013 to 2019. All patients had a preexisting diagnosis of congestive heart failure and were admitted for sepsis. The patients

were divided into two groups: The aggressive group were those in which orders for normal saline boluses in the first 24 hours met or exceeded the recommended 30cc/kg ideal bodyweight recommendation, and the conservative group was any cumulative normal saline bolus of less than that amount over the same time. The primary outcome was length of stay and ICU length of stay. Secondary outcome was in-hospital mortality. Length of stay differences were compared by an Independent Student's t-Test (Mann Whitney-U) and a Chi square analysis was used to evaluate mortality between groups. Results: Of the 608 patients that fit the inclusion criteria, 49 patients met criteria for aggressive fluid resuscitation strategy and 133 were designated conservative fluid resuscitation strategy. Among these two groups, there was a nonsignificant difference between length of stay (9.7 days vs 9.8 days, $p=0.77$) and ICU length of stay (3.0 days vs 3.0 days, $p=0.90$). However, there was a significant difference in mortality. The patients treated with the aggressive fluid resuscitation strategy resulted in a higher in-hospital mortality (26.5% vs 13.5%, $p=0.04$). Conclusions: There is no significant difference between length of stay or ICU length of stay in patients with congestive heart failure admitted for sepsis based on the initial fluid resuscitation strategy, however, there may be a relationship between aggressive initial volume resuscitation and worsened mortality.

28) Cytosorb Filter: An Adjunct for Survival in the COVID-19 Patient in Cytokine Storm? A Case Report

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Ascension Genesys

COVID-19 is a pandemic that has affected not only the United States, but the entire world. The impact it has had has overwhelmed the entire healthcare system, from the unknown carrier status, poor testing capabilities to hospitals running out of ventilators for severely ill patients. There has been a variety of potential treatment modalities for the various forms of illness ranging from asymptomatic carriers to the ventilated ICU patients. These include anti-inflammatory medications, antibiotics, immune-modulators, convalescent plasma, and others. The cytokine storm that inflicts some patients can be devastating to the vital organs of the human body in the form of acute respiratory distress syndrome (ARDS), renal failure, coagulopathy, and death. Cytosorbents® cytokine filter is a potential treatment methodology aimed at reducing the cytokine storm, thus serving as a bridge for therapy in the acutely ill patients infected with COVID-19. The following case report demonstrates the utility in a critically ill patient who survived the cytokine storm after receiving the cytokine filter via continuous renal replacement therapy bridging him to further definitive therapy

29) Cardiac Arrest Outcomes at Ascension Genesys Hospital

Brett Haschig, DO
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Introduction: National data from 2014-2017 showed that the national average of survival for a patient who experienced a cardiac arrest and underwent resuscitation was 75.2%. The national

rate for return of spontaneous circulation (ROSC) following an arrest from 2014-2017 was 72%. Current ACLS guidelines do not recommend the use of Sodium Bicarbonate, Calcium Chloride, or Magnesium Sulfate in the resuscitative efforts when someone experiences a cardiac arrest because they have not definitively proven to improve overall survival after cardiac arrest. The overall goal of this research was to determine if the rates of ROSC and mortality at Ascension Genesys Hospital differ from the national average, and to see if our use of sodium bicarbonate, calcium chloride, or magnesium sulfate significantly positive or negatively impacts our rates.

Methods: Data for all those with a Code Blue order set ordered or an ICD 10 code of cardiac arrest (I46.9) in the hospital EMR was obtained from the IT department. All of this information was then verified with the code blue sheets housed in the quality department. Those sheets were also used to identify patients that were missed from the data collection and their demographic information added to the spreadsheet. Review of "Code Blue Notes" within the EMR were used to help fill in incomplete data from the code blue sheets. There were a small number of instances where some data points were not able to be found using either the code blue sheets or the general miscellaneous notes.

Results: Of the 310 total arrests, ROSC was achieved 224 (72.3%) times. Of the 239 unique patients, there were 176 (73.6%) patients who died prior to discharge. There were 107 (70.4%) patients that achieved ROSC out of the 152 that received adjunctive medications. There were 70 (80.5%) patients that achieved ROSC out of the 87 patients who were not administered meds. There is a difference that is approaching significance between ROSC achieved and whether or not the patient received adjunct medications ($p=0.09$). There were 122 (80.3% of 176 total patients that died prior to discharge) patients who received meds and died prior to discharge. There were 54 (62.1% of 176 total patients that died prior to discharge) patients who did not receive meds and died prior to discharge. There is a significant association between administration of adjunctive meds and death prior to discharge ($p=0.002$).

Conclusions: At Ascension Genesys the mortality rate over a 2-year period was 73.6%, compared to 75.2% for the national average from 2014-2017. In those same time periods, the rate of ROSC in any given cardiac arrest at Genesys was 72.3%, compared to the national average of 72%. There is a difference approaching significance between ROSC achieved and whether or not the patient received adjunct medications. There is a significant association between administration of adjunctive meds and death prior to discharge. While there is likely a significant association between giving these adjunctive medications and rates of ROSC and mortality, whether or not this association is causative is still unclear.

30) Understanding Influenza Vaccination Declination in Adult in a Primary Care Setting in Mid-Michigan

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Abstract Text: Influenza has a significant morbidity and mortality in the USA, and the influenza vaccine can help to reduce this disease burden, yet vaccine hesitancy and declination exists as a prevalent barrier to reduce the impact of influenza. The Michigan 2019-2020 influenza season mortality rate was 12.8 per 100,000 with a total of 1,662 deaths. Yet the vaccination rate in Michigan for the same season was only 31.4%. AIM: The aim of this study is to delineate rationale for influenza vaccination declination and to recognize possible barriers to vaccination. Reasons for influenza vaccination declination can ultimately be divided into the following common themes: concerns intrinsic to the vaccine, extrinsic societal forces, and perceived risks and benefits. METHODS: Two Mid-Michigan primary care offices participated by providing validated questionnaires for 9 weeks during the 2019-2020 influenza season. Demographic information, as well as information on chronic disease status, past vaccination status, future vaccination plans, and rationale for ever declining an influenza vaccination was collected. Participants were able to select those that applied from a list or describe their own reason. Data were analyzed using SPSS 25 RESULTS: 1,104 questionnaires were returned and deemed valid for a response rate of 79%. 61.7% of participants had received at least one influenza vaccination in the past. Of the participants who had never received an influenza vaccination in the past, 75.2% stated they did not plan on receiving an influenza vaccination this year. 433 participants responded to the qualitative portion regarding reasons for vaccination declination. The most commonly selected responses were “fears of getting sick from the vaccine” (35.8%), “past negative reactions to vaccines” (28.2%), “other” (25.6%) and “concerns about substances in vaccine/vaccine safety” (24.9%). DISCUSSION: Identifying reasons for vaccine hesitancy related to the influenza vaccine can help to bolster education surrounding vaccination, bridge gaps between patient and provider, and ultimately decrease rates of declination

31) Incidence and Associated Factors of Missed Diagnosis of Ischemic Posterior Circulation Stroke in the Emergency Department of a Community Hospital in 2018-2019 – a Retrospective Review

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Ascension Genesys

Background and Purpose - Diagnosis of posterior circulation strokes (PCS) are notorious for being misdiagnosed or delayed, and misdiagnosis may cause significant delays in treatment of PCS which requires time dependent intervention. This study determined (i) the incidence of misdiagnosed PCS in the ED, (ii) the clinical factors associated with PCS misdiagnosis in the ED and (iii) discharge outcomes of misdiagnosed PCS patients admitted to our community hospital between January 1, 2018 and December 31, 2019. Methods - A retrospective cohort study was

performed on all patients with an MRI or CT-verified PCS lesion admitted to a 484-bed community hospital in Michigan, USA, during the stated 2-year period. Patients with MRI or CT-verified PCS stroke were divided into two groups: (1) those who were not diagnosed with PCS stroke in the ED are considered “missed”, and (2) those correctly diagnosed with PCS stroke prior to leaving the ED are considered “diagnosed”. Demographic data, vascular risk factors, clinical signs and symptoms, ED course, length of stay and 30-day in-hospital mortality were compared between groups. The cumulative incidence was calculated using descriptive statistics. Factors associated with missed diagnoses were tested for significance ($p < 0.05$) using Chi square analysis and the odds ratio for each factor calculated. Results – The total number of patients with a discharge diagnosis of stroke was 941, out of which 775 were excluded from the study. Out of 166 patients with a CT/MRI-verified PCS lesion, 91 (54.82%) were missed in the ED (mean age of 70.90 + 14.50). There were no significant differences between the two groups in demographic characteristics, vascular risk factors, clinical signs and symptoms, time from symptom onset to ED arrival (onset-to-door), presenting NIHSS score, or 30-day in-hospital mortality. About 39 % of patients in the missed group presented to the ED with significantly less severe disabling symptoms (mRS score 0-2) as compared to 77.3% patients in the diagnosed group who presented with moderate to severe disabling symptoms (mRS 3-6, $p = 0.03$). The average time from ED arrival to diagnosis of PCS for the missed diagnosis group was 48.81 + 82.39 hours, significantly greater than 2.78 + 4.35 hours for the diagnosed group ($p = < 0.0001$). The average time from ED arrival to disposition (door-to-disposition) was longer by 2.05 hours in the missed group and length of stay was slightly longer by 0.68 hours in the missed group, both were trending toward significance ($p = 0.07$ and 0.08 , respectively). The overall regression analysis for predicting missed diagnoses of PCS in the ED was significant at $p = 0.03$ ($\beta = 3.36$; OR = 4.60). The nonspecific signs and symptoms variable was the primary independent, significant predictor at $p = 0.05$ ($\beta = -0.76$; OR [95% CI] = 3.60 [0.22 – 1.02]). Age younger than 50 years old, mild NIHSS score (0 – 4) or having less than one vascular risk factor was not predictive of having a missed diagnosis of PCS in the ED. Conclusion – Almost 55% of patients with MRI or CT-verified PCS lesion were missed in our community ED. PCS were 4.6 times more likely to be missed if patients present with nonspecific symptoms. Moreover, diagnosis of PCS via imaging tends to be delayed by an average of 49 hours in patients who present with absent to mild disabling symptoms. Further studies could help identify ways to improve our institution’s quality and timely care of patients with PCS in the ED.

32) Initiation of Screening for Obstructive Sleep Apnea In the Primary Care Setting

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McLaren Bay Region

Obstructive sleep apnea (OSA) is a chronic disorder that has been linked to the development of multiple comorbid conditions. Currently, the primary care community has conflicting recommendations by the American Academy of Sleep Medicine (AASM) and the United States Preventative Service Taskforce (USPSTF) with regards to routine screening for OSA1. This

Quality Improvement project aimed to investigate the effects of implementing universal screening for OSA in adult patients at the Family Health and Wellness Clinic using the STOPBANG screening questionnaire.

33) Endoscopic Management of Unintentional Glass Ingestion Complicated by Contained Gastric Perforation

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Ascension Genesys

A 34-year-old man with no past medical or psychiatric history presented with 3 days of severe epigastric pain. Epigastric pain was not related to any other gastrointestinal symptoms including nausea, vomiting, diarrhea, hematemesis, hematochezia or melena. He denied sick contacts, travel, change in diet or ingestion of foreign objects. Laboratory work-up was unremarkable. CT of abdomen and pelvis with contrast was obtained and showed circumferential thickening of the distal stomach with a linear hyperdensity in the anterior aspect of the stomach of unknown origin, but was hypothesized to be an ingested object causing contained perforation (A). Gastroenterology and general surgery teams were consulted. Patient was made NPO, started on IV fluids, ceftriaxone, metronidazole and pantoprazole. Patient then underwent upper endoscopy that revealed a 3 cm shard of glass embedded in the anterior wall of the gastric antrum, as well as an area of gastric wall defect where the glass had perforated (B/C/D). The shard of glass was removed from the wall of the stomach via biopsy forcep and retrieved via overtube and snare. The two areas of perforation were repaired with 4 hemoclips (E/F). A repeat CT with water soluble contrast was performed the following day and did not show any extravasation of contrast from the stomach. Patient had an uncomplicated post-procedural course. His diet was advanced sequentially to a general diet and he was discharged with oral antibiotics to complete a 5 day course.

34) A Retrospective Study of First-Line Analgesics for Distal Radius Fractures with Age Stratification

Hal Anderson M.D., Virginia Labond M.D., Chris Moore D.O.
Ascension Genesys

Objective: The objective of this study was to determine the first analgesic choice among Emergency Department patients with non-displaced distal radius fractures and to stratify this choice by age. Our primary question was to determine the prevalence of emergency department use of opioids as first-line analgesics within varying age groups of this patient population. Methods: This study is a retrospective chart review performed on all patients with a diagnosis of distal radius fracture from 2015-2019 who presented to one midwestern suburban emergency department. Patients were excluded if they required manipulation or reduction of the fracture. We then determined the first analgesic given (opioid or non-opioid analgesia) and stratified the data by age groups. Results: Patients were organized into subgroups by age. The two subgroups were children and adolescents (age 1-19 years) which comprise the younger age

group (YAG), and young and older adults (age 20-95 years) which comprise the older age group (OAG). Patients in the younger age group received opioids 50 % of the time, and patients in the older age group were received opioids 80% of the time. The age groups were compared to determine if there was a difference in the type of medication chosen as first-line treatment. there was a significant difference when comparing the two younger age groups and the two older groups($p=0.002$). Conclusion: At this study sight, there was a surprisingly high percentage of patients receiving opioids as first-line analgesia for the diagnosis of distal radius fracture. This trend was observed in all age groups, particularly adults.

35) Provider perspectives and compliance with use of novel stethoscope protector in the hospital setting

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Introduction: Stethoscopes are understood to be fomites harboring and transmitting bacteria among patients in the inpatient setting, possibly contributing to healthcare associated infections. Although a causal link between contaminated stethoscopes and healthcare associated infections (HCAI) is not well established, decontamination of stethoscopes between patients is standard of practice, especially for patients on contact precautions (POCP). Providers may employ different methods of protection when examining POCP including using a hospital-provided disposable stethoscope, using an improvised barrier on one's own stethoscope, and using one's own stethoscope without barrier and sanitizing after each patient encounter. The purpose of this study was to determine practices and attitudes of care providers regarding the use of stethoscopes during physical exams of patients and compare these perceptions to observational data assessing provider compliance to contact precautions. Methods and Materials: This study included a 17-question survey distributed to care providers relating to the effectiveness, compliance, and their preferences regarding stethoscope use. Additionally, physicians and nurses were observed performing auscultation exams over a 6-week-period and data was collected regarding their compliance with contact precautions and their behaviors relating to stethoscope use. Following this, a 4-week period of intervention was initiated where dispensers containing StethOprotect (B&B Medical Products) disposable stethoscope covers were made available to providers as an alternative method of barrier protection for their stethoscopes. After this 4-week period to allow providers to be familiarized with the product, another 6-week period of observation was performed. Results and Discussion: A majority of respondents (77.1%) recognized that stethoscopes likely play a role in the spread of iatrogenic infections. While the stated hospital policy at Ascension Genesys is to use a disposable stethoscope for examination of POCP, 96.7% of survey respondents believed that disposable stethoscopes were not as effective as their personal stethoscope and only 39.4% of respondents reported often or always used the disposable stethoscope to POCP. A majority of respondents (63.4%) instead preferred using a disposable glove as a barrier and an even greater proportion (78.0%) indicated an interest in using a fitted disposable stethoscope cover should it be provided at bedside. During the initial observational period, 78.6% of providers were found to be compliant with contact precautions using either disposable stethoscope or improvised

barrier using a glove. During the observational period following the introduction of the fitted disposable stethoscope cover as an intervention, 86.2% of providers were found to be compliant with contact precautions. Though it did not meet statistical significance ($p=0.54$), the absolute percentage of compliance to contact precautions increased with the introduction of the fitted disposable stethoscope cover. Whereas 78.0% of respondents to the survey stated they would be interested in using a fitted disposable stethoscope cover, in observation only 20.0% of compliant providers used the provided fitted disposable cover.

36) Addressing Missed Opportunities for Patient Refill Requests and Proper Billing in a Family Medicine Residency Clinic.

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Purpose: At the McLaren Bay Region Residency Clinic non-appointment refills require a lot of administrative time and limit proper billing of complexity of care. Study aim was to determine efficacy of refill request forms to be completed by all patients prior to their appointment on number of refill requests and the ability to properly bill for complexity of care delivered at in office appointments. Methods: Introduction of refill request form given prior to each appointment to be completed prior to seeing a provider. All patients who had an in-person appointment during the QI study period were included in the project. Results/Anticipated Results: QI project aimed to have a reduction in the number of non-office visit refill requests by 10% and increase in the number of 99214 office visits (higher complexity) vs 99213 (lower complexity) by 5%. An observed 11.7% reduction of refill requests after intervention compared to pre-intervention. Number of 99214s vs 99213s pre-intervention vs post-intervention demonstrated a smaller difference, 62.30% pre-intervention vs 63.2% post-intervention, a 0.9% increase. Conclusion: A significant reduction of refill requests was seen post-intervention, meeting goal set by this QI project. Despite improvement, goal of a 5% increase in the number of 99214s was not met. However, it can still be determined that introduction of a refill request form can demonstrate improvement of complexity of billing and reduction of number of refill requests.

37) Atypical Presentation of Multiple Myeloma (MM) as Disseminated MM with Osteopenia and Compression Fractures

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Multiple myeloma is a tumor of B-cell origin, in which monoclonal plasma cells proliferate within the bone marrow causing paraprotein destruction of bone and nearby tissues. This neoplasia is classically characterized by hypercalcemia, anemia, kidney involvement, and most notably lytic “punched out” bone lesions. On rare occasions, this bone neoplasia presents as a disseminated form with global osteopenia causing secondary compression fractures. A 59-year-

old man presents to his primary care physician with new-onset back pain. He has a history of multiple myeloma and is currently on chemotherapy; he also has an unrelated history of hyperplastic polyps which were resected two years prior to this current presentation.

Initial MRI of the lumbar spine found no evidence of acute fractures. However, there was evidence of multilevel disc degeneration with desiccation, or disc dehydration, at L1-2, L4-5, as well as L5-S1. Two months following, the patient presents again with severe back pain with spasms. This time a whole-body PET and unenhanced CT scan were performed. Abnormal findings included diffuse osteopenic transformations of axial skeletal systems predominantly in the thoracic, lumbar, and sacral regions. The key abnormalities in the PET scan which helped make the diagnosis of disseminated disease pattern is the diffuse metabolic activity seen throughout the skeletal system. This metabolism was also a specific finding seen in the lower thoracic through the upper lumbar spine. There were no isolated findings of lytic lesions, proving this to be an irregular presentation of this disease. Further MRI studies weeks later, revealed loss of vertebral body height in multiple thoracic vertebral segments: T3 through T12, further evidence of bone metabolism. There is also a T1-weighted hypointense lesion of L1, due to lower fat content in the disc. Other key disc segments such as L4-L5 and L5-S1 showed facet hypertrophy with spinal stenosis as well as neuroforaminal stenosis, respectively. These findings raise suspicion of nerve compression in the spine. Although multiple myeloma is most commonly recognized by the finding of lytic bone changes, patients presenting with a history of severe back pain with initial findings of degenerative disc changes on imaging should not be excluded from the diagnosis of multiple myeloma. This is especially true in patients who are non-elderly or considered young for this particular pathology, who do not show classic multiple myeloma signs. Above all, early diagnosis is key to a good outcome in treatment.

38) Survey of barriers to fruit and vegetable access among food-insecure families with overweight or obese children

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Objective: Food insecurity and obesity often coexist in children from low-income families, placing these children at an increased risk of developing chronic health conditions in the future. However, evidence suggests there is a negative correlation between increased intake of fruits and vegetables and childhood obesity. The present study sought to gain a better understanding of barriers to fruit and vegetable access among food-insecure families with children whose BMI is above the 85th percentile. Design: Prospective cohort study. Upon initiation of a food prescription program, data was collected from eleven caregivers of patients from Care Free Medical Clinic via phone interviews. Researchers elicited caregivers' perceptions about what would help their child eat more fruit and vegetables and fruit and vegetable servings

consumption of their child in the past 24 hours. Using thematic analysis, researchers examined qualitative data to identify patterns across transcripts and formulate emerging themes. Setting: Lansing, MI, USA Subjects: English speaking children aged 5-17 with a BMI above the 85th percentile from food-insecure households were identified by using the short form of the US Household Food Security Survey. Results: Results pending. Conclusion: Conclusions pending upon the collection of initial data

39) A Case Report: Essential Thrombocytosis Jak2 Positive Mutation Initially Refractory to Hydroxyurea

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A 61-year-old male presented to the emergency department with worsening dizziness over the last 48 hours. The episodes of dizziness come in clusters and last for a few minutes and then go away without any modifying factors. He felt that some of the episodes felt like the room was spinning. The dizziness is exacerbated with any sort of exercise or physical activity and occasionally results in bilateral paresthesia to the hands. He had recently seen a hematologist outpatient for a workup of thrombocytosis incidentally found by his primary care physician. Laboratory workup initially showed thrombocytosis with a platelet count of 968,000 cells/microliter, hemoglobin of 16 g/d, WBC $17.71 \times 10^3/\mu\text{L}$, and HCT 48.7%. He also had an AKI with Cr 1.330 mg/dL, and eGFR 57 along with a mild increase in troponins of 0.063 to 0.102. Lastly, his serum was positive for Jak2 mutation by PCR. Electrolytes, urinalysis and iron studies were all within normal limits. Peripheral smear showed thrombocytosis (Plt count 919/ μL), neutrophilia (Neutrophil count 10.8/ μL) and monocytosis (Monocyte count 1.5 / μL). Abdominal ultrasound showed mild splenomegaly. Hematologist diagnosed him with Jak2 positive essential thrombocytosis and started him on hydroxyurea with the initial dosage of 500mg daily. Cardiology ordered a TTE that showed a reduced ejection fraction of 40-45% and a possible thrombus. Heparin was started and a TEE was done showing no thrombus. He was then taken for cardiac catheterization and was found to have 95% left proximal LAD thrombotic lesion. A drug eluting stent was placed. The patient's presenting symptoms continued, and his course was complicated with platelets reaching 1,036,000. He was not responding to hydroxyurea despite increasing to maximal dosing over several days. Given the patient was still symptomatic and medically refractory worsening ET, plateletpheresis was done which resulted in a significant reduction of his platelets to 434,000 along with symptomatic improvement. Pt has been following with hematology outpatient and his platelets have been well controlled with hydroxyurea and anagrelide.

40) Phosphodiesterase-5 Inhibitors in Heart Failure with Preserved Ejection Fraction: A Systematic Review and Meta-analysis

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Background: Heart failure with preserved ejection fraction (HFpEF) results from a complex interplay of various risk factors. Patients with HFpEF have shown reduced cGMP (cyclic Guanosine 3',5'-Monophosphate) levels relative to those with HF with reduced ejection fraction (HFrEF). Phosphodiesterase -5 inhibitors (PDE5i) are thought to play a cardioprotective role by potentiating the cGMP pathway. Objective: To study the effect of PDE5i on oxygen consumption (peak VO₂), six-minute walk distance (6MWD), mitral annular E/e' ratio, left ventricular ejection fraction (LVEF), mean pulmonary artery pressure (mPAP), pulmonary artery systolic pressure (PASP), and pulmonary vascular resistance (PVR). Methods: An electronic database search was conducted for Randomized Controlled Trials (RCTs) published in the English language prior to February 2021. A random effect model using RevMan (version 5.4) was used for data synthesis. The Cochrane risk of bias tool was used to assess bias in included studies. Results: The pooled data from four RCTs showed that there were no statistically significant differences in peak VO₂ (Mean Difference (MD)= 0.05 ml/kg/min, 95% Confidence Interval (C.I.): -0.43, 0.52; p = 0.85), 6MWD: MD= 6.78 meters, C.I. = -21.13, 34.69; p = 0.63), mitral annular E/e' ratio (MD = -2.19; 95% C.I. = -6.09,1.71; p = 0.27),LVEF (MD = 2.28, C.I.= -0.35, 4.91; p = 0.09), mPAP (MD = -5.79 mm Hg (95% C.I.= -19.02, 7.43; p = 0.39), PASP (MD = -8.51 mm Hg, C.I. = -22.22, 5.19; p = 0.22),PVR (MD = 78.87 dynes/sec/cm-5, 95% C.I.= -172.91, 15.16; p = 0.10) with use of PDE-5i compared to control. Conclusion: Our findings show that PDE5i did not statistically significantly change study outcomes in HFpEF. However, patients with pulmonary hypertension-left heart disease had improved pulmonary hemodynamics parameters.