

# Midwest Clinical & Translational Research Meeting

## April 8-9, 2024

INTERCONTINENTAL CHICAGO MAGNIFICENT MILE



### Poster Session Monday, April 8, 2024 5:15 pm – 6:30 pm Renaissance Ballroom

Poster # Title/First Author

#### Section One

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- 1 ANDERSON TAWIL SYNDROME PRESENTING WITH HFREF (*Case Report*)  
*Dawood Shehzad, MD, University of South Dakota, Sanford School of Medicine*

Congenital Long QT Syndromes (CLQTS) are the most common inherited arrhythmia, with an estimated incidence of at least 1:2000 live births. (1) Genes implicated in LQTS code for various ion channels governing the depolarization and repolarization of cardiac myocytes. LQTS-7 or Anderson Tawil syndrome type 1 (ATS1) is a genetic disorder due to a mutation of the KCNJ2 gene that encodes a potassium channel subunit. It is a rare autosomal dominant disorder with incomplete penetrance. We report a case of ATS1 with heart failure as part of the presentation.

- 2 A RARE CASE OF FORAMEN OVALE ENDOCARDITIS (*Case Report*)  
*Dawood Shehzad, MD, University of South Dakota, Sanford School of Medicine*

Based on national data from 1998-2008, an average of 350,000 new cardiac implantable electronic devices (CIEDs) have been implanted annually (1). Infections are one of the most feared complications due to significant associated morbidity and mortality. Pseudomonas endocarditis is exceedingly rare but has worse outcomes. We report a rare case of late-onset pseudomonas infective endocarditis (IE) of the fossa ovalis.

- 3 A NEW PATHOGENIC VARIANT OF THE FILAMIN-C GENE RESULTING IN DILATED CARDIOMYOPATHY (*Case Report*)  
*Mustafa Shehzad, MD, Hackensack University Medical Center*

Filamin-C (FLNC) is a large dimeric actin-binding protein located at pre-myofibrils, myofibrillar Z-discs, and myofibrillar attachment sites of striated muscle cells, where it is involved in mechanical stabilization, mechanosensation, and intracellular signaling. Variants in FLNC mutations can cause varying degrees of morbidity, mortality, and heritability depending on the pathomechanism associated with the variant type and location. (1) We report a case of a young adult who presented with congestive heart failure secondary to dilated cardiomyopathy and was found to have a new variant of the FLNC gene resulting in a premature translational stop signal Exon 40, c.6561\_6564del (p.Thr2188Serfs\*62).

- 4 WHISPERS OF DANGER: A CASE OF SPONTANEOUS PNEUMOPERICARDIUM IN AN ELDERLY NON-VERBAL PATIENT *(Case Report)*  
*Muhammad S. Farooqi, MD, Insight Hospital and Medical Center, Chicago, IL*

Pneumomediastinum is an uncommon yet potentially life-threatening condition characterized by air accumulation in the mediastinal space. Very rarely, it can lead to pressure building up and air leaking into the intrathoracic structures such as the pericardial space to form a pneumopericardium. [1] [2] The condition in itself can occur either spontaneously or as a result of blunt trauma, falls, thoracic procedures, infection, positive pressure ventilation, or esophageal rupture. The likelihood of coexistence of the two entities is an even more infrequent occurrence. [3-5] A patient with pneumopericardium often experiences severe chest pain and hemodynamic instability but can lead to serious complications like cardiac tamponade, arrhythmias, and cardiac dysfunction, necessitating prompt diagnosis and management. [6- 8] This case report aims to elucidate the unusual etiology and clinical course, possible diagnostic challenges, and the nuances of management in a rare presentation of concurrent pneumopericardium and pneumomediastinum in a fragile elderly man.

- 5 SPONTANEOUS TYPE A AORTIC DISSECTION IN A YOUNG MANDARIN-SPEAKING FEMALE: A CASE REPORT *(Case Report)*  
*Muhammad S. Farooqi, MD, Insight Hospital and Medical Center, Chicago, IL*

Spontaneous Type A aortic dissection, although relatively rare in young individuals without predisposing factors, constitutes a life-threatening condition necessitating immediate intervention. The incidence of thoracic aortic dissection is 3-4 cases per 100,000 per year and is associated with high mortality. The risk factors which include hypertension, smoking, diabetes, iatrogenic aortic injury, bicuspid aortic valve, and drug use underscore the importance of understanding the incidence and associated characteristics of aortic dissection. Nonetheless, diagnosing this condition poses significant challenges due to its varied clinical presentation and the absence of apparent risk factors.

- 6 AN INTERESTING TALE OF LEFT VENTRICULOGRAPHY IN ACUTE AORTIC DISSECTION *(Case Report)*  
*Sarah Jiang, University of Missouri-Kansas City School of Medicine*

Left ventriculography (LV gram) is no longer routinely performed in most practices. However, we present a missed case of acute aortic dissection (AAD) on LV gram.

- 7 MANAGEMENT OF ASYMPTOMATIC SIGNIFICANT COARCTATION OF THE AORTA IN PREGNANCY *(Case Report)*  
*Sarah Jiang, University of Missouri-Kansas City School of Medicine*

Management approach to patients with significant coarctation of the aorta (CoA) in pregnancy and without significant hypertension is not clear. We present a patient to guide community cardiologists when encountering such cases.

- 8 MARKED FIRST DEGREE AV BLOCK - CONSIDER NEED FOR CARDIAC PACEMAKER IMPLANT *(Case Report)*  
*Vraj Patel, MD, Wright State University - Boonshoft School of Medicine, Internal Medicine Residency*

First-degree AV block is generally considered to be of no prognostic significance. However, marked first degree AV block causes atrial systole to occur in close proximity to the preceding ventricular systole. This timing results in incomplete atrial filling. Consequentially, ventricular filling is also compromised, causing a decrease in cardiac output. Patients may experience fatigue, dizziness, unsteadiness or other symptoms usually associated with the pacemaker syndrome. Small uncontrolled trials have demonstrated symptomatic and functional improvement with pacing in patients with PR intervals greater than 0.30 seconds by decreasing AV

conduction times. We report here a case representing a sub-group of patients with first degree AV block in whom permanent pacemaker implant may be considered even in the absence of overt symptoms, and we discuss the ACC-AHA guidelines in this regard.

**Poster # Title/First Author**

**Section Two**

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- 9      **HYPERTRIGLYCERIDEMIA, PANCREATITIS AND DKA - A DANGEROUS TRIAD (Case Report)**  
*Adnan Al Najada, MD, Rochester Regional Health*

Diabetic ketoacidosis (DKA) is a frequently encountered complication of diabetes mellitus. DKA manifests as an insulin deficit state and leads to moderate to severe hypertriglyceridemia. Hypertriglyceridemia stands as one of the common causes of pancreatitis, often going unnoticed. The triad of DKA, hypertriglyceridemia, and acute pancreatitis is rarely observed, yet it is associated with high mortality. This combination is often referred to as the 'enigmatic triangle,' given that the exact underlying pathophysiological mechanism remains not fully understood. The question persists whether DKA is the cause or a complication of acute pancreatitis.

- 10     **PHEOCHROMOCYTOMAS IN A VETERAN POPULATION: WHAT DO WE KNOW? (Case Report)**  
*Aditya Chauhan, MD, University of Minnesota -Twin Cities*

Pheochromocytomas are rare neuroendocrine tumors arising from chromaffin cells, with an incidence of about 0.6 cases per 100,000 person-years. There have been concerns of malignancies in veterans with Agent Orange and pit burn smoke exposures. To our knowledge, no literature exists regarding pheochromocytomas in the veteran population. Here, we present a case series of three veterans, seen by the authors, diagnosed with pheochromocytoma at the Minneapolis Veterans Affairs Health Care System, in order to examine the disease characteristics in this group.

- 11     **ARRHYTHMIAS IN COVID-19 INFECTION: A NEED FOR AWARENESS (Case Report)**  
*Cameron Quick, University of Missouri - Kansas City School of Medicine*

In sick symptomatic patients who are hospitalized with COVID-19 infections, arrhythmias are common. Different mechanisms postulated are hypoxia, myocarditis, myocardial ischemia, and drug side effects. Among the highest prevalent abnormal ECG findings include sinus tachycardia and sinus bradycardia, atrial fibrillation, and ST segment elevation.<sup>1,2</sup> However, we present a first case of COVID 19 infection and symptomatic junctional tachycardia competing with sinus rhythm, interpreted as complete heart block by community physicians. This case is to guide community physicians on awareness of this arrhythmias and management approach.

- 12     **BILATERAL CRYPTOGENIC STROKE RELATED TO AN AORTIC ARCH THROMBUS (Case Report)**  
*Momin Shah, MD, University of Toledo*

About 30-40% of acute ischemic strokes are cryptogenic, lacking a clear cause. Possible mechanisms include atrial fibrillation, paradoxical embolism through a patent foramen ovale (PFO), or substenotic atherosclerosis.<sup>[1-3]</sup> Aortic atherosclerosis, though rare as a cause of embolization<sup>[4]</sup>, is common and can lead to systemic embolization. Complex plaques carry a higher risk of embolic stroke and recurrence.<sup>[5-9]</sup> A complex distal atherogenic aortic arch thrombus is an uncommon source of systemic embolism.

- 13 THE PUZZLE OF CULTURE-NEGATIVE ENDOCARDITIS (*Case Report*)  
*Dawood Shehzad, MD, University of South Dakota, Sanford School of Medicine*

Infective endocarditis [IE] is a common treatable cardiac condition. Inappropriate treatment or diagnostic delay can have life-threatening consequences. Even in the absence of positive blood cultures, clinicians should be vigilant to look for clinical signs and symptoms beyond the cardiovascular system when suspicion for IE is high. We present the case of a young female who initially did not have typical signs and symptoms of IE and was diagnosed days into her hospital course.

- 14 ADVANCED LUNG ADENOCARCINOMA PRESENTING WITH A LARGE PERICARDIAL EFFUSION (*Case Report*)  
*Dawood Shehzad, MD, University of South Dakota, Sanford School of Medicine*

A pericardial effusion is characterized by the accumulation of excess fluid between the parietal and visceral layers of the serous pericardium, exerting pressure on the heart. This can ultimately result in diminished cardiac output. Common causes of pericardial effusion include idiopathic, uremia, neoplasm, and myocardial injury. Malignant pericardial effusion accounts for 5-20% of cases, and lung cancer has a prevalence of 33-50% among all malignant pericardial effusions. (1) While malignancy is a common cause of pericardial effusion, it rarely presents as an initial manifestation of the primary neoplasm. We present a rare case of recurrent pericardial effusion presenting as an initial manifestation of lung adenocarcinoma.

- 15 POST ACUTE MI - ISCHEMIC VSD WITH 28-DAY IMPELLA PLACEMENT (*Case Report*)  
*Mustafa Shehzad, MD, Hackensack University Medical Center*

Ventricular Septal Defect (VSD), although rare, is a serious mechanical complication of acute myocardial infarction (AMI). In the reperfusion era, the incidence of post-AMI VSD has been reported to be between 0.17%-0.31%, compared to 1%-3% in the pre-reperfusion era. (1) Surgical VSD closure has long been considered the best treatment approach given the exceedingly high mortality rate of conservative management. However, the timing of surgical repair needs to be carefully considered, given the peri-infarct myocardium may not be amenable to successful suturing. The cornerstone of management while awaiting surgery is afterload reduction. We present a case of anterior wall MI complicated by apical VSD that was successfully treated with surgical repair after 28 days of Impella mechanical support.

- 16 L-ARGININE TO TREAT DIALYSIS-REFRACTORY HYPERAMMONEMIA IN AN ADULT WITH PROBABLE HETEROