



April 24-25, 2023  
CHICAGO  
HYATT REGENCY MCCORMICK PLACE

# Midwest Clinical & Translational Research Meeting

**Monday, April 24, 2023**  
**Regency Ballroom A/B**

**Poster # Title/First Author**

**Cardiology / Cardiovascular Disease** \_\_\_\_\_

- 1 RIGHT VENTRICULAR FUNCTION ON CARDIOVASCULAR MAGNETIC RESONANCE IMAGING AND LONG-TERM OUTCOMES IN STABLE HEART TRANSPLANT RECIPIENTS. *(Abstract)*  
*Collin M Barrett, BA, University of Minnesota Medical School*

In stable heart transplant recipients, right ventricular (RV) dysfunction may occur for a variety of reasons, including pulmonary hypertension, tricuspid regurgitation, rejection(s), and cardiac allograft vasculopathy. Whether RV dysfunction in the stable phase after heart transplantation is associated with long-term adverse outcomes is unknown. This knowledge has the potential to improve the long-term outcomes of heart transplant recipients.

- 2 EFFECT OF DIFFERENT LIGATION TIMES AND MOUSE STRAINS ON LEFT VENTRICULAR FUNCTIONS: A MOUSE MODEL OF MYOCARDIAL INFARCTION *(Abstract)*  
*Ayman Isbatan, BS, University of Illinois at Chicago*

The mouse model of myocardial infarction (MI) has been widely used to study prevention, diagnosis and therapy of human MI. Different mouse strains with different ligation times have been traditionally used in cardiac infarct studies.

- 3 CASPASE 12 DEFICIENCY IS PROTECTIVE FOR HEART FAILURE *(Abstract)*  
*Dan A Marian, BS, Cardiovascular Research Core at UIC*

Caspase-12 has long been used as an upregulation marker for endoplasmic reticulum (ER) stress, a key apoptotic pathway in cells. In addition, ER stress is believed to have a significant role in mediating ischemic heart failure.

- 4 OUTCOMES IN PATIENTS WITH CARDIAC ARREST NOT UNDERGOING CARDIAC CATHETERIZATION  
*(Abstract)*  
*Suhaib Bajwa, MD, University of Missouri*

Ventricular tachycardia (VT) and ventricular fibrillation (VF) account for 23-54% of cardiac arrest and are often due to underlying coronary artery disease. Among patients who suffer cardiac arrest secondary to VT/VF, those with evidence of ST segment changes on the post resuscitation electrocardiogram (ECG) had approximately a 70-85% chance of having underlying coronary artery disease. The same patient cohort but without evidence of ST segment changes on the post resuscitation ECG had approximately a 25-50% of having underlying coronary artery disease [1]. A recent nationwide study indicated that post resuscitation for VT or VF arrest, only 87.2% of patients with ST elevation and 33.9% of patients without ST elevation underwent cardiac catheterization in 2016. We aim to study outcomes in patients with cardiac arrest with VT/VF without cardiac catheterization.

- 5 LONG-TERM PROGNOSTIC VALUE OF LEFT AND RIGHT VENTRICULAR SYSTOLIC FUNCTION ON CARDIOVASCULAR MAGNETIC RESONANCE IMAGING IN SYSTEMIC SCLEROSIS *(Abstract)*  
*Parag Bawaskar, University of Minnesota*

Systemic sclerosis (SSc) is rare autoimmune disorder that is associated with a high risk of cardiovascular disease. Previous studies on the prognostic significance of ventricular systolic function have shown inconsistent results, mainly because of their small size. Therefore, a large study is needed to better understand the value of ventricular systolic function in identifying SSc patients at risk of adverse outcomes.

- 6 SYMPATHETIC NERVOUS SYSTEM AS A POTENTIAL NEW THERAPEUTIC TARGET FOR ABDOMINAL AORTIC ANEURYSM *(Abstract)*  
*Calvin Chao, MD, Northwestern University*

Abdominal aortic aneurysms (AAA) are defined as localized dilation of the infrarenal aorta to greater than 3.0 cm and remain a leading cause of premature death worldwide. The primary risk of this condition is aortic rupture and subsequent massive hemorrhage with a mortality rate of 85-90% after rupture. Strategies for repair broadly consist of open aortic surgery or endovascular aneurysm repair (EVAR), which has become the predominant treatment modality. Yet, despite remarkable advancements in surgical technique, particularly in the endovascular space, no pharmacologic therapy has successfully slowed or halted AAA growth. There is thus an unmet clinical need to develop novel therapeutics that could limit the growth and rupture of AAA.

- 7 A LIPIDOMICS APPROACH TO PREDICTING PULMONARY HYPERTENSION IN HUMAN HEART FAILURE WITH PRESERVED EJECTION FRACTION *(Abstract)*  
*Vaishnavi Aradhyula, MS, University of Toledo College of Medicine and Life Sciences*

Pulmonary hypertension (PH) in heart failure with preserved ejection fraction (HFpEF; PH-HFpEF) is associated with high morbidity and mortality; however, the pathophysiology of disease is unknown. The development of PH is a continuum of disease processes initiated by HFpEF, where patients initially develop isolated postcapillary PH (ipc-PH) which can transform to the more fatal combined pre and postcapillary PH (cpc-PH). This transformation of PH does not occur in all patients and is not explained by traditional risk factors alone, necessitating the need to examine novel regulatory mechanisms.

Polyunsaturated Fatty Acid (PUFA) metabolites play a vital role in cardiovascular health by regulating balance between anti-inflammatory, pro-inflammatory, and pro-resolatory lipid mediators. An imbalance of lipid metabolites has been previously shown to predispose PH.

- 8 IMPACT OF MODE OF TRANSPORTATION ON THE OUTCOMES IN STEMI PATIENTS: A SYSTEMIC REVIEW AND META-ANALYSIS OF 36557 PATIENTS (*Abstract*)  
*Abdulmajeed Alharbi, MD, University of Toledo Medical Center*

Introduction: Cardiovascular disease, particularly acute coronary syndrome (ACS), is a leading cause of mortality worldwide. Currently, emergency revascularization with primary percutaneous coronary intervention (PCI), has been established to improve clinical outcomes for patients with ACS especially ST-elevation myocardial infarction (STEMI). For acute coronary syndromes such as STEMI, healthcare facilities allot and utilize resources to practice the guideline recommendation of minimizing delays to percutaneous coronary intervention. Numerous observational studies have attempted to compare the efficiency of widely-used transport modalities around the world. To our knowledge, this is the first meta-analysis that evaluates the data from these research studies collectively.

- 9 HEART FAILURE HOSPITALIZATION OUTCOMES DURING COVID-19 PANDEMIC (*Abstract*)  
*Halah Alfatlawi, MD, University of Toledo Medical Center*

Background: Heart failure (HF) was designated as an epidemic in 1997 due to an observed exponential increase in hospitalization rate. From 2014 to 2017, there was a 26% increase in observed HF-related hospitalizations, further highlighting the public health concern and economic burden of this condition. In the year 2020, hospitalizations related to the COVID-19 pandemic created a global health emergency further straining the healthcare sector and exacerbating the public health burden of conditions such as heart failure. The focus of this study is to examine how a secondary COVID-19 diagnosis affects the outcome of HF patients, and how a pre-existing diagnosis of heart failure impacts outcomes of patients hospitalized with COVID-19 infection.

- 10 DIMINISHED ACTIVITY OF HDL-ASSOCIATED ENZYME PARAOXONASE IS ASSOCIATED WITH AORTIC AND CORONARY ARTERY VASCULAR CALCIFICATION IN PATIENTS WITH HEART FAILURE (*Abstract*)  
*Prabhatchandra Dube, PhD, University of Toledo College of Medicine and Life Sciences*

Vascular calcification is a significant risk factor for adverse cardiovascular outcomes and is positively correlated with atherosclerotic plaque burden, increased risk of myocardial infarction (MI), and plaque instability. The pathogenesis of vascular calcification is multifactorial. Clinical and experimental evidence has previously demonstrated that diminished activity of the HDL-associated enzyme Paraoxonase (PON) is associated with vascular dysfunction and increased cardiovascular morbidity and mortality in the setting of heart failure (HF), although the exact mechanism is unclear.

- 11 PHOSPHORYLATION OF MITOCHONDRIAL CALCIUM UNIPORTER IN HEART FAILURE (*Abstract*)  
*Madeline Kelly, University of Minnesota*

In addition to their role as a cellular powerhouse, mitochondria are recognized as key players in cell death signaling via reactive oxygen species (ROS). Increased ROS and mitochondrial damage are proposed to be involved in the pathology of various cardiovascular diseases such as heart failure (HF), but there are no therapies available in the clinical setting that can directly target/treat cardiac mitochondria. Mitochondrial Ca<sup>2+</sup> (mtCa<sup>2+</sup>) overload via the mtCa<sup>2+</sup> uniporter (MCU) in

cardiomyocytes (CMs) is frequently observed in HF, which induces overproduction of ROS, promoting CM damage, and subsequently leading to HF. Our recent characterization of tyrosine phosphorylation (P-Tyr) and activation of MCU under the activation of oxidation-sensitive protein Tyr kinases (PTK) including proline-rich PTK 2 (Pyk2) in primary CMs represents an opportunity to overcome a major roadblock in the understanding of the role of mtCa<sup>2+</sup> for mitochondrial ROS (mROS) generation in cardiac pathology. However, it is still unclear how Pyk2 accesses MCU structure, phosphorylates MCU, and modulates its channel function as well as mitochondrial Ca<sup>2+</sup> uptake profile.

- 12 RELATIONSHIP OF INTESTINAL DYSBIOSIS AND BARRIER DYSFUNCTION WITH FEEDING INTOLERANCE IN CONGENITAL HEART DISEASE PATIENTS UNDERGOING CARDIOPULMONARY BYPASS (*Abstract*)  
*Jacob Owens, BS, University of Nebraska Medical Center*

Congenital heart disease (CHD) is the most common birth defect, occurring in around 1 in 40,000 births annually in the US. Infants with CHDs will often have increased metabolic demands from increased cardiac workload and work of breathing, and they can also see increases in intestinal inflammatory states due to hypoxemia and/or reduced mesenteric blood flow from systemic hypoperfusion. This can lead to intestinal dysbiosis, intestinal epithelial barrier dysfunction (EBD), and increased gut permeability. Pediatric patients with CHDs will often require surgical correction with cardiopulmonary bypass (CPB). This procedure has been shown to cause a systemic inflammatory response syndrome and can result in further intestinal inflammation. This can exacerbate problems with intestinal homeostasis and result in post-operative feeding intolerance (FI).

- 13 ACHALASIA CAUSING ACUTE HEART FAILURE AND CHEST PAIN: A RARE ENCOUNTER (*Case Report*)  
*Gorgina Barsoum, University of Missouri- Kansas CITY*

Achalasia, a rare esophageal abnormality, when severe can cause left atrial compression. In theory, this can contribute to hemodynamic compromise and acute heart failure, but there are no reported cases in literature. We present a case of acute hypoxemia and resulting acute heart failure from severe achalasia causing obstructive physiology. We highlight the importance of mechanical decompression when encountered by such a case.

- 14 IMPORTANCE OF REVIEW OF NON-GATED CT CHEST IMAGES: A DIAGNOSTIC TREASURE (*Case Report*)  
*Ali Naveed, MD, UMKC*

Non-gated chest CT scans are frequently performed for numerous clinical conditions in patients presenting to the emergency department (ED). Attention is seldom given to cardiac structures as these scans are not aimed at cardiac evaluation. We present a case to emphasize review of images.

- 15 PERICARDIAL EFFUSION MASKING ACUTE RUPTURE OF SINUS OF VALSALVA ANEURYSM: ROLE OF POINT OF CARE ULTRASOUND AND MULTIMODALITY IMAGING (*Case Report*)  
*Gorgina Barsoum, University of Missouri- Kansas CITY*

The sinus of Valsalva aneurysm (SOVA) is a rare cardiac anomaly characterized by dilation of the aortic root between the aortic valve annulus and the sinotubular junction. Rupture of SOVA into the pericardial space is a very rare but life-threatening complication and delays diagnosis due to diversion of attention to the pericardial effusion. The role of multimodality imaging becomes central in these cases to facilitate early diagnosis. We present a case to highlight the advantages of readily available multimodality imaging techniques for rapid diagnosis in these uncommon but life-threatening cases.

We also emphasize the importance of following up critical findings on cardiac point of care ultrasound (POCUS) with more formal imaging.

- 16 MARATHON MADNESS: AN UNUSUAL PRESENTATION OF ST-SEGMENT ELEVATED MYOCARDIAL INFARCTION IN A YOUNG ATHLETE TAKING CREATININE SUPPLEMENTATION (*Case Report*)  
*Alexander D Shinn, DO/MBA, University of Missouri Healthcare*

ST-Segment Elevation Myocardial Infarction (STEMI) is a result of acute plaque rupture and total occlusion of a coronary artery. Clinically, these occur in older patients and those with significant risk factors. We present a case of a young athletic patient who experienced a STEMI while training for a marathon.

- 17 DIAGNOSING CARDIAC CONDITIONS ON NON-GATED CT CHEST: A CASE OF INFECTIVE ENDOCARDITIS (*Case Report*)  
*Ali Naveed, MD, UMKC*

Non-gated computed tomographic scans (CT) of the chest are the mainstay of initial diagnostic work-up in patients who present to the emergency department (ED) with undifferentiated dyspnea. Generally, cardiac structures are not reviewed in detail during the reporting of these studies as electrocardiographic gating is not performed. We present a case of acute infective endocarditis (IE) initially recognized on non-gated CT chest. We aim to highlight the diagnostic value of non-gated CTs acquired in the ED and importance of visualizing valvular structures during reviewing these studies.

- 18 EXPANDING ON NON-COMPACTION: A RARE CASE OF A CARDIAC DEVELOPMENTAL DISORDER ASSOCIATED WITH NEUROMUSCULAR DISEASES (*Case Report*)  
*Adam J Russell, DO, University of Missouri - Columbia*

Left ventricular hyper-trabeculation or noncompaction (LVHT) is a cardiomyopathy with altered myocardial wall due to arrest of compaction during uterine development. This results in deep intra-trabecular recesses and has been described in association with multiple neuromuscular diseases (NMD), with some studies showing up to 80% of patients with LVHT having an associated NMD. We present a case of a male with type I muscular dystrophy who was diagnosed with LVHT.

- 19 THE HAPPY HEART PARADOX (*Case Report*)  
*Nicholas Zingas, MD, Wright State University Boonshoft SOM Internal Medicine Residency Program*

The relationship between takotsubo cardiomyopathy and negative stressors, such as sorrow or fear, has been recognized for many years, hence the term “broken heart syndrome” (BHS). More recently an association with joyful triggers, such as good news or a celebration, has also been described, referred to as the “happy heart syndrome” (HHS). According to reports, this represents less than 5% of the cases of stress cardiomyopathy. It affects men more often than in BHS, and frequently the ventricle demonstrates a ballooning pattern that is atypical. We present here a case demonstrating the challenge of identifying the trigger and categorizing these cases.

- 20 ANESTHETIC MANAGEMENT OF A PATIENT WITH SEVERE PULMONARY ARTERIAL HYPERTENSION FOR INCARCERATED UMBILICAL HERNIA REPAIR (*Case Report*)  
*Leena Penumalee, BS, University of Chicago Pritzker School of Medicine*

Pulmonary arterial hypertension (PAH), defined as a mean pulmonary arterial pressure  $\geq$  25 mmHg, is a disorder with a reported incidence of 15 to 50 individuals per million. (1) PAH is associated with perioperative changes in hemodynamics and the risk of acute right ventricular decompensation. (2,3) Anesthetic plans for these patients often involve careful risk assessment, invasive cardiopulmonary monitoring, and anticipation of possible pulmonary hypertension crises. (3)

- 21 MATERNAL MONITORING FOR MULTI-DRUG REGRATORY FETAL SUPRAVENTRICULAR TACHYCARDIA: A MANAGEMENT CHALLENGE (*Case Report*)  
*Gorgina Barsoum, University of Missouri- Kansas City*

There are no current recommendations for general cardiologists and internists practicing in the community on maternal monitoring of patients being treated for fetal supraventricular tachycardia (SVT). Fetal SVT, though rare, is a significant source of life-threatening complications such as hydrops fetalis and intrauterine fetal demise. It is treated with various combinations of maternal antiarrhythmic therapy and transplacental administration of antiarrhythmic medications. We present a case to guide physicians practicing in community hospitals on how to approach these complex patients and highlight the challenges of maternal monitoring during management of refractory fetal SVT.

- 22 STRESS INDUCED RECURRENCE OF SYMPTOMATIC NON-SUSTAINED VENTRICULAR TACHYCARDIA (*Case Report*)  
*Austin Meehl, MD, University of Toledo Medical Center*

Non-Sustained Ventricular Tachycardia (NSVT) is widely defined as an arrhythmia with a heart rate greater than 100 beats per minute lasting for three or more consecutive beats but for a duration of less than 30 seconds.(1) It is recognized as relatively common, often found incidentally and without appreciable symptoms although symptoms may range from palpitations to syncope, and albeit less frequently, sudden cardiac arrest.(1) Idiopathic VT and Premature Ventricular Contractions (PVCs) frequently originate from the right ventricular outflow tract (RVOT), aortic cusps, tricuspid annulus, right or left ventricle, inferoapical septum, and LVOT.(2,3) Treatment with radiofrequency ablation for symptomatic arrhythmia in patients without structural heart disease has been found to be effective in eliminating arrhythmia in up to 90% of patients.(2) In patients with refractory arrhythmia, sotalol and amiodarone are preferred.(4)

- 23 CORONARY ARTERY TO LEFT VENTRICULAR FISTULA MASQUERADING HYPERTROPHIC CARDIOMYOPATHY: A RARE CASE OF HEART FAILURE (*Case Report*)  
*Gorgina Barsoum, University of Missouri- Kansas City*

Coronary artery fistula (CAF) is an abnormal connection between a coronary artery and another vessel or cardiac chamber. The majority of CAF are congenital and often have no hemodynamic consequences. However, when large, these can lead to significant left to right shunting and resultant heart failure and pulmonary hypertension. CAF are rare and there is limited understanding of their phenotype, natural history and indications for percutaneous closure. We present a case of congenital CAF that was initially diagnosed as hypertrophic cardiomyopathy (HCM). To our knowledge, this is the first case of CAF mimicking HCM, adding new knowledge to literature on its phenotypic characteristics and improving our understanding of this rare clinical entity.

- 24 LEFT VENTRICULAR NARROW-NECK PSEUDOANEURYSM FOLLOWING A REDO MITRAL VALVE REPLACEMENT (*Case Report*)  
*Abdel-Rhman Mohamed, MD, The University of Toledo*

A cardiac pseudoaneurysm is defined as a contained rupture of the myocardium by the pericardium<sup>1</sup>. This is differentiated by a true aneurysm that contains all layers of myocardial tissue. It is of vital importance to be able to diagnose pseudoaneurysms as they require urgent surgical intervention and carry a high risk of rupture and mortality<sup>8</sup>. Most commonly, pseudoaneurysms are associated with myocardial infarctions, particularly of the inferior wall<sup>2</sup>.

## Dermatology

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- 25 SHAVE REMOVAL OF SQUAMOUS CELL CARCINOMA AND BASAL CELL CARCINOMA (*Abstract*)  
*Aishwarya Sharma, University of North Dakota School of Medicine and Health Sciences*

Based on the American Academy of Dermatology, the current standard of care for a lesion suspicious for a basal cell carcinoma (BCC) or squamous cell carcinoma (SCC), is first performing a biopsy, and then if diagnosis is confirmed as either BCC or SCC the patient would be scheduled for definitive treatment [1]. Depending on risk factors such as size, location, or aggressive histological features, treatment options include excision with standard margins, mohs surgery, destruction such as electrodesiccation and cauterization (ED&C), or radiation. In select cases, superficial nonmelanoma skin cancer [NMSC] 1.5 cm or less in diameter can be excised using a disposable #15 scalpel blade and followed up with routine pathology and twice-annual follow up [2]. This expedient alternative modality saves time for the patient, cost for the hospital and conserves provider resources in better service to others in need without compromising on the healing cosmetically [2]. We aim to prove that when approaching a lesion suspicious for BCC or SCC starting instead with a shave procedure with the intent to remove the lesion entirely can be definitive treatment if the histological margins are reported as uninvolved and there aren't aggressive histological features.

- 26 CHARACTERIZATION OF M6A RNA METHYLATION IN CUTANEOUS SQUAMOUS CELL CARCINOMA (*Abstract*)  
*Grace Y Duan, BA, University of Chicago Pritzker School of Medicine*

Cutaneous squamous cell carcinoma (SCC) is among the most common malignancies in the United States [1]. Carcinogenesis of SCC progresses through precursor dysplastic lesions, full thickness SCC in situ (SCCis) tumor, and eventually invasive and metastatic SCC. Exposure to ultraviolet radiation (UVR) is a well-established pathogenic factor in the development of SCC, and recent studies have suggested the importance of m(6)A RNA methylation in regulation of UVR-induced DNA damage response [2]. This modification process subjected to dynamic control via positive regulators ("writers") such as METTL14 and negative regulators ("erasers") such as ALKBH5 and FTO [3]. Although m(6)A RNA methylation has been described in the initiation, progression and drug response of various malignancies, its role in cutaneous SCC carcinogenesis is not well-understood.

- 27 A COMPARATIVE STUDY OF REVIVIFY TO RESTORE SKIN WELL-BEING AMONG POPULATION SUFFERING FROM ACNE VULGARIS *(Abstract)*  
*Wahida K Chowdhury, MBBS, DDV, FCPS, Orion Institute for Translational Research*

Acne vulgaris is a common chronic inflammatory skin disease of pilosebaceous units. It affects both male and females in different times of their lives, but more commonly in adolescents. It primarily affects the face, upper part of the chest, back, arm and thigh. This happens from a complex pathogenesis of overproduction of sebum by the sebaceous gland, clogging of hair follicles leading to formation of plug, and accumulation of bacteria namely Propionibacterium. Thereafter, there occurs an inflammatory reaction leads to reactive species (ROS) production by the damaged follicular walls. In addition, Propionibacterium bacteria produces some enzymes like lipases, protease, hyaluronidases which play an important role in the inflammatory process. Oxygen, which is an important and vital component for human, can produce reactive types like super-oxide anions, hydroxyl radicals. Super-oxide dismutase (SOD), catalase (CAT) and glucose 6 phosphate dehydrogenase are some of the antioxidant enzymes. Currently, there is a new medication, namely Revivify which is a dietary supplement based on primary antioxidant superoxide dismutase, prebiotic fiber, diverse polyphenols from various fruits juice. It stimulates the immune system by activating T-cell, and acts as an antioxidant and anti-inflammatory product. It works on the cellular level to help to repair damage cells, caused by free radicals. It also increases oxygen, reduce inflammation, and promote skin well-being by promoting healthy digestion and gut flora.

#### **Diagnosis or Treatment of a Disease Process or Clinical Syndromes** \_\_\_\_\_

- 28 MACHINE VISION ESTIMATION OF HEMOGLOBIN CONCENTRATION IN HOSPITALIZED PATIENTS WITH ANEMIA. *(Abstract)*  
*Mohammed I Lone, The University Of Chicago*

Anemia is an important global health problem that affects nearly a third of the world population. Chronic anemia has a significant disease burden and is associated with increased morbidity, early mortality, and adverse economic impacts. Laboratory screening, diagnosis and monitoring of anemia requires the use of capillary puncture or venipuncture hemoglobin (hematocrit) assays that are typically performed during in-person healthcare visits. The rise of telemedicine healthcare visits during the recent COVID-19 pandemic highlighted the need to develop non-invasive methods, appropriate for virtual patient assessments, to reduce the need for in-person clinic visits and laboratory blood draws. Previous groups have utilized laboratory-grade optical devices and machine vision approaches for noninvasive estimation of hemoglobin concentration in healthy caucasian students. We hypothesized that similar accuracy could be achieved on image samples acquired using consumer-grade cameras in a diverse population of chronically-ill hospitalized patients with anemia.

- 29 URINARY LEVELS OF ANGIOGENIC FACTORS AND MARINOBUFAGENIN IN URINE OF PREGNANT PATIENTS WITH AND WITHOUT PREECLAMPSIA *(Abstract)*  
*India W Morgan, Texas A&M University School of Medicine*

Preeclampsia is a syndrome which occurs in 3-10% of pregnancies and is a leading cause of maternal and fetal morbidity and mortality. This syndrome is characterized by the de novo development of hypertension and proteinuria after 20 weeks of gestation. The precise etiology (etiologies) of this syndrome remain(s) unknown. It seems clear that preeclampsia is not a single disorder, but a



syndrome with multiple pathophysiologic factors and mechanisms. There is no single biomarker for detection of the syndrome.

- 30 PROLONGED HOSPITAL COURSE LEADING TO DELAYED IDENTIFICATION OF TOXIC EPIDERMAL NECROLYSIS WITH FATAL COMPLICATIONS (*Case Report*)  
*Shelby Schuh, DO, University of Missouri-Columbia*

Toxic epidermal Necrolysis (TENS) is a desquamative necrotic rash encompassing 30 percent or more of the body's surface area. Without prompt identification of triggers, TENS can progress to distributive shock and multi-organ failure. We present a unique case of a patient with acute hypoxic respiratory failure, distributive shock, and a desquamative rash secondary to TENS. Careful review of outside records revealed Augmentin as the likely culprit agent. A maximal supportive care strategy across a multidisciplinary team was employed. High clinical suspicion for TENS is imperative to allow for timely removal of causative agent and initiation of supportive care as the management of TENS is complex and best well managed in critical care units. Toxic Epidermal Necrolysis (TENS) and Stevens-Johnson Syndrome (SJS) are severe mucocutaneous reactions characterized on histopathology as having keratinocyte necrosis with partial to full thickness necrosis of epidermis[1]. TENS normally covers greater than 30% of the body surface area whereas SJS covers less than 10% [2]. While the exact pathophysiology remains unclear, many drugs such as sulfonamide antimicrobials, phenobarbital, carbamazepine, and lamotrigine are well known triggers[3]. Furthermore, not only is pathophysiology unclear but the management of TENS remains controversial. The mainstay of treatment continues to be prompt withdrawal of possible offending agents and supportive care, however, IVIG, steroids and other medications are frequently trialed[1]. Although the treatment remains controversial, a retrospective case study completed at a national referral center for TENS/SJS in Singapore demonstrated the patients still do have improved overall outcomes with early referral. Early referral was defined as patients seen within 4 days of developing blistering lesions[4]. The improved outcomes from early referral were likely due to prompt withdrawal of offending medications and the possibility of immunomodulatory therapy use which has been shown to be more effective in the progressive phase of disease.

- 31 ALLOPURINOL HYPERSENSITIVITY SYNDROME COMPLICATED BY RESPIRATORY DISTRESS, TOXIC EPIDERMAL NECROLYSIS AND MULTI-ORGAN FAILURE (*Case Report*)  
*Andrew R Campbell, University of Toledo Medical Center*

Allopurinol-induced drug reactions are related to a hypersensitivity syndrome characterized by fever, skin rash and multiple organ involvement. Pulmonary manifestations of allopurinol hypersensitivity syndrome (AHS) are not often described in previous studies, however a 2019 literature review reported symptoms of cough and dyspnea were present in 72% of patients at the time of presentation. (1) Almost half of the cases in this 2019 study were initially treated with empiric antibiotics for suspected pneumonia prior to reaching the correct diagnosis. AHS associated mortality has been reported as high as 18-32% and its long latency period can present a challenge to timely diagnosis and treatment. (2)

## Educational / Outcome Research

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- 32 THE RELATIONSHIP OF THE EARLY EDUCATION OF THE DANGERS OF VAPING/E-CIGARETTE USES IN TEENS. *(Abstract)*  
*Rukmini K Surnedi*

As most likely known, vape use is extremely popular in the United States. Many most likely know how much of a problem vaping is as well. As of December 2018, youth e-cigarette use was declared a national epidemic by the United States Surgeon General. The Food and Drug Administration(FDA) wrote as of December 12, 2022, one in six high school students uses a vape, and one in twenty-five middle school students vape. For me, learning this information was quite confusing. In the society I live in, teen vaping/e-cigarette use was normalized. Causing students like me to think that vaping/e-cigarette use was no big deal. The American Academy of Pediatrics(AAP) stated that more than 2,500 kids alone are hospitalized due to e-cigarette or vaping-related lung injuries.

## Endocrinology / Metabolism

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- 33 HIGH FAT DIETS WITH CHOLESTEROL AND FRUCTOSE HAVE A DIFFERENTIAL IMPACT IN NASH AND ADIPOSITY IN MICE WITH PRE-ESTABLISHED DIET-INDUCED OBESITY. *(Abstract)*  
*Jose Cordoba-Chacon, PhD, University of Illinois at Chicago*

Non-alcoholic fatty liver disease (NAFLD) is characterized by excess storage of fat in hepatocytes. NAFLD has a prevalence over 30% in the US that increases to 70% in overweight/obese individuals. About 25% of patients with NAFLD progress to non-alcoholic steatohepatitis (NASH), a condition that may lead to fibrosis, cirrhosis, hepatocellular carcinoma, cardiovascular disease, and increase risk of mortality. NAFLD/NASH is associated with obesity and increased expression of hepatic peroxisome proliferator-activated receptor gamma (PPAR $\gamma$ ) in mice and humans.

- 34 THE IMPACT OF PARENT-OF-ORIGIN ON CHILDHOOD GROWTH TRAJECTORIES AND SULFONYLUREAS USE IN CHILDREN WITH HNF1A-MODY IN THE U.S. MONOGENIC DIABETES REGISTRY. *(Abstract)*  
*Maria V Salguero Bermonth, MD, MSc, University of Chicago Hospitals*

MODY (autosomal dominant diabetes) accounts for ~3% of pediatric diabetes. (1,2) Precision therapy for HNF1A-MODY is sulfonylureas (SU). (3) There are gaps in understanding the impact of in-utero maternal hyperglycemia on childhood weight and SU efficacy.(4)

- 35 GLUCOSE AVAILABILITY CONTROLS PROTEIN STABILITY OF HEXOKINASE DOMAIN CONTAINING 1 (HKDC1) *(Abstract)*  
*Md. Wasim Khan, PhD, University of Illinois at Chicago*

Glucose is essential for various metabolic pathways, acting as a nutrient and a signaling molecule. Its dysregulated metabolism leads to metabolic disorders like hyperglycemia, type II diabetes, and obesity. Metabolic disorders are prevalent in 90-95% of adults worldwide, and hyperglycemia is an independent risk factor for cardiovascular disease, contributing significantly to morbidity and mortality. Hexokinases catalyze the first committed step of glucose metabolism. The novel hexokinase, hexokinase domain containing 1 (HKDC1), is dramatically overexpressed in the liver in conditions like type II diabetes mellitus (T2D), non-alcoholic steatohepatitis (NASH), non-alcoholic fatty liver disease

(NAFLD), and most recently hepatocellular carcinoma (HCC) where HKDC1 plays a role in modulating glucose metabolism and/or flux. However, the mechanism by which HKDC1 expression is regulated in these pathological conditions remains unknown.

- 36 CHARACTERIZING CLINICAL CHARACTERISTICS OF 6Q24-RELATED TRANSIENT NEONATAL DIABETES  
(Abstract)  
*Michael McCullough, MPH, University of Chicago*

Transient neonatal diabetes mellitus (TNDM) is a heterogeneous subtype of neonatal diabetes that usually presents within the first days or weeks of life, spontaneously remits in infancy, but can recur in childhood or adolescence as a permanent form of diabetes. Approximately 70% of TNDM cases are due to overexpression of genes at chromosome 6q24 caused by one of three potential mechanisms: uniparental disomy (UPD6), paternal duplication, or hypomethylation of the maternal allele.

- 37 FGF21 HAS A SEX-SPECIFIC ROLE IN CALORIE-RESTRICTION-INDUCED BEING OF WHITE ADIPOSE TISSUE IN MICE (Abstract)  
*Mariah Calubag, BS, University of Wisconsin-Madison*

Calorie restriction (CR), defined as a dietary regimen in which calories are reduced without malnutrition, promotes healthspan and increases lifespan in diverse organisms ranging from yeast to mice and non-human primates. Despite almost a century of effort, the physiological and molecular mechanisms by which CR functions are still not totally understood, stymieing efforts to develop CR mimetics which could promote health in the rapidly aging global populace. As CR works to slow aging in all tissues, it has been suggested that CR may work in part through endocrine factors. Some studies have demonstrated that CR induces, to different extents, fibroblast growth factor 21 (FGF21), a hormone that regulates energy balance and that when overexpressed, promotes metabolic health and longevity in mice. However, the role of FGF21 in the response to CR has not been fully investigated.

- 38 EVALUATION OF URINARY TRACT INFECTIONS IN MALES WITH LOWER URINARY TRACT SYMPTOMS AND CONCOMITANT SGLT2 INHIBITOR USE (Abstract)  
*Austin Reed, DO, University of Missouri-Columbia*

Excluding dapagliflozin, a meta-analysis in 2017 looking at outcomes for patients on SGLT2 inhibitors (SGLT2i) found no significant difference in UTI rates when compared to placebo [1]. The meta-analysis did not further stratify these patients based on history of benign prostatic hypertrophy (BPH) which is a risk factor for UTIs.

- 39 NOVEL MUTATIONS IN GLIS3/TRMT10A AS A CAUSE OF CONGENITAL HYPERINSULINISM (Abstract)  
*Mansa Krishnamurthy, MD, MSc, Cincinnati Children's Hospital Medical Center*

Congenital hyperinsulinism (CHI) is a heterogeneous group of disorders characterized by hypoglycemia and inappropriate insulin secretion. Prompt identification of CHI and its genetic causes are essential to minimize the risk of permanent neurological damage as well as guide treatment options for these patients. Although, there are 15 known monogenic forms of CHI, there remain 50% of patients without an identified genetic diagnosis, suggesting that there are genetic loci that remain yet to be discovered.

40 ARYL HYDROCARBON RECEPTOR ACTIVATION PROTECTS AGAINST PREGNANCY INDUCED INSULIN RESISTANCE (*Abstract*)

*Medha Priyadarshini, PhD, University of Illinois at Chicago*

Increase in insulin resistance, during later stages of pregnancy is a physiologic adaptation, that returns to normal in the postpartum period. Exact mechanisms underlying the regulation of pregnancy insulin resistance are not clearly defined. We recently identified that precursors of insulin resistance during pregnancy may originate in the gut microbiota. We observed marked decline in gut microbially generated indole metabolites in feces and modest gut inflammation in pregnant mice at gestation day 15, G15, (phenotypically analogous to insulin resistant phase of human pregnancy). Of note, gut microbial indole derivatives serve as ligands for aryl hydrocarbon receptor (AHR), and their impaired production is a key factor in development of metabolic disorders.

41 BIOLOGICAL SEX AND GENETIC BACKGROUND DETERMINE THE METABOLIC OUTCOMES OF DIETARY ISOLEUCINE RESTRICTION (*Abstract*)

*Michaela Trautman, RD, University of Wisconsin Madison*

While calorie restriction (CR) is the gold standard for prolonging mammalian health and lifespan, adhering to CR diets is difficult for humans. Protein restriction (PR) replicates some of the theorized CR mechanisms and promotes health and longevity in mice; lower consumption of dietary protein is also associated with positive outcomes in humans. We have found that the key mediators of these benefits are the three branched-chain amino acids (BCAAs), leucine, isoleucine (ile), and valine. Restriction of all three BCAAs promotes metabolic health, fitness, and lifespan in C57BL/6J male mice, and we recently discovered that restriction of ile is necessary and sufficient for the effects of a PR diet in mice.

42 LIPOLYSIS AS A REGULATORY FOCUS IN GEROPROTECTIVE DIETARY INTERVENTIONS (*Abstract*)

*Chung-Yang Yeh, University of Wisconsin-Madison*

The push for real-world applications of pro-longevity therapies must consider the contribution of environmental factors and the possibility of combining multiple geroprotective treatments for even greater benefits. One variable that fits both criteria is diet. Amongst the lifespan-extending dietary interventions, caloric restriction (CR) remains the gold standard in effectiveness, followed by its more tenable derivative, protein restriction (PR). The restriction of dietary isoleucine (IleR) is a critical component of PR and recapitulates its longevity and metabolic benefits, including improvement in glycemic control, weight loss, and energy expenditure. These dietary restrictions are thought to elicit their benefits through the inhibition of the nutrient-sensing master regulator mechanistic target of rapamycin complex 1 (mTORC1). Rapamycin, the putative pharmacological inhibitor of mTORC1, is one of the most robust treatments evaluated in the Interventions Testing Program (ITP) for healthy aging across sexes, throughout age ranges, and in various dosages. However, rapamycin elicits undesirable side effects due to its inhibition of mTORC2, causing glucose dyshomeostasis and poor metabolic health. The prospect of avoiding these side effects of rapamycin by simultaneously combining a dietary promoter of metabolic health represents an exciting, highly promising approach to provide a comprehensive geroprotective treatment regimen.

- 43 REVIVIFY REDUCE FASTING GLUCOSE: HUMAN CASE STUDY (*Abstract*)  
*Ahmed F Pantho, BS, Orion Institute for Translational Medicine*

Increased fasting glucose is associated with diabetic patient having type 2 diabetes. The impaired glucose metabolism and its improper utilization of glucose by the body cells are the main reason of increased fasting glucose. We believe, glucose homeostasis depends on many organ/tissue/cells integration process. If body cell's integrity is not compromised or altered by free radicals induced oxidative stress, the pancreas, the liver, the brain, the muscle cells and other cell combined would maintain desired level of fasting glucose. Based on this hypothesis, we have chosen a patented dietary supplement called Revivify, which study showed as a strong antioxidant, diverse anti-inflammatory properties, and enhanced immunity capabilities. Revivify composition focus on integrating the cellular health integrity as well as gut microbes good eco-system, both are involved in glucose metabolism. In addition, some polyphenols are added value in both cellular health and gut-microbes eco-system. Thus Revivify compositions can improve slowly the pancreatic cell to produce adequate insulin and release as needed. Its anti-inflammatory property can reduce insulin resistance. and increase uptake of glucose by muscle cells. Gut-microbe production of vitamins may bring efficiency in glucose utilization in energy ATP production. Modulation of beneficial microbes, production of Short Chain Fatty acid all in combination can play role in reducing fasting glucose.

- 44 MONSTER IN DISGUISE A CASE OF LARGE METASTATIC ADRENAL CORTICAL CARCINOMA (*Case Report*)  
*Sreekant Avula, MD, University of Minnesota*

Adrenal tumors are common; prevalence is estimated to be 3% to 10%. Most adrenal tumors are found incidentally during routine imaging and the majority are benign nonfunctional adrenocortical adenomas. Adrenal cortical carcinoma (ACC), in contrast, is a very rare disease with an incidence believed to be 1 to 2 per million per year. The diagnosis of malignancy relies on careful investigations of clinical, biological, and imaging features before surgery and pathological examination after tumor removal. Most patients present with steroid hormone excess or abdominal mass effects, but 15% of ACC are discovered incidentally. We present a rare case of metastatic adrenal carcinoma in a young male who presented with back pain and elevated blood pressure and on workup was found to have a very large adrenal mass with possible metastasis.

#### **Epidemiology / Health Outcomes / Quality Improvement / Bio-informatics\_\_\_\_\_**

- 45 VALIDATING A NEW METHOD OF APPROXIMATING CATEGORICAL INDIVIDUAL-LEVEL INCOME USING COMMUNITY-LEVEL INCOME FROM THE CENSUS (WEIGHTING BY INCOME PROBABILITIES) (*Abstract*)  
*Uriel Kim, PhD, Case Western Reserve University School of Medicine*

Individual-level income is an important but often missing variable in biomedical research studies. To surmount this issue, "indirect estimation" methods have been used, often imputing this missing information by joining community-level data from the US census using a patient's community of residence. Central tendency measures of community-level data from the census (i.e. "median income of a census tract") are often used in the indirect estimation of income, though this approach may lead to substantial misclassifications. Weighting by "income probabilities" is a newly described (1) advancement in indirect estimation of income that may improve estimations. It involves using data from the US census to calculate the probability of having a certain user-defined income category in each census tract ("income probabilities"). Then, patients are assigned these income probabilities

based on their census tracts of residence. Finally, the income probabilities are used as observation weights in calculations, facilitating a broad range of income-stratified statistical tasks.

- 46 EPIDEMIOLOGICALLY SIGNIFICANT AND GEOGRAPHICALLY EQUITABLE COVID-19 WASTEWATER-BASED EPIDEMIOLOGY (WBE) SITE SELECTION STRATEGY FOR THE STATE OF ILLINOIS (*Abstract*)  
*Anuj Tiwari, PhD, Discovery Partners Institute*

Wastewater-Based Epidemiology (WBE) provides an opportunity for near real-time, cost-effective monitoring of community-level transmission of SARS-CoV-2. It typically focuses on wastewater treatment plants (WWTPs) and the corresponding community. However, many public health questions require insight across many communities such as at the county or state level. What is the optimal sampling strategy in regions such as rural counties with dozens of WWTPs and private septic systems, or in entire states with many such counties? Selecting WWTPs to perform COVID-19 WBE at the state, or county level is no trivial task given the rural-urban health disparities, geographical complexities in the WWTPs boundaries, and the multiple demographic, socioeconomic, and epidemiological constraints involved. In the last three years, CDC-driven nationwide or public health departments-enabled statewide WBE programs used different analytical and qualitative techniques to determine the most favorable locations for COVID-19 WBE. Some of the most frequently used site-selection techniques include the largest population centers in each county, the largest population centers in COVID-19 risk regions, and COVID-19 hotspots. population-centric techniques fail to provide coverage in large rural regions whereas pandemic-centric techniques daily update with frequently updating pandemic statistics and can not be used directly for stable site selection.

## **Gastroenterology / Clinical Nutrition**

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- 47 HMGB2 IN MEDIATING HEPATIC STELLATE CELLS ACTIVATION AND LIVER FIBROSIS (*Abstract*)  
*Zhihong Yang, PhD, Indiana University School of Medicine*

Liver fibrosis is characterized by the excessive accumulation of extracellular matrix (ECM) in response to liver injury, which is mainly produced by hepatic stellate cells (HSCs). Liver fibrosis can progress to cirrhosis leading to an increase in morbidity and mortality. High-mobility group box 2 (HMGB2) is a chromatin protein that belongs to the HMG protein family and is involved in gene transcription and repair processes. The role of HMGB2 in the pathogenesis of liver fibrosis is elusive.

- 48 ALDH2 DEFICIENCY EXACERBATES BINGE ALCOHOL-INDUCED GUT LEAKINESS, ENDOTOXEMIA, AND ACUTE LIVER INJURY THROUGH THE GUT-LIVER AXIS. (*Abstract*)  
*Wiramon Rungratanawanich, PhD, National Institute on Alcohol Abuse and Alcoholism (NIAAA), NIH*

More than 560 million people worldwide have inactive mitochondrial aldehyde dehydrogenase 2 (ALDH2), a major enzyme metabolizing alcohol-derived acetaldehyde to acetate, due to a dominant-negative ALDH2\*2 gene mutation. This leads to an accumulation of toxic acetaldehyde and lipid aldehydes after alcohol consumption. These individuals are susceptible to alcohol-induced tissue injury, notably in the gut and liver. Aldh2-knockout (KO) mice also exhibit increased sensitivity to alcohol-mediated tissue damage compared with that of wild-type (WT), indicating a conserved system among species. However, the underlying mechanisms by which ALDH2 deficiency enhances alcohol-induced tissue damage remain unclear.

- 49 MELATONIN TREATMENT PROTECTS AGAINST THIOACETAMIDE (TAA)-MEDIATED LIVER FIBROSIS BY SELECTIVELY ACTIVATING SIRT1 DEACETYLASE AND PROTEIN DEACETYLATION (*Abstract*)  
*Wiramon Rungratanawanich, PhD, National Institute on Alcohol Abuse and Alcoholism (NIAAA), NIH*

More than 1.5 billion people worldwide are suffering from chronic liver diseases, including liver fibrosis, an excessive extracellular matrix deposition. Once developed, the disease may progress from advanced fibrosis to cirrhosis and subsequent liver failure. There is no FDA-approved drug for effectively treating or preventing liver fibrosis. Melatonin (MT), a generally recognized as safe (GRAS) agent by the FDA, has been considered not only a circadian rhythm regulator, but also an anti-inflammatory and antioxidant agent. However, the mechanism underlying liver fibrosis and the beneficial role of a physiologically relevant MT dose as a potential therapeutic agent are still elusive.

- 50 OPPOSING FUNCTIONS OF GALECTIN-3 AND -8 IN MODULATING DIFFERENTIATION STATES AT HOMEOSTASIS AND IN METAPLASIA (*Abstract*)  
*Jeffrey W Brown, MD, PhD, Washington University in St. Louis, School of Medicine*

Although aberrant expression of neoglycosylation epitopes is widely recognized to occur in metaplasia and cancer where they serve as important biomarkers to (1) diagnose these tissue transformations, (2) monitor therapeutic response, and (3) evaluate for recurrence, the functional consequences of these post-translational modifications are under- and/or unstudied. In the gastrointestinal foregut, galactose containing Lewis antigens are prominent examples of such neoglycosylation epitopes in metaplasia and cancer of the esophagus, stomach, and pancreas [e.g., 3'-Sulfo-LeA/C that we have recently described in addition to others like 3'-Sialyl-LeA (CA19-9)].

- 51 NOVEL APPLICATION OF NUTRIMETABOLOMICS - A NEW WINDOW FOR THE BIOMEDICAL SCIENCES AND CLINICAL NUTRITION RESEARCH (*Abstract*)  
*Sugasini Dhavamani, University of Illinois*

Nutrimetabolomics helps to study the molecular and bioactive lipids, proteins, and carbohydrates in plant, algal and animal foods, cells, tissues, and biological fluids. Targeted and untargeted metabolites of lipidomics, proteomics, and glycomics play a crucial role in biomedical science and nutrition for the maintenance of good health.

- 52 PRE-CUT PAPILOTOMY VS EUS-RENDEZVOUS- A SYSTEMATIC REVIEW AND META-ANALYSIS (*Abstract*)  
*Amna Iqbal, MD, University of Toledo Medical Center*

ERCP is now used more commonly as a therapeutic procedure rather than a diagnostic procedure for hepatobiliary and pancreatic diseases. Recently, European Society of Gastrointestinal Endoscopy (ESGE) defined Difficult Biliary Cannulation (DBC) as one of the following: more than 5 contacts with papilla when trying to cannulate, more than 5 minutes spent to cannulate after visualization of papilla, or more than one inadvertent cannulation or opacification of pancreatic duct. (2) Various endoscopic techniques are employed to achieve biliary cannulation when confronted with difficult biliary access. Every technique carries its own risk of complications. We aim to perform meta-analysis to compare pre-cut papillotomy and EUS-Rendezvous technique for difficult biliary cannulation.

53 PROTEIN RESTRICTION AUGMENTS WEIGHT LOSS AND GLUCOSE CONTROL FOLLOWING SLEEVE GASTRECTOMY *(Abstract)*

*Julia A Illiano, BS, University of Wisconsin Madison*

Sleeve gastrectomy (SG) improves obesity and Type 2 diabetes (T2D). The added therapeutic potential of post-operative dietary interventions on obesity and T2D are understudied. Following SG, patients increase dietary protein consumption, however, protein restriction induces weight loss, improves metabolic health, and extends lifespan in mice and humans.

54 IS INPATIENT FECAL IMMUNOHISTOCHEMICAL TESTING (FIT) USEFUL FOR PREDICTING COLONOSCOPY OUTCOMES *(Abstract)*

*Katherine E Janike, MD, University of Illinois At Chicago*

Evidence supports fecal immunohistochemical testing (FIT) for routine screening of colorectal cancer (CRC) in asymptomatic patients, however FIT is often used in the inpatient setting to evaluate the source of symptoms in patients with acute illness. Studies have shown that inpatient FIT has led to extended hospital stay and increased use of unnecessary procedures. We studied colonoscopy outcomes after inpatient FIT to better understand FITs utility in predicting disease at our tertiary care center.

55 COMPARISON OF THE UTILIZATION, QUALITY, AND FOLLOW UP OF FECAL IMMUNOCHEMICAL TEST IN COLORECTAL CANCER SCREENING AND NON-COLORECTAL CANCER SCREENING. *(Abstract)*

*Claire M Shin, MD, University of Illinois at Chicago*

Colorectal cancer (CRC) is the second leading cause of cancer-related mortality in the US, with over 50,000 deaths expected in the year 2020 [1]. Despite its disease burden in our population, effective colorectal cancer screening and surveillance programs have been shown to reduce CRC incidence and mortality [2,3]. The fecal immunochemical test (FIT) is one mode of first-line CRC screening that has resulted in higher screening participation due to its cost-effectiveness, accessibility, and noninvasive approach, especially in underserved communities [4,5]. Despite its only indication for CRC screening, FIT has been widely used inappropriately [6-8].

56 PASSAGE OF FOOD BOLUS USING GLUCAGON IN THE PRESENCE OF A SCHATZKI RING *(Case Report)*

*Austin Reed, DO, University of Missouri-Columbia*

A 73-year-old male was admitted for concern of food bolus impaction. Medical management with glucagon was initiated. The subsequent EGD performed demonstrated a lower esophageal Schatzki ring with esophagitis located both proximal and distal to the Schatzki ring, consistent with passage of a food bolus. This case represents successful medical management of a food bolus impaction in the setting of a Schatzki ring. Food bolus impactions are an increasingly common reason for hospital admissions. Typically, food bolus impactions are treated with therapeutic endoscopy, although on occasion medical management with glucagon can be trialed. Glucagon has been chosen previously for its proposed effect of the relaxation of the structures of the esophagus. We present a case of the passage of a food bolus using glucagon as medical therapy in the setting of a Schatzki ring.



- 57 METASTATIC DUODENAL SIGNET RING CELL ADENOCARCINOMA PRESENTING AS AN OBSTRUCTING COLONIC MASS: A CASE REPORT. *(Case Report)*  
*Wasef Sayeh, MD, University of Toledo Medical Center*

Signet ring cell adenocarcinomas (SRCC) are a rare histological subtype of adenocarcinoma with a poor prognosis, typically due to advanced disease at the time of diagnosis. The stomach is considered the most common site for primary tumors in SRCC with more than 50% of cases of SRCC usually originating from the stomach<sup>1</sup>. However, other sites mainly in the gastrointestinal (GI) tract were identified. Here, we are presenting a rare case of duodenal SRCC with metastasis.

## Genetic and Molecular Medicine

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- 58 A HETEROZYGOUS VARIANT OF TGFB3 IN A PATIENT WITH AN ATYPICAL PRESENTATION OF LOEYS-DIETZ SYNDROME: CASE REPORT AND REVIEW OF THE LITERATURE *(Case Report)*  
*Meagan McNicholas, Carle Illinois College of Medicine*

Loeys-Dietz syndrome (LDS) is an autosomal-dominant connective tissue disorder characterized by the clinical triad of hypertelorism, bifid uvula or cleft palate, and aortic aneurysm (1) (2). Mutations of genes encoding components of the transforming growth factor beta (TGF $\beta$ ) signaling pathway are implicated in LDS. (1)LDS5 (Rienhoff syndrome), caused by TGFB3 mutations, is characterized by the syndromic presentation of early-onset of aortic aneurysms with a risk of dissections and rupture but clinical features vary among patients (3).

## Geriatrics

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- 59 THE EXPERIENCES OF HIGH UTILIZERS WITH END-OF-LIFE CARE AND ADVANCE CARE PLANNING AS REPORTED BY PROXIES *(Abstract)*  
*Jamie Zeng, BS, University of Chicago*

Advance care planning (ACP) is defined as a process used to address, comprehend, and support an individual's preferences and goals for future medical care. This is particularly relevant in the event that an individual is in or approaching a sustained altered mental status while dealing with chronic or serious illness.<sup>1</sup> ACP is essential to prepare for the growing aging population who are high utilizers of the healthcare system particularly in providing EOL (end-of-life) care aligned with wishes and goals that also consider a palliative, quality-of-life based approach rather than simply defaulting to aggressive care.<sup>2,3</sup> ACP has been argued to be essential for psychosocial well-being in late life because patients and their caregivers report feeling more prepared for difficult EOL decisions.<sup>4,5,6,7</sup> This pilot study seeks to address the need for further investigation into the factors that facilitate or inhibit better ACP between patients and their care team and the various motivations behind deciding to prioritize quantity or quality of life at different stages of the EOL care process.

- 60 REASONS FOR PT NON-TREATMENT IN PATIENTS WITH FUNCTIONAL IMPAIRMENT DURING HOSPITALIZATION FOR MEDICAL ILLNESS *(Abstract)*  
*Mahnoor Baig, University of Chicago, Medicine*

Hospitalized patients spend 87-100% of their time in bed. This prolonged immobility contributes to the development of hospital-associated disability (HAD), defined as the new inability to perform one or

more activities of daily living (ADLs) after discharge from the hospital without assistance. HAD is associated with increased readmissions, institutionalization, and death. Physical therapy (PT) is an invaluable tool to treat and prevent HAD but is a constrained resource in most hospitals. Given their limited numbers, it is important to optimize the time of physical therapists. Patients miss over 15% of inpatient PT sessions but little is known about the reasons for missed sessions, termed PT “non-treatment”, in patients with specific indicators of the need for PT. Knowing this could contribute to the optimization of inpatient PT protocols, maximizing the time therapists spend with patients in need.

## Health Disparities

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- 61 MOTIVATING SMOKING CESSATION IN AGING AFRICAN AMERICANS WHO SMOKE: FINDINGS FROM A CULTURALLY-SPECIFIC MESSAGE DEVELOPMENT STUDY (*Abstract*)  
*Adrienne L Johnson, PhD, University of Wisconsin Center for Tobacco Research and Intervention*

While the U.S. adult population has shown significant reduction in cigarette smoking since 2000, older adults who smoke remain stagnant in their cessation rates. Older adults who smoke are half as likely to quit smoking than younger counterparts, but more likely to succeed in quit attempts when using evidence-based smoking treatment. Recent research suggests the potential utility of dementia prevention messaging to motivate smoking cessation among older adults, but there are unique smoking-related factors associated with the African American/Black (AA/Black) community (i.e., later smoking onset, lower daily smoking rate, increased menthol cigarette use, and lower smoking cessation success than White counterparts) that suggest older AA/Black adults who smoke may benefit from tailored interventions. Culturally-specific interventions for AA/Black adults who smoke are beneficial in terms of intentions to quit, utilization of evidence-based smoking treatment resources, and cessation success. However, there has yet to be a culturally-specific message for older adult AA/Black people who smoke to motivate cessation attempts and increase the use of evidence-based smoking treatment.

- 62 TRAUMA, SUBSTANCE USE, AND SEXUAL RISK BEHAVIORS: ASSOCIATIONS EXAMINED AMONG SEXUAL AND GENDER MINORITIZED YOUTH (*Abstract*)  
*Faith Summersett Williams, PhD, Northwestern University Feinberg School of Medicine*

In recent years, trauma exposure has emerged as a consistent correlate of sexual risk behaviors among adolescents and young adults who are vulnerable to HIV infection. It is unclear, however, whether substance use changes the strength of the association between trauma exposure and sexual risk-taking behaviors. Furthermore, these associations have not been explored among sexual minoritized populations such as young men who have sex with men (YMSM) and young transgender women (YTW), as these populations have been found to have an increased risk of trauma exposure and HIV infection compared to those identifying as heterosexuals. Most studies have examined sexual risk behaviors and trauma exposure among heterosexuals who engage in substance use, which may not capture the complexities and vulnerabilities of sexual minoritized groups. To our knowledge no studies have examined sexual risk behaviors, substance use, and trauma exposure in a community-recruited sample of sexual minoritized youth.

- 63 COULD RELAXIN BE A MARKER FOR PRO-TUMORAL MICROENVIRONMENT OF THYROID CANCER? *(Abstract)*  
*Anupam Kotwal, University of Nebraska Medical Center/Nebraska Medicine*

Differentiated thyroid cancer (DTC) generally has a favorable prognosis, however, 30% have recurrence and progression hence there is a critical need to identify additional prognostic and potentially therapeutic markers. Relaxin inhibits the inflammatory macrophage type (M1) but promotes the anti-inflammatory macrophage type (M2) which is favorable for tumor growth, hence deserves to be investigated in the DTC tumor microenvironment (TME). We hypothesize that Relaxin is expressed in DTC and is associated with pro-tumoral macrophage infiltration.

- 64 UNDERSTANDING PHOSPHOLIPASE D2 ACTIVATION AND ITS ROLE IN VIRAL GENE EXPRESSION DURING DE NOVO KAPOSI SARCOMA-ASSOCIATED HERPESVIRUS (KSHV) INFECTION *(Abstract)*  
*Warren M Nakazawa, BS, Rosalind Franklin University*

Kaposi's sarcoma-associated herpesvirus (KSHV), also known as human herpesvirus 8 (HHV8), is a double-stranded DNA virus implicated in the pathogenesis of Kaposi's sarcoma (KS), primary effusion lymphoma (PEL), and multicentric Castleman's disease (MCD). The induction of these cancers hinges on the replication of viral DNA in the host, as well as the latent and lytic cycles and associated proteins affecting viral gene expression. Phospholipase D2 (PLD2) is an enzyme that has been observed to play a role in neoplastic, proliferative cell growth and angiogenesis in various cell types. Generally, phospholipase D (PLD) hydrolyzes phosphatidylcholine to choline and phosphatidic acid. PLD2 specifically localizes to the plasma membrane of cells when overexpressed, whereas other PLD enzymes localize elsewhere. Knockout of PLD2 has been shown to inhibit hypoxic cellular responses, including the upregulation of hypoxia-inducible factor 1 alpha (HIF-1 $\alpha$ ) target genes and potentiation of VEGF-induced endothelial cell survival and angiogenesis. PLD inhibitors have been developed in hopes of decreasing the proliferative and angiogenic properties of multiple cancers, specifically showing promise in U87-MG glioblastoma cells. There is absence of research and literature on the implications of PLD2 inhibition in KSHV-induced cancers.

- 65 GATA2 SUPPRESSES CHROMOSOMAL INSTABILITY AND IS PREDICTIVE OF SURVIVAL IN ENDOMETRIAL SEROUS CARCINOMA *(Abstract)*  
*Apoorva Tarihalkar Patil, MS, University of Wisconsin School of Medicine and Public Health, Madison*

Endometrial serous carcinoma (ESC) is an aggressive malignancy which occurs in elderly women and has a 5-year disease specific survival of 50%. Due to aggressive tumor behavior, all ESC patients are offered paclitaxel-carboplatin therapy and/or targeted radiation, resulting in significant morbidity. Currently, there are no robust disease markers predictive of ESC behavior or response to therapy. ESCs are characterized at the molecular level by p53 inactivation and high rates of chromosomal instability (CIN) which correlates with myometrial invasion and poor outcome. CIN occurs when cells lose or gain chromosomes or pieces of chromosomes during mitosis due to improper kinetochore (KT) attachments to the microtubule (MT) cytoskeleton. GATA-binding factor 2 (GATA2) is a transcription factor that binds genomic GATA motifs to promote transcriptional programs and enable development and function across multiple organs. GATA2 is expressed in the uterus where it functions with progesterone receptor to support embryo implantation.

- 66 DELETION OF CCZ1 OR RMC1 ENHANCES ERYTHROID PROLIFERATION IN HUDEP2 CELLS (*Abstract*)  
*Masaki Ito, University of Michigan*

To prevent the development of anemia, the human body must produce ~2 million red blood cells (RBC) every second. Although the majority of the cell extrinsic factors that promote erythroid differentiation have been identified, the repertoire of erythroid genes that are required for erythroid differentiation remains poorly described.

- 67 A USABILITY AND PARTICIPATORY DESIGN STUDY FOR GERI, AN OPEN-SOURCE, REMOTE CANCER TREATMENT TOXICITY AND FRAILTY MONITORING PLATFORM FOR OLDER ADULTS (*Abstract*)  
*Nabiel Mir, MBBS, University of Chicago Medical Center*

Older adults are disproportionately affected by cancer, but there are significant barriers to studying cancer treatment tolerance in this population, including low enrollment in clinical trials and a lack of age-related outcome measures. Technology, such as wearable sensors and remote monitoring through tablets and smartphones, has the potential to overcome these barriers, but older adults may face challenges with adoption. Participatory design involves co-designing technology with end-users, is a promising strategy to enhance technology use among older adults. We present the usability results of GeRI, a technology-based platform for monitoring cancer treatment toxicity and aging metrics in the homes of older adults with cancer, which uses a simplified interface to collect activity, nutrition and symptom metrics.

- 68 A NOVEL ROLE OF AQUAPORIN 3 IN REGULATING OXIDATIVE STRESS IN KAPOSI'S SARCOMA ASSOCIATED VIRUS-ASSOCIATED PRIMARY EFFUSION LYMPHOMA (*Abstract*)  
*Olivia Powrozek, Rosalind Franklin*

Kaposi's sarcoma-associated herpesvirus (KSHV) is associated with Kaposi's sarcoma (KS), primary effusion lymphoma (PEL), multicentric Castleman's disease (MCD), and KSHV inflammatory cytokine syndrome (KICS). PEL is a highly aggressive B-cell non-Hodgkin's lymphoma presented as body cavity effusions called ascites. PEL patients have a poor prognosis and survival fewer than six months after diagnosis. PEL is treated with chemotherapy cyclophosphamide, doxorubicin, vincristine, prednisone (CHOP), and antiretroviral therapy for HIV coinfection. However, none of these therapeutics are targeted explicitly at KSHV and have side effects. Therefore, targeted antivirals and anticancer therapies for PEL are needed. KSHV has latent and lytic phases, which contribute to tumor formation and progression. Two essential KSHV proteins for its life cycle are latency-associated nuclear antigen-1 (LANA-1; ORF73) and regulator of transcription activator (RTA; ORF50). KSHV has evolved to reprogram several host factors to promote its latency, replication, and maintenance in the host cells and the survival and proliferation of the infected cells. Reactive oxygen species (ROS) mediated oxidative stress has been reported to regulate KSHV lytic cycle reactivation in latently infected PEL cells. Aquaporins (AQPs), integral membrane proteins, also known as water channel proteins, facilitate the uptake of hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) ROS into cells, thus mediating the downstream intracellular signaling involved in cancer cells. What has not been studied is the role of AQPs in the transmission of ROS within KSHV-infected PEL cells.

- 69 A CASE OF METASTATIC ADENOID CYSTIC (BASAL CELL) CARCINOMA OF THE PROSTATE: SYSTEMIC THERAPY FOR A RARE DISEASE (*Case Report*)  
*Jonathan Q. Trinh, MD, University of Nebraska Medical Center*

Basal cell carcinoma is a very rare type of prostate cancer. No consensus exists on optimal systemic therapy for patients with metastatic disease. We describe a patient who presented as such and responded positively to chemotherapy and review current literature of other patients who received systemic treatment.

- 70 A PECULIAR CASE OF ANTI-G IN AN ALLOIMMUNIZED ANTENATAL MOTHER (*Case Report*)  
*Ayesha J Zaidi, MBBS, University of Illinois at Chicago*

The Rh system is the most important blood group system after ABO. The G antigen is a member of the Rh system of blood group antigens expressed on red blood cells (RBCs) possessing C, D or both C and D antigens. Antibodies against Rh antigens are notorious for causing hemolytic disease of the fetus and newborn (HDFN). Anti-D is the most common antibody responsible for severe HDFN, but other Rh antibodies, such as anti-C, anti-E, anti-e, and anti-G, can also cause HDFN. Anti-G has been reported as a possible cause of HDFN, either independently or in association with anti-D, anti-C or both. This antibody can be induced either by pregnancy or transfusion. Anti-G antibody mimics the pattern of anti-C and anti-D reactivity in the identification panel and is often present along with either or both antibodies, but cannot be serologically differentiated, since it is adsorbed by both C–D+ and C+D– red blood cells. The differentiation of anti-G with anti-D and anti-C in routine pretransfusion workup is especially significant in antenatal cases. The presence of anti-D in an expecting mother excludes the need for the administration of prophylactic anti-D immunoglobulin (RhIG). In contrast, D-negative mothers with anti-G are potential candidate for Rh prophylaxis to prevent possible formation of anti-D and subsequent HDFN.

- 71 AN UNUSUAL ELEVATION IN INTERNATIONAL NORMALIZED RATIO IN THE SETTING OF APIXABAN USE (*Case Report*)  
*GRISHMA POKHAREL, MBBS, MD, Englewood Health and Medical Center*

Apixaban is a direct oral anticoagulant (DOAC) that works by directly inhibiting factor Xa of the coagulation cascade. Studies reveal an association between the use of DOACs and the prolongation of prothrombin time (PT) and the International Normalized Ratio (INR). In patients using Apixaban, INR elevations were observed with a median INR of 1.4 on day 1 and a median INR of 1.7 on day 7 of therapy. Extreme elevation in INR is rare with Apixaban. [1-3] Here, we report a case of a patient, who was found to have a critically elevated INR of 10.83 in the setting of Apixaban use.

- 72 COMPLEMENT MEDIATED TMA AND SPLENIC RUPTURE ASSOCIATED WITH CMV INFECTION (*Case Report*)  
*Sadia Shabir, MD, University of Toledo Medical Center*

Complement-mediated thrombotic microangiopathy (TMA) is characterized by a triad of microangiopathic hemolytic anemia (MAHA), thrombocytopenia, and acute renal failure.<sup>1,2</sup> It sometimes presents following an event causing activation of complement cascade in a predisposed individual with genetic abnormalities involving complement factors or autoantibodies against complement regulators. Spontaneous splenic rupture is a rare complication of CMV infection and potentially life threatening event. The goal is to resuscitate the patient with conservative

management. Cytomegalovirus (CMV) is a DNA virus with high seroprevalence. Although it is well known for causing serious infections in immunocompromised and transplant patients, CMV has been reported with serious complications in previously healthy immunocompetent patients. Here we are reporting a case of a previously healthy female patient with complement-mediated TMA and splenic rupture caused by a systemic CMV infection that was successfully treated with plasmapheresis, steroids, and parenteral valganciclovir.

73 DELAYED ONCONEURONAL ANTIBODY DEVELOPMENT IN IMMUNE CHECKPOINT INHIBITOR INDUCED PARANEOPLASTIC SYNDROME (*Case Report*)

*Doo Woong Choi, MD, Englewood Hospital and Medical Center*

With wider use of immune checkpoint inhibitors (ICI) in treatment of various solid organ cancers, an increasing number of neurologic paraneoplastic syndromes from ICIs are reported [1, 3, 5]. Onconeural antibodies are used to support the diagnosis of paraneoplastic syndrome but there are limited studies regarding timing of antibody development in ICI-induced paraneoplastic syndromes. We present a unique case of delayed development of onconeural antibodies in ICI-induced paraneoplastic syndrome, the diagnosis of which was strongly supported by the presence of rare onconeural antibodies in the absence of progression of cancer. Also, we will discuss the use of western blot in ICI induced paraneoplastic syndrome.

74 A CD1A NEGATIVE BIOPSY AND A CD1A POSITIVE BIOPSY: AN EXTREMELY RARE PRESENTATION OF ROSAI-DORFMAN DISEASE WITH LANGERHANS CELL HISTIOCYTOSIS (*Case Report*)

*Ayman Salih, MD, University of Toledo Medical Center*

Rosai-Dorfman disease (RDD), also known as sinus histiocytosis with massive lymphadenopathy, is a systemic proliferation of cells that resemble the sinus histiocytes of lymph nodes and is often characterized by painless, massive cervical lymphadenopathy. (1) It has been reported that about 43% of cases have extra-nodal involvement, most commonly involving skin and subcutaneous tissues. (2,3) RDD is a rare subtype of histiocytic disorders, which also includes Langerhans cell histiocytosis (LCH). LCH is characterized by an abnormal reactive process that involves the proliferation of abnormal Langerhans cells. While it may initially present as a rash it can involve several organs including the lungs, bone marrow, lymph nodes, and pituitary gland. (4) Here, we shed the light on a unique case of a 24-year-old female who originally presented at the age of 14 and was diagnosed with RDD involving the CNS, and had a skin rash that was originally thought to be secondary to RDD but was, in fact, cutaneous LCH.

75 MALIGNANT RECTAL LIPOSARCOMA: A RARE CAUSE OF A COMMON PRESENTING COMPLAINT (*Case Report*)

*Hassan Alkhatatneh, MD, Englewood Hospital and Medical center*

Sarcomas are malignant tumors arising from connective tissue. One of the more common histologies is the liposarcoma which may present as a painless, gradually enlarging mass, usually of the extremities and retroperitoneum. Unusual origins have however, been known to occur. Here we present a rare case of a metastatic dedifferentiated liposarcoma of rectal origin.

- 76 A CASE OF PLEXIFORM NEUROFIBROMA OF THE APPENDIX: A RARE ENTITY IN NEUROFIBROMATOSIS  
(Case Report)  
*Hassan Alkhatatneh, MD, Englewood Hospital and Medical center*

Neurofibromatosis one (NF1), or Von Recklinghausen's disease, is an autosomal dominant disorder with a prevalence of about 1 in 3000 [8]. It is a multi-system disorder that affects any organ in the body. However, patients typically present with cutaneous neurofibromas, café-au-lait spots, Lisch nodules, or inguinal/axillary freckling [2,8]. Gastrointestinal (GI) involvement is reported in 10-25% of cases, most frequently involving the jejunum, stomach, ileum, duodenum, and colon [2]. Appendiceal neurofibromas (ANF) are extremely rare with less than 10 cases previously reported [2]. Here, we describe a case of an ANF in a patient with NF1.

- 77 MALIGNANT TRITON TUMOR IN AN OTHERWISE ASYMPTOMATIC NEUROFIBROMATOSIS TYPE 1  
PATIENT: AN ATYPICAL CASE (Case Report)  
*Chadane Thompson, MD, Englewood Hospital and Medical Center*

Neurofibromatosis (NF) is an autosomal dominant tumor-predisposition syndrome primarily affecting the skin and nervous system and typically presenting in childhood [1]. Malignant peripheral nerve sheath tumors (MPNSTs) are a group of rare, aggressive spindle cell neoplasms of peripheral nerves or plexiform neurofibromas in NF type 1 (NF-1) [2]. MPNSTs represent only 3-5% of all soft tissue sarcomas but are the leading cause of mortality and most common malignant neoplasm seen in NF-1, where the lifetime risk is ~8-13% [1-3]. Malignant Triton tumor (MTT) is a rare subset of MPNSTs with heterologous skeletal muscle (rhabdomyoblastic) differentiation and is scarcely reported in literature [2]. Here, we report a case of NF-1 with the atypical presentation of an isolated retroperitoneal MTT in the fifth decade of life.

- 78 OH, WHAT A STORM: A CASE OF BLINATUMOMAB-INDUCED CYTOKINE RELEASE SYNDROME (Case Report)  
*Chadane Thompson, MD, Englewood Hospital and Medical Center*

Acute lymphoblastic leukemia (ALL) is a rare malignant proliferation of immature lymphoid precursors and is uncommon in adulthood. Blinatumomab is a bispecific T-cell engaging drug used in patients with Philadelphia chromosome-positive (Ph+) or -negative (Ph-) relapsed/refractory (R/R) ALL, prior tyrosine kinase inhibitor (TKI) exposure and T315I mutation [1-5]. T315I mutation is a defect in the BCR-ABL fusion protein that limits therapeutic options in Ph+ ALL by conferring resistance to TKIs except for ponatinib. Blinatumomab can be used as a single agent or in combination with ponatinib to further improve outcomes. Despite the potential benefits of blinatumomab, cytokine release syndrome (CRS) is a potentially life-threatening complication [2,6]. As the use of novel immunotherapy agents expands, it is vital that physicians promptly recognize and manage their associated toxicities [1,6]. We present a case of relapsed Ph+ B-cell ALL due to T315I mutation requiring treatment with blinatumomab and ponatinib in which initial infusion of blinatumomab incited Grade 1 CRS.

- 79 DOUBLE WHAMMY!: NEW DIAGNOSIS OF GLUCOSE 6-PHOSPHATE DEHYDROGENASE DEFICIENCY WITH HEMOLYTIC ANEMIA AND METHEMOGLOBINEMIA (*Case Report*)  
*Zachary A Banbury, MBBS, Englewood Health*

Glucose 6-phosphate dehydrogenase (G6PD) deficiency is the most common enzymatic deficiency affecting upward of 400 million people worldwide. It affects men more than women due to its X-linked inheritance with prevalence in African, Asian and Mediterranean ethnicities. It is often diagnosed after exposure to oxidative stresses including medications (e.g. Isoniazid, Methylene blue, Primaquine, Trimethoprim) which induce hemolytic anemia. Methemoglobinemia (MetHb) can be congenital or acquired with acquired Methb accounting for the majority of cases seen, often occurring after exposure to direct oxidizing agents (e.g. benzocaine, prilocaine), indirect oxidizing agents (e.g. nitrates) or metabolic activation (e.g. aniline, dapsone). The co-occurrence of G6PD deficiency and MetHb is seldom seen in literature. We present a rare case of a 30 year old male presenting after a urinary tract infection diagnosed with concurrent G6PD deficiency and MetHb.

- 79 MALIGNANT RECTAL LIPOSARCOMA: A RARE CAUSE OF A COMMON PRESENTING COMPLAINT (*Case Report*)  
*Hassan Alkhatatneh, MD, Englewood Hospital and Medical center*

Sarcomas are malignant tumors arising from connective tissue. One of the more common histologies is the liposarcoma which may present as a painless, gradually enlarging mass, usually of the extremities and retroperitoneum. Unusual origins have however, been known to occur. Here we present a rare case of a metastatic dedifferentiated liposarcoma of rectal origin.

- 80 IRINOTECAN INDUCED TRANSIENT DYSARTHRIA: A CASE SERIES (*Case Report*)  
*Caleb T Spencer, MD, University of Toledo Medical Center*

Irinotecan, a topoisomerase inhibitor also known as CPT-11, is an anti-tumor agent against a variety of cancers. It acts to prevent DNA replication of cancer cells by inhibiting DNA stability and replication. Irinotecan in combination with leucovorin calcium and fluorouracil (FOLFIRI) with the addition of oxaliplatin (FOLFIRINOX) has proven to be an effective treatment against advanced cases of colorectal and pancreatic cancers. It is also an alternative treatment in metastatic gastric cancer if cisplatin is not tolerated. The most common adverse events with irinotecan use are diarrhea and neutropenia, with roughly a third of patients experiencing these symptoms. Here we describe two patients that developed transient dysarthria after infusion of irinotecan. There have been approximately 50 cases described in the literature to date. The goal of this article is to add to the growing volume of similar cases and call to attention the importance of shared decision making with patients.

- 81 A MYSTERIOUS CASE OF RECURRENT SINUSITIS (*Case Report*)  
*Nicoy D Downie, MD, Tulane University*

Extranodal NK/T cell lymphoma (ENKL) is a rare subtype of peripheral T cell lymphoma. ENKL, nasal type commonly occurs in the nasal and upper aerodigestive region. Patients typically present initially with nonspecific localized symptoms including nasal obstruction, nasal discharge, and epistaxis, typically treated as sinusitis. Given the overlapping features in recurrent infections and underlying lymphomas, persistent sinusitis should prompt additional workup for lymphoma including imaging, assessment of EBV viral load, and LDH levels due to the difference in overall survival when diagnosed



as early stage. Adequate staging is also a concern, thus early use of PET imaging even prior to oncology referral is recommended to not delay treatment.

## Implementation Science

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- 82 PATIENT AND PROVIDER PERCEIVED BARRIERS AND FACILITATORS TO OPHTHALMOLOGY VISIT ADHERENCE: IDENTIFYING THE ROLE OF MOTIVATION VERSUS ABILITY (*Abstract*)  
*Archit V Potharazu, BE, University of Illinois Chicago*

Adherence to eye care visits is associated with improved visual outcomes for those with eye disease (1). However, less than 60% of adults at high risk of vision loss reported receiving eye care in 2017 (2). Social vulnerability is associated with reduced healthcare access and may represent a contributing barrier to visit adherence (3). Understanding influencing factors is essential for the design of effective interventions aimed at increasing visit adherence for patients living in neighborhoods with high social vulnerability.

- 83 A HYBRID 2 TRIAL OF PHAT LIFE EFFECTIVENESS AND IMPLEMENTATION FOR ADOLESCENTS ON PROBATION: DELIVERY BY YOUTH LEADERS VS. PROBATION STAFF (*Abstract*)  
*Brenikki Floyd, University of Illinois Chicago*

Juvenile justice involvement is implicated in long-term health disparities in Black communities, including poor sexual and reproductive health and substance use. Justice-involved youth report high rates of marijuana and alcohol use and risky sexual activity and are more likely to test positive for sexually transmitted infections than their peers. One evidence-based intervention for youth on probation, Preventing HIV/AIDS among Teens (PHAT) Life, has been shown to reduce sexual risk taking among youth who report the highest risk behavior when research assistants delivered PHAT Life. Research assistants, however, are not sustainable within the justice system. To increase feasibility, acceptability, and sustainability, this hybrid 2 trial compared two implementation strategies, youth-led (YL) versus probation staff-led (PS) PHAT Life and examined effectiveness and implementation outcomes.

- 84 EFFECTS OF COVID-19 ON STOCK INHALER IMPLEMENTATION: A QUALITATIVE ANALYSIS (*Abstract*)  
*Paige Hardy, BS, University of Illinois Chicago*

In 2018, Illinois passed Public Act 100-0726, which allows schools to stock inhaler medication for asthma symptoms(1). While this program has the potential to ensure critical medication access to individuals without an asthma rescue inhaler, the uptake of stock inhaler programming in Illinois has been slow(2,3). One potential reason for delays is the COVID-19 pandemic, which has changed school-based health significantly.

- 85 INTRODUCING A REAL-TIME METHOD FOR IDENTIFYING THE PREDICTORS OF NON-COMPLIANCE WITH EVENT-BASED REPORTING OF TOBACCO USE IN ECOLOGICAL MOMENTARY ASSESSMENT (*Abstract*)  
*Ashley D. Kendall, PhD, University of Illinois Chicago*

The use of ecological momentary assessment (EMA) or “real-time data capture”—in which data are collected from people in real time as they go about their daily lives—has surged over recent decades as a method of studying a broad range of health outcomes [1,2]. Importantly, certain people may be

less likely to complete EMA reports than other people, and some circumstances may be less conducive to reporting than others. To the extent that undetected person- or moment-level factors systematically drive missing reports, the findings from EMA studies will be biased, and the effectiveness of interventions built on these data will be compromised. Noncompliance with reporting thus represents a central threat to realizing the full clinical translational potential of this method. A small body of work has begun to examine the predictors of noncompliance with time-based reporting (i.e., reporting that is prompted by the EMA device) [3-5]. Many EMA studies, however, rely on event-based reporting (i.e., reporting that is self-initiated by participants) to capture key health outcomes ranging from pain to heart symptoms in real time. Due to the difficulty inherent to tracking failures to self-initiate event reports, very little is known about noncompliance with event-based reporting.

- 86 HELPING STUDIES FIT PEOPLE: USING HUMAN-CENTERED DESIGN METHODS TO BRIDGE THE IMPLEMENTATION GAP IN CLINICAL TRIALS *(Abstract)*  
*Jennifer Sculley, MDes, University of Illinois Chicago*

Clinical trials are a critical part of the translational research process. Over 90% of clinical trials report delays in enrollment and 20% terminate early or have lower than expected sample size due to insufficient enrollment or retention. Implementation science offers theories, frameworks, and models that may be helpful in the conduct of clinical trials to increase the likelihood of successful completion. Human-centered design (HCD, sometimes called user-centered design or design thinking) is an approach to developing products, services, and systems that are tailored to the people who use them and the contexts in which they are used. HCD methods are well-recognized in industries outside of healthcare as critical to meeting the needs of people they serve. HCD may offer complementary methods to implementation science and help researchers plan trials that are more contextually appropriate, acceptable to stakeholders, and feasible to implement.

- 87 OPTIMIZING TWO PATIENT-FACING IMPLEMENTATION STRATEGIES TO INCREASE FAMILY SCREENING IN PARTNERSHIP WITH THE FAMILY HEART FOUNDATION *(Abstract)*  
*Nkiru S Ogbuefi, Feinberg School of Medicine*

Over 1 million Americans with familial hypercholesterolemia (FH) are undiagnosed; inequities exist with regard to race, ethnicity, and gender. Cascade screening – an evidence-based practice of contacting and screening first-degree biological relatives of individuals diagnosed with FH (“probands”) – improves timely FH diagnosis and reduces morbidity. Despite success in other countries, cascade screening has been challenging in the US. Applying insights from behavioral economics to design implementation strategies to address barriers can help improve equitable implementation of cascade screening. Our team includes investigators from Penn Medicine and the Family Heart Foundation (FHF), a research and advocacy nonprofit with the mission to save generations of families from heart disease through timely and improved care for FH. Our team has co-designed, and will pilot test, two patient-facing implementation strategies to increase cascade screening to plan for a fully powered RCT. The first strategy will involve direct outreach via Penn Medicine using automated text messages; the second strategy will involve direct outreach via the FHF using a navigator.

- 88 PROCESS EVALUATION OF THE COMMUNITY ASTHMA PROGRAM ON THE NAVAJO NATION USING THE RE-AIM FRAMEWORK *(Abstract)*  
*Priyanka Ravi, MDS, University of Arizona*

Children living on the Navajo Nation have high rates of asthma prevalence and severity. The Community Asthma Program (CAP) is an evidenced-based program that is being implemented in partnership with the Navajo Nation across 3 communities: Tuba City, Chinle, and Fort Defiance, Arizona. CAP's purpose is to reduce asthma exacerbations by implementing evidence-based preventive practices within healthcare and school settings. We report the preliminary findings of a robust implementation process evaluation of CAP.

- 89 COVID-19 INTERVENTION IMPLEMENTATION: DISRUPTIONS AND BARRIERS FOR ELEMENTARY CLASSROOM TEACHERS, SCHOOL HEALTH STAFF, AND SCHOOL CLEANING STAFF (*Abstract*)  
*Amanda M Wilson, PhD, University of Arizona*

The COVID-19 pandemic brought many changes including interventions meant to reduce COVID-19 spread in schools. The Centers for Disease Control and Prevention issued school specific guidance for K-12 schools. Lack of adherence to these guidelines could result in outbreaks and increased transmission at schools.

- 90 MY ILLINET RECOVER RETURN OF INDIVIDUAL RESEARCH RESULTS (MIRROR): A PILOT STUDY ABOUT PARTICIPANT PREFERENCES IN A LONGITUDIAL COVID STUDY (*Abstract*)  
*Denise A Kent, PhD, RN, APN, UIC- College of Nursing*

Disclosing individual research results with participants is not standard practice. In 2018 the National Academy of Sciences, Engineering, and Medicine (NASEM) published a recommendation for researchers to return individual research results which has created a paradigm shift. With the call for increased transparency in healthcare, it is apparent that the return of individual research results (ROIRRs) is likely to increase public engagement and trust in the research enterprise, improving the efficiency, generalizability, and lead to research that is more participant-centered.

- 91 USING IMPLEMENTATION SCIENCE TO INFORM THE PREPARATION PHASE OF THE MULTIPHASE OPTIMIZATION STRATEGY (MOST) FRAMEWORK (*Abstract*)  
*Katherine G Merrill, PhD, University of Illinois Chicago*

The multiphase optimization strategy (MOST) framework is an innovative approach to intervention science, facilitating an assessment of the effectiveness of individual components of an intervention prior to testing the effectiveness of the full intervention package. There is growing recognition of the critical role that implementation factors play in the success of an intervention, but gaps in the literature remain on how implementation science can and should inform use of the MOST framework.

- 92 EVALUATION OF THE EFFECTIVENESS OF A STOCK ALBUTEROL PROGRAM IN MARICOPA (PHOENIX) ARIZONA (*Abstract*)  
*Ashley A Lowe, PhD, MSPH, University of Arizona*

Acute respiratory symptoms often prevent students with asthma from participating in school activities and frequently lead to unplanned absences. To relieve symptoms and avert severe exacerbations, the National Asthma Education Prevention Program recommends that all students have access to rescue medication (albuterol sulfate) at school, and, when developmentally appropriate, self-carry and administer it. Despite these recommendations, most students lack an inhaler when needed. Parents may not provide one; students may forget or misplace it; or the inhaler might be expired, empty, or difficult to access. Furthermore, some children lack an Asthma Action Plan (AAP) on file with their

school or a completed medication administration form authorizing the school to administer the medication. Schools can overcome these challenges by maintaining a single, stock albuterol inhaler (stock inhaler) for use among multiple students via disposable holding chambers.

## Infectious Disease

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- 93 A SYSTEMATIC REVIEW OF METHODOLOGY AND REPORTING OF DIAGNOSTIC PREDICTION MODELS FOR HEALTHCARE FACILITY-ONSET CLOSTRIDIODES DIFFICILE INFECTION (*Abstract*)  
*Jesse M Fajnzylber, BA, Cleveland Clinic Lerner College of Medicine of Case Western Reserve University*
- Clostridioides difficile infection (CDI) is the most common cause of healthcare-associated diarrhea and is associated with significant morbidity and mortality. Previous studies developed diagnostic models to identify inpatients at risk for developing healthcare facility-onset CDI (HO-CDI); however, the quality and the clinical utility of these models remains uncertain. Therefore, the uptake of these diagnostic models has been limited and increasing physician's confidence in these tools is paramount to implementation and improved patient outcomes.
- 94 A SCOPING REVIEW OF TRENDS IN ANTIMICROBIAL RESISTANCE AMIDST THE COVID-19 PANDEMIC (*Abstract*)  
*Meggie Griffin, MS, University of Wisconsin - Madison*
- The introduction of a new respiratory pathogen that mimics bacterial pneumonia along with disruptions to normal antimicrobial stewardship and infection prevention operations have been predicted to accelerate the emergence and spread of antimicrobial resistance (AMR) amidst the COVID-19 pandemic. While some studies have been done to suggest that rates of AMR have increased throughout the pandemic, no reviews have comprehensively characterized the available literature.
- 95 INPATIENT ANTIBIOTIC PRESCRIBING BEFORE AND DURING THE COVID-19 PANDEMIC IN A LARGE SAMPLE OF U.S. HOSPITALS (*Abstract*)  
*Meggie Griffin, MS, University of Wisconsin - Madison*
- Because of disruptions in hospital infection control and antibiotic stewardship operations caused by the COVID-19 pandemic, there is concern about the short and long-term effects of these changes on antibiotic resistance trends.
- 96 EFFECT OF MONOVALENT COVID-19 BOOSTER AMONG HOSPITALIZED PATIENTS WITH BREAKTHROUGH INFECTION (*Abstract*)  
*Megan Corn, University of North Dakota*
- The virus that causes severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection has changed over time. In 2021, the Omicron variant of SARS\_CoV-2 led to increased Coronavirus 2019 infections (COVID-19) prompting recommendations for patients to receive a booster (monovalent) dose of the vaccine.
- 97 TYPICAL HEMOLYTIC UREMIC SYNDROME IN AN ADULT: A CASE REPORT (*Case Report*)  
*Zayd Ahmed, University of Illinois College of Medicine*

Hemolytic Uremic Syndrome (HUS) involves the clinical triad of thrombocytopenia, microangiopathic hemolytic anemia with schistocytosis, and acute kidney injury. It can also be associated with fever and neurologic symptoms. Typical HUS is more commonly associated with Shiga-toxin producing *Escherichia coli* (STEC) or less frequently *Streptococcus pneumoniae*, while atypical HUS (aHUS) is not related to an infection but is rather driven by complement activation and dysregulation. While HUS associated with *E. Coli* O157:H7 is a recognized yet rare cause of acute kidney injury in children, the incidence in adults is exceedingly uncommon. Due to the rarity of the condition in adults, it is likely that the diagnosis will often be delayed, which can defer treatment and negatively impact outcomes. This report demonstrates a case of a previously healthy 68-year-old female inflicted with STEC-HUS, with the hope of aiding in early diagnosis and differentiation from other thrombotic microangiopathies, ultimately decreasing the time in which an adequate treatment plan can be formulated.

## Nephrology

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- 98 LONGITUDINAL CHARACTERIZATION OF METABOLIC CHANGES IN ADPKD (*Abstract*)  
*Cassandra J Trask, Mayo Clinic PKD Center*

Metabolic dysregulations and mitochondrial abnormalities are implicated in the pathogenesis of autosomal dominant polycystic kidney disease (ADPKD), but reports differ between studies, and there are no longitudinal studies that determine the timing of these alterations through the disease.

- 99 SEX-BASED DIFFERENCES IN IMMUNE-MEDIATED KIDNEY DISEASE (*Abstract*)  
*Valerie Garcia, BS, Northwestern University*

Chronic kidney disease (CKD) affects approximately 850 million people worldwide. While CKD is more prevalent among women, men with CKD are more likely to progress to kidney failure. Despite this observation, the underlying mechanisms driving this difference remain unknown.

- 100 AN IMPROVED MODEL OF CHRONIC KIDNEY DISEASE: ADENINE DIET IN THE SKH1 MOUSE (*Abstract*)  
*Benjamin W French, University of Toledo College of Medicine and Life Sciences*

Chronic kidney disease (CKD) is often complicated by wound healing and other dermatologic disorders. Experimental models of the skin disorders which often accompany CKD are lacking. Low protein diets high in the purine derivative adenine have been utilized to model CKD in both rats and mice and mimic several key phenotypes including reduced glomerular filtration rate, kidney fibrosis, proteinuria and polyuria, and elevated plasma levels of cystatin-C. These occur in the adenine diet model largely through tubular atrophy and glomerular damage (glomerulosclerosis and hypertrophy). The C57BL/6 mouse is highly resistant to many features of experimentally induced CKD, including kidney fibrosis, polyuria, proteinuria, and various cardio-renal pathologies. Additionally, for dermatologic studies, C57BL/6 mice require depilatory or shaving procedures which can introduce confounding effects on the skin. The SKH1 mouse strain is an immunocompetent hairless strain of mice which is ideal for dermatological studies, including wound-healing models, and in some skin cancer research. Adenine-induced CKD has not been investigated in the SKH1 strain and represents an important need in order to model and investigate the dermatological disorders which often complicate CKD.

## Neurology / Neurodegeneration

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- 101 CHARACTERIZING MEDIAL AMYGDALA RESPONSE TO SOCIAL STRESSORS (*Abstract*)  
*Alexandra C Ritger, BS, Rosalind Franklin University of Medicine & Science*

Depression is characterized by social withdrawal and avoidance and can emerge after exposure to a social stressor. The medial amygdala (MeA) regulates social behaviors and responds to social cues, and there is evidence of reduced MeA volume and connectivity in people with depression. Repeated social defeat is a natural stressor in rats that results in negative long-term outcomes, including social avoidance and anhedonia, and increases MeA immediate early gene expression, an indirect marker of neuronal activity. x

- 102 ANALYSIS OF TREM2 INTERACTIONS WITH ALZHEIMER'S DISEASE LIGANDS APOE AND OLIGOMERIC AMYLOID BETA REVEALS THE TREM2 HYDROPHOBIC SITE AS A POTENTIAL THERAPEUTIC TARGET (*Abstract*)  
*Jessica Greven, Washington University in St. Louis*

The development of new innovative treatments to prevent and ameliorate AD requires knowledge of molecular mechanisms that are critical to neuronal health. The triggering receptor expressed on myeloid cells 2 (TREM2) receptor is part of a signaling complex that modulates inflammatory responses, phagocytosis and cell survival in microglia, resident immune cells in the brain that play a critical role in clearing misfolded aggregates. Examples include neurotoxic aggregates consisting largely of amyloid beta (A $\beta$ ) and apolipoproteinE (apoE). Both molecules have emerged as important signaling ligands for TREM2. Although TREM2 signaling in microglia is generally associated with beneficial outcomes, intense or prolonged signaling may produce overactivated microglia leading to neuronal damage. Such events may also contribute to other diseases such as Parkinson's or cancers. Furthermore, rare TREM2 variants, most notably R47H and R62H, have been identified that are associated with a significantly increased risk of developing AD. Given these significant roles, TREM2 has emerged as an important yet challenging therapeutic target for AD.

- 103 REVIVIFY GEL ATTENUATES HUMAN BRAIN MICROVASCULAR ENDOTHELIAL CELLS (HBMEC) FROM HYPOXIA INDUCED DISRUPTION OF BLOOD BRAIN BARRIER (BBB) PERMEABILITY IN A IN VITRO MODEL (*Abstract*)  
*Syeda H Afroz, PhD, Orion Institute for Translational Medicine*

Accumulating data suggests that oxidative stress and mitochondrial damage are involved in the pathogenesis of neurodegenerative disorders including Parkinson Disease [PD], Multiple Sclerosis [MS], Alzheimer's Disease [AD], and many others. Brain uses about 20% of oxygen consumption, thus high producer of reactive oxygen species [ROS]. Also brain cell membrane composed of more unsaturated fatty acids [M UFA and PUFA], thus more prone to lipid auto-oxidation due to ROS. REVIVIFY GEL, addresses instant reduction of oxidative stress from multi-dimensional pathways and resulted an immediate effect induced by the disease symptoms. The purpose of the study is to evaluate whether revivify gel attenuates human brain microvascular endothelial cells (HBMEC) from oxidative damage.

- 104 POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME IN A TRAUMA PATIENT WITH MULTIPLE GUNSHOT WOUNDS *(Case Report)*  
*VIJAY DIMRI, University of Missouri Kansas City*

Posterior Reversible Encephalopathy Syndrome (PRES) is a neurological condition with variable manifestations confirmed by radiological findings of vasogenic edema. While the exact pathophysiology of the condition is unknown, the leading endothelial dysfunction theory posits that damage to the blood-brain-barrier due to hypertension, acute fluctuations in blood pressures, or toxin-mediated endothelial damage causes leak of vessel contents into the interstitial space.<sup>1</sup> Clinicians may not be aware of trauma as an inciting factor for PRES given the scarcity of such cases in the literature. As such, we aim to increase recognition of these cases in clinical practice. Here we delineate the first reported case of PRES occurring in a trauma patient with multiple gunshot wounds (GSW).

- 105 RESPIRATORY FAILURE AS THE SOLE MANIFESTATION OF ANTI-MUSK MYASTHENIA GRAVIS *(Case Report)*  
*Mustafa AW. Mohammed, LSUHSC Department of Neurology and University Medical Center*

Approximately 80% of patients with myasthenia gravis (MG) have antibodies to the acetylcholine receptor (AChR) and 8% have antibodies to muscle-specific kinase (MuSK)<sup>1</sup>. Younger females are more likely to be affected than males<sup>2</sup>; and blacks are more likely to have these antibodies compared to whites. The incidence of MuSK antibody-positive MG considerably varies depending on the geographic location<sup>3-5</sup>. Patients with Anti-MuSK antibodies have HLA-DRB1, DQB1, DQ5, and DR14 alleles,<sup>6-8</sup>. Anti-MuSK MG typically presents with acute onset of bulbar symptoms followed by rapid progression to respiratory failure within a few weeks. Occasionally, anti-MuSK MG may resemble anti-AChR MG and present with generalized weakness and fatigue. Anti-MuSK MG presenting with isolated ocular findings, vocal cord paralysis, or head drop have been reported. We report a case of anti-MuSK MG with chronic respiratory failure as the only manifestation.

- 106 POST LUMBAR PUNCTURE (LP) SUBDURAL HEMATOMA: A CASE REPORT. *(Case Report)*  
*Omar Sajdeya, MD, University of Toledo Medical Center*

Lumbar puncture is considered an important minimally invasive tool that can be used for diagnostic and therapeutic purposes. One of the most important indications for performing LP is to confirm or rule out an infectious pathology affecting the central nervous system. Complications of the procedure include post-LP headache, back pain, radicular pain or numbness, and less likely cerebral herniation and bleeding<sup>1</sup>. Serious bleeding is usually rare in the absence of thrombocytopenia or coagulopathy and presents mainly in the form of spinal hematoma. We are presenting a rare case of post-LP subdural hematoma

- 107 WARFARIN INDUCED NEW-ONSET HEADACHE IN A PATIENT WITH MIGRAINE AND ANTIPHOSPHOLIPID SYNDROME *(Case Report)*  
*Mustafa AW. Mohammed, LSUHSC Department of Neurology and University Medical Center*

There are several published reports of serendipitous improvement in migraine among patients treated with the anticoagulant warfarin. In one case series, the authors proposed that warfarin ameliorates migraine headaches by inhibiting platelet aggregation and serotonin secretion resulting in a drop in serotonin levels below the threshold necessary for triggering vasoconstriction. However, we are not

aware of any reports of warfarin triggering a new type of headache or aggravating the headache of patients who happen to have migraine.

## Pathophysiology

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- 108 INCREASED EXPRESSION OF (PRO)RENIN RECEPTOR DURING PREGNANCY IS ASSOCIATED WITH PREECLAMPSIA (*Abstract*)  
*Waverly B Kundysek, Texas A&M School of Medicine*

Preeclampsia (preE), a complex syndrome of hypertension and proteinuria, is a leading cause of maternal and fetal morbidity and mortality. Methods for early diagnosis and treatment are not yet available, yet the renin-angiotensin system (RAS) has been implicated in preeclampsia pathogenesis.

## Pediatrics

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- 109 CHEMOKINE CHANGES DURING PREECLAMPTIC PREGNANCY AND ITS EFFECTS ON FETOPLACENTAL STRESS (*Abstract*)  
*Sara Mohamed, MD, Baylor Scott White McLane Children's Medical Center*

Preeclampsia (PreE) is the de novo development of hypertension and proteinuria after 20 weeks of gestation and has a link to alterations of feto-placental stress that pass to the offspring causing detrimental effects.

- 110 TRANSCRIPTOME BASED DRUG REPURPOSING IN GROUP 3 MEDULLOBLASTOMA (*Abstract*)  
*David J Doss, Creighton University*

Medulloblastoma (MB) is the most common malignant brain tumor of childhood, accounting for 20% of pediatric brain tumors. With the advent of high throughput sequencing, international consensus has identified four molecular subgroups of MB: WNT, SHH, group 3 (G3), and group 4 (G4). Each subgroup is characterized by unique methylomic and transcriptomic signatures, cytogenetic aberrations, histology, and prognosis. Mainstay of therapy consists of surgical resection followed by craniospinal irradiation (CSI) and chemotherapy. Based primarily on clinical features, treatment regimens fail to capitalize on unique subgroup-specific molecular signatures. However, subgroup-specific prognoses vary widely, from >95% five-year survival in WNT MB to < 50% five-year survival in G3MB. As such, there is a great need to address these outcome disparities, specifically in G3MB, with more selective therapies.

- 111 AN EVALUATION OF OUTPATIENT PEDIATRIC ASTHMA PRESCRIBING PATTERNS IN THE UNITED STATES (*Abstract*)  
*Noopur Walia, Rosalind Franklin University*

Pediatric asthma is often underdiagnosed and under-treated, resulting in a lack of concentration, difficulty sleeping, and tiredness. The GINA guidelines recommended that children should be prescribed maintenance inhalers along with rescue inhalers. If both were prescribed concurrently, it was considered appropriate, otherwise deemed inappropriate for this study. The global prevalence, morbidity and mortality of childhood asthma has increased significantly over the last 40 years with inappropriate prescribing of inhalers as one of the major contributing factors.



- 112 NEONATAL HYPOGLYCEMIA IS NOT ASSOCIATED WITH NEURODEVELOPMENTAL DELAY IN CHILDREN UP TO 2 YEARS OF AGE *(Abstract)*  
*Manisha K Singh, DO, Baylor Scott and White*

Neonatal hypoglycemia is linked to poor neurological outcomes. In newborns with hypoglycemia, long-term neurologic consequences, such as epilepsy and cognitive impairments, have been documented. There is currently no agreement among doctors as to what constitutes neonatal hypoglycemia, what the treatment threshold should be, or how long low blood sugar levels are safe for infants.

- 113 INDUCING IRON IMBALANCE BY TARGETING THE ABCB7/GPX4 AXIS ACCELERATES FERROPTOSIS IN MEDULLOBLASTOMA *(Abstract)*  
*RANJANA K KANCHAN, PhD, UNMC*

Medulloblastoma (MB), the most common malignant pediatric brain tumor and a leading cause of childhood mortality, is stratified into four primary subgroups, i.e. WNT (wingless), SHH (sonic hedgehog), group 3, and group 4, the latter two representing high-risk MB. Improvements in targeted therapies for WNT and SHH MB have improved overall survival, while chemotherapy toxicity limits effective treatment of high-risk tumors, fueling recurrence and mortality rates. Deletions within chromosomal locus 17p13.3, which houses multiple tumor suppressor genes including miR-1253, characterize high-risk tumors. Leveraging the tumor-suppressive properties of miRNAs as adjuncts to chemotherapy may provide a promising alternative to current therapeutic strategies.

- 114 PUTATIVE B7-H3 INHIBITORS MITIGATE GROUP 3 MEDULLOBLASTOMA AGGRESSIVENESS *(Abstract)*  
*PRAKADEESWARI GOPALA KRISHNAN, University of Nebraska Medical Center*

Medulloblastoma (MB) is a primary childhood malignancy of the central nervous system (CNS). Clinically heterogeneous, MBs are sub-grouped into four molecular subgroups, i.e., Wingless (WNT), Sonic Hedgehog (SHH), Group 3, and Group 4. Among all, Group 3 MBs (G3MB) are known to be the most aggressive form, with less than 50% five-year survival. G3MBs are associated with large cell/anaplastic (LCA) histology, a distinctive methylation profile, amplification of c-MYC, and isochromosome 17q (i17q). Targeting these high-risk molecular features unique to G3MB has been challenging, necessitating alternative approaches to therapy for G3MB. One innovative approach is targeting immune checkpoint molecules involved in tumor evasion. B7 homolog 3 (B7-H3/CD276) is an example of an immunosuppressive checkpoint protein and member of the B7 superfamily that is significantly enriched in G3MB. The enhanced expression of B7-H3/CD276 has been associated with an elevated aggressive and metastatic potential for G3MB. B7-H3/CD276 is also a primary target of miR-1253, a novel tumor suppressor gene silenced in G3MB.

## **Pulmonary / Critical Care**

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- 115 YAP1 DEFICIENCY PROTECTS HYPOXIA-MEDIATED PULMONARY HYPERTENSION IN MICE *(Abstract)*  
*Ali Imran Sarwar, BS, Cardiovascular Research Core*

Pulmonary hypertension (PH) is a chronic vascular disease characterized by pulmonary vasoconstriction and pulmonary arterial remodeling (PVR). PVR is mainly due to the uncontrolled pulmonary artery

smooth muscle cell proliferation. It is known that activation of YAP1 (an oncogene) promotes cell proliferation and inhibits apoptosis.

- 116 AUGMENTATION OF KINDLIN-2 EXPRESSION ATTENUATES ENDOTHELIAL CELL PERMEABILITY AND MURINE ACUTE LUNG INJURY (*Abstract*)  
*Weiguo Chen, 6647, University of Illinois at Chicago*

We previously reported lung endothelial cell (EC) inflammation attenuated by simvastatin, an HMG CoA-reductase inhibitor, is mediated by integrin  $\beta 4$  (ITGB4). The unique cytoplasmic domain of ITGB4 contains amino acid sequences that would be predicted to bind integrin adapters of the kindlin-2 family. Further, kindlin-2 expression is mediated by SMURF1 (Smad ubiquitination regulatory factor-1), an E3 ubiquitin ligase that promotes kindlin-2 ubiquitination and degradation.

- 117 UCHL1, A DEUBIQUITINATING ENZYME, AUGMENTS ENDOTHELIAL CELL BARRIER FUNCTION IN RADIATION- INDUCED LUNG INJURY (*Abstract*)  
*Yulia Epshtein, PhD, UIC*

Radiation-induced lung injury (RILI) is a common complication in patients administered thoracic radiotherapy that is characterized by increased lung endothelial cell (EC) inflammation and permeability and is associated with significant morbidity and mortality. Although the molecular etiology is poorly understood, we previously identified dysregulation of sphingolipids as an important mediator of RILI in a murine model and confirmed radiation-induced increases in lung expression of sphingosine kinase (SphK) isoforms 1 and 2. Moreover, mice with a targeted deletion of SphK1 (SphK1<sup>-/-</sup>) exhibited marked RILI susceptibility and we confirmed significant RILI protection conferred by the sphingosine-1 phosphate (S1P) analog, (S)-FTY720-phosphonate (Tysiponate, Tys). Separately, we have also identified differential RILI responses mediated by the deubiquitinating enzyme, UCHL1 (ubiquitin carboxyl terminal esterase L1) and we have confirmed SphK1 ubiquitination is regulated by UCHL1.

- 118 INCREASED RISK OF POST-LIVER TRANSPLANT PULMONARY COMPLICATIONS IN PATIENTS WITH ABNORMAL NON-INVASIVE HEMODYNAMICS, EVEN WITHOUT SIGNIFICANT PULMONARY HYPERTENSION (*Abstract*)  
*Anne C Osuji, University of Illinois at Chicago*

Portopulmonary hypertension (PoPH) as a complication of liver cirrhosis is a significant risk factor for perioperative complications and mortality with liver transplant, particularly in patients with moderate to severe disease, and screening is an important part of the pre-transplant evaluation. Right heart catheterization (RHC) is used to diagnose PoPH when the echocardiogram is significantly abnormal, yet it is unclear if non-invasive hemodynamic measurements are sufficient to identify risk factors for complications and poor outcomes of liver transplant in patients both with and without confirmed PoPH.

- 119 MURINE MODEL OF PHENYLHYDRAZINE-INDUCED CHRONIC HEMOLYSIS COMBINED WITH HYPOXIA LEADS TO DEVELOPMENT OF SEVERE PULMONARY HYPERTENSION (*Abstract*)  
*Janae Gonzales, MD, University of Illinois at Chicago*

Pulmonary hypertension (PH) is a severe complication of sickle cell disease associated with high morbidity and early mortality. The pathogenesis remains incompletely understood and PH specific therapies have limited supportive evidence. We previously implicated the in vitro toxicity of

extracellular hemoglobin on the pulmonary artery endothelium as a contributing mechanism for the vascular remodeling seen in PH related to chronic hemolytic states.

- 120 MRSA INDUCES LUNG ENDOTHELIAL DYSFUNCTION VIA EPIGENETIC MECHANISMS AND CYP1A1 UPREGULATION (*Abstract*)  
*Lucille Meliton, MD, University of Illinois Chicago*

Lung endothelial injury is a hallmark of Acute Respiratory Distress Syndrome (ARDS), which is commonly triggered by bacterial infections [e.g. Methicillin-resistant *Staphylococcus aureus* (MRSA)]. Epigenetic mechanisms, including histone modifications that regulate gene expression, play an important role in endothelial cell (EC) dysfunction and contribute to the pathophysiology of ARDS.

- 121 ENDOTHELIAL SPECIFIC CARMIL1 KNOCKDOWN EXACERBATES IN VIVO LUNG INJURY (*Abstract*)  
*Cat Humpal, University of Illinois at Chicago*

The acute respiratory distress syndrome (ARDS) secondary to systemic or lung inflammation causes significant morbidity and mortality. Vascular leak and alveolar flooding are hallmarks of ARDS pathology. Regulation of the pulmonary endothelial barrier by the actin cytoskeleton is an intriguing area of research to identify risk factors and develop therapies for lung injury. Variations in the gene encoding the cytoskeletal regulator capping protein Arp2/3 complex myosin-I linker (CARMIL1) have been implicated in human ARDS outcomes through preservation of platelet count (Wei, et al. AJRCCM 2017 and Wei, et al, CHEST 2015) but also identified differences in CARMIL1 expression. We have previously demonstrated that CARMIL1 is expressed in pulmonary endothelial cells and contributes to barrier regulation.

- 122 DISTINCT TRANSCRIPTIONAL PROGRAMS DEFINE IMMUNOTYPE SPECIFIC CD4+ T-CELL SUBTYPES IN SARCOIDOSIS (*Abstract*)  
*Christian Ascoli, MD, University of Illinois at Chicago*

In sarcoidosis, paradoxical peripheral CD4+ T-cell lymphopenia accompanied by exhaustion and anergy are thought to impair immune surveillance and elicit a state of persistent maladaptive inflammatory activity that predisposes to chronic and progressive disease. Our prior transcriptomic analysis of peripheral blood mononuclear cells (PBMCs) utilizing bulk RNA-sequencing suggests that aberrant crosstalk between hyperactive monocytes and CD4+ T-cells results in dysregulated transcriptional programming that may incite the lymphopenic immunotype. We hypothesize that CD4+ T-cell subtypes exhibit unique gene regulatory networks (GRNs) that are associated with decreased cell survival and function in the lymphopenic immunotype.

- 123 RIG-I AGONIST SLR10 PROMOTES MACROPHAGE M1 POLARIZATION DURING INFLUENZA VIRUS INFECTION (*Abstract*)  
*Jordan P Metcalf, MD, University of Oklahoma Health Sciences Center*

Retinoic-acid-inducible gene I (RIG-I) is a cytosolic pattern recognition receptor (PRR) that recognizes viral nucleic acids and induces innate immune responses. A family of short synthetic, triphosphorylated stem-loop RNAs (SLRs) have been designed to activate the RIG-I pathway and induce a potent interferon (IFN) response, which may have therapeutic potential

- 124 NON-CANONICAL AUTOPHAGY BY LYSOSOME-MUCIN GRANULE FUSION REGULATES THE ELIMINATION OF EXCESS MUCIN GRANULES (*Abstract*)  
*Erik A Sillaste, Purdue University*

Introduction: Muco-obstructive airway diseases (e.g., COPD and asthma) are associated with mucous cell metaplasia and mucin hypersecretion, leading to airway obstruction and symptoms such as shortness of breath and cough. How mucous cells regulate excess mucin granules is poorly understood. Previous paradigms suggested that mucous cells only secrete mucin granules to the external airway. However, our recent data indicates that mucin granules can be degraded through the autophagy-lysosomal pathway. In this highly orchestrated process, cells eliminate excess organelles or proteins through double-membraned autophagosomes fusing with lysosomes for degradation by acid hydrolases.

- 125 LUNG EPITHELIAL CELL-DERIVED EXTRACELLULAR VESICLES CAUSE MICROVASCULAR ENDOTHELIAL DYSFUNCTION (*Abstract*)  
*Eleftheria Letsiou, PhD, University of Illinois Chicago*

Pulmonary infection by *Streptococcus pneumoniae* can cause acute lung injury (ALI), which is characterized by disruption of lung epithelial and endothelial normal functioning. We previously demonstrated that pneumolysin (PLY), a pneumococcal pore-forming toxin, stimulates lung epithelial cells (Epi) to release large extracellular vesicles (EVs) that carry mitochondrial cargo. EVs are important mediators of intercellular communication, and extracellular mitochondria encapsulated within EVs have pro-inflammatory properties.

- 126 THE ASSOCIATION OF NEIGHBORHOOD TRAFFIC AND PHYSICAL ACTIVITY LEVELS IN ADULTS WITH ASTHMA DURING COVID-19 PANDEMIC (*Abstract*)  
*Caroline Youssef, MD, University of Illinois at Chicago*

Higher rates of physical inactivity occur among adults with asthma, and this is associated with worse asthma outcomes. Specific barriers to physical activity in adults with asthma may include fear of exercise due to exercise-induced bronchoconstriction and lack of social support however additional environmental factors may contribute.

- 127 SARCOIDOSIS RELATED SYMPTOM SEVERITY CORRELATES WITH INFLAMMATORY GENE SIGNATURES (*Abstract*)  
*Christen Vagts, MD, University of Illinois at Chicago*

Sarcoidosis is an immune mediated systemic disease of unknown etiology that results in granulomatous inflammation and multiorgan dysfunction. While there is no universal biomarker to guide sarcoidosis management, the presence of systemic symptoms is a major consideration to treatment initiation and titration. The Sarcoidosis Health Questionnaire (SHQ) is a validated tool that assesses sarcoidosis related morbidity with three domains: physical functioning (PF), daily functioning, and emotional functioning (1). We hypothesize that sarcoidosis related symptom severity, as measured by the PF domain, is associated with alteration in gene expression profiles and that the assessment of gene networks will yield further insight into drivers of disease.

128 CLINICAL RESEARCH PARTICIPANT AS CUSTOMER: FIVE PRINCIPLES FOR DESIGNING HUMAN-CENTERED RESEARCH STUDIES *(Abstract)*

*R. McKinley Sherrod, MDes, University of Illinois at Chicago*

Over 90% of clinical research studies report delays in enrollment; 20% terminate early or have lower than expected sample size due to insufficient enrollment or retention. While many factors affect recruitment and enrollment, the research community has not yet paid sufficient attention to the participant experience. Human-centered design is a practice used to create products, systems and services. It can be employed to identify and understand factors affecting enrollment and retention as a basis for improving the participant experience. As with any service,, the recruitment and retention of clinical study participants necessitates responding to their motivations, needs, and challenges. The RE-CONNECTS study enrolled participants from nine CONNECTS parent studies of potential treatments for SARS CoV2. The goals of RE-CONNECTS were to understand if recontacting participants from previous, related studies was a viable recruitment method and, if so, what qualities a future COVID-focused study would need to possess for participants to join a registry in which they would be contacted several times a year to answer surveys about their health and provide biospecimens (blood, stool, etc).. The study employed human-centered design to explore these questions.

129 REVISTING PROPOFOL INFUSION SYNDROME: EARLY DIAGNOSIS LEADING TO BETTER SURVIVAL AND OUTCOME *(Case Report)*

*Sasmit Roy, MD, Centra Lynchburg General Hospital*

Propofol related infusion syndrome (PRIS) is a dreaded complication that can happen to critically ill patients initiated on propofol, as an infusion agent for sedation. PRIS is mostly seen in patients receiving high dose (> 67 microgram/kilogram/minute[mcg/kg/min]) and/or prolonged infusion of > 48 hours (hrs) along with associated clinical features of high anion gap metabolic acidosis, renal failure, cardiogenic shock, hypertriglyceridemia, lactic acidosis. (1) Most patients with reported PRIS succumb to their illness because of its high mortality i.e., 30-70% (2)

**Rheumatology / Immunology / Allergy**

130 SUBCLINICAL CARDIAC DYSFUNCTION DETECTED BY SPECKLE TRACKING ECHOCARDIOGRAPHY IN DERMATOMYOSITIS/POLYMYOSITIS: A META-ANALYSIS *(Abstract)*

*Faria Sami, MD, John H. Stroger Hospital of Cook County*

Dermatomyositis and Polymyositis (DM/PM) are connective tissue disorders characterized by autoimmune-mediated inflammatory myopathy along with other multisystem manifestations. Cardiac abnormalities are also frequent in these patients, and often subclinical. In comparison to standard echocardiography, speckle tracking echocardiography (STE) has become a more useful ultrasound technique to estimate myocardial function. We report the STE parameters in DM/PM patients in our study to estimate the degree of cardiac dysfunction.

131 USE OF BETA-BLOCKERS IN PATIENTS WITH APIS-MELLIFERA AND OTHER HYMENOPTERA VENOM ANAPHYLAXIS *(Abstract)*

*Aamir W Akram, MD, Wright State University*

The Hymenoptera comprise a group of insects that includes bees, wasps, sawflies and ants. Hymenoptera stings, primarily from bees (Genus: Apis, Species: Mellifera) result in approximately 60-70 deaths in the United States annually and cause serious reactions in others. The number of deaths

from bee stings exceeds that from snake bites, spiders or wild animal attacks in this country. Beta blockers represent one of the most commonly used class of drugs to treat a variety of illnesses. Due to their mechanism of action, beta-blockers may reduce the efficacy of epinephrine used to treat anaphylaxis and may also counter the body's own adrenergic response

- 132 SERUM PROTEOME DIFFERENCES BETWEEN CHRONIC AND ACUTE REACTIVE ARTHRITIS PATIENTS  
(Abstract)  
*Tarek R Firzli, BS, University of Nevada Reno School of Medicine*

Reactive Arthritis (ReA) is an arthritic sequela to enteric or sexually transmitted infection, commonly campylobacter jejuni, salmonella sp., shigella sp., chlamydia trachomatis and yersinia sp [1]. Symptoms appear about 2-4 weeks following such infections and may include the classic triad of urethritis, uveitis and arthritis, although more commonly patients do not present with all of these symptoms. While a majority of patient's symptoms resolve within 6 months, a subset (10-30%) may go on to develop chronic symptoms [2, 3]. Certain general inflammatory biomarkers such as ESR, CRP, IL-6, IL-13, IFN-gamma and TNF-alpha have also been described, however no specific serum protein biomarkers have been described [1, 4]. There is a paucity of data characterizing acute ReA which resolves and chronic ReA which may persist for years causing significant morbidity to patients.

- 133 COMPARATIVE ANALYSIS OF DIFFERENCES IN METABOLISM AND HEPATOTOXICITY IN MURINE MODELS OF TYPE1/TYPE17 VS TYPE2 IMMUNE RESPONSES AFTER ORAL EXPOSURE TO THE HARMFUL ALGAL BLOOM CYANOTOXIN MICROCYSTIN-LR (Abstract)  
*Apurva C Lad, University of Toledo College of Medicine and Life Sciences*

Overgrowths of cyanobacteria (aka blue-green algae) are increasing in freshwater sources across the globe and referred to as Harmful Algal Blooms (cHABs). These cHABs produce bioactive secondary metabolites including microcystin-LR (MC-LR), which is one of the most frequently detected and potent cyanotoxins and poses significant health risks to exposed individuals. While the immunotoxicity of MC-LR has been demonstrated in target organs including the liver and kidney, little is known about the metabolism and fate of this common cyanotoxin as well as the role of the immune system in response to MC-LR exposure.

- 134 INCREASED HEPATOTOXIC AND NEPHROTOXIC RESPONSE IN A MURINE MODEL OF TYPE 1/TYPE 17 VS TYPE 2 IMMUNE RESPONSE EXPOSED TO AEROSOLIZED HARMFUL ALGAL BLOOM TOXIN MICROCYSTIN-LR (Abstract)  
*Gabriel G Kleer, University of Toledo College of Medicine and Life Sciences*

Cyanobacterial Harmful Algal Blooms (cHABs) are on the rise globally and pose serious health concerns due to the release of cyanotoxins, which are harmful to both humans and the environment. Microcystin-LR (MC-LR) is one of the most frequently produced cyanotoxins and has recently been detected in aerosols generated by the normal motions of affected bodies of water. However, the human health effects of MC-LR aerosols on health remain largely unknown. We have previously demonstrated that MC-LR aerosol exposure has a pro-inflammatory influence on the airways of mice, inducing a type 1/type 17 inflammatory response.

- 135 OVERLAP OF RHEUMATOID ARTHRITIS AND GRANULOMATOSIS WITH POLYANGIITIS (*Case Report*)  
*Faria Sami, MD, John H. Stroger Hospital of Cook County*

Rheumatoid arthritis (RA) is an inflammatory polyarthritis with multisystem involvement. It can coexist with other autoimmune diseases and rarely even vasculitis. 1-3 Granulomatosis with polyangiitis (GPA) is necrotizing vasculitis of medium-sized vessels. GPA patients can have symmetric polyarthritis which can make it challenging to differentiate from RA. 4 The handful of cases of overlap of GPA and RA reported raise the question of possible interrelation between the two. 5 We present a case of RA with GPA with the aim to highlight diagnostic challenges and association of GPA and RA

- 136 GOUT AS A CELLULITIS MIMIC (*Case Report*)  
*Faria Sami, MD, John H. Stroger Hospital of Cook County*

Gout is a crystalline arthropathy caused by monosodium urate deposition in joints, more commonly affecting men [1,2]. While the management is entirely different, rarely cellulitis can mimic gout and, more commonly, gout can mimic cellulitis [3, 4]. Cellulitis is a clinically diagnosed infection of subcutaneous tissue, epidermis, and dermis [5]. Distinction between the two can be a diagnostic challenge [6]. Our case highlights the significance of keeping a low threshold for gout when the presentation resembles cellulitis with desquamation.

- 137 STATIN-ASSOCIATED NECROTIZING AUTOIMMUNE MYOPATHY (*Case Report*)  
*Joel W Wright, MBBS, Hackensack University Medical Center/Englewood Hospital*

Statins have become a cornerstone therapy in the primary and secondary prevention of atherosclerotic cardiovascular disease with 1 in 4 Americans over the age of 40 currently taking a statin. Despite their great benefit, the most common reason for their discontinuation by patients is statin-associated muscle symptoms (SAMS). SAMS may manifest as separate and distinct entities clinically: (i) myalgia, (ii) rhabdomyolysis, (iii) Toxic Self-limited Myopathy and (iv) Statin-Associated Necrotizing Autoimmune Myopathy (SANAM), a relatively newly described disease. SANAM is less commonly recognized and occurs with an estimated incidence of 1 in 100,000 persons on a statin. It is important that clinicians are vigilant for SANAM and differentiate it from other SAMS as its management and prognosis vary from the other entities.

- 138 ANGIOTENSIN II TYPE 1 RECEPTOR ANTIBODY MEDIATED KIDNEY REJECTION UNRESPONSIVE TO TREATMENT (*Case Report*)  
*Suhalika Synghal Sahni, MBBS, University of Illinois Chicago*

Antibody-mediated rejection (AMR) is a well-known complication following a kidney transplant, resulting in graft failure if not treated promptly. Many AMR cases are due to recipient antibodies against donor HLA antigens. Recently, non-HLA antibodies have been identified as causing AMR in the absence of recipient HLA sensitization. Among these, antibodies with agonistic specificity for the angiotensin II type 1 receptor (AT1R) are increasingly implicated in cases of AMR refractory to standard treatment. While some reports have suggested improvement or stabilization of graft function, we present two patients in which anti-rejection therapy including therapeutic plasma exchange was unable to salvage the allograft.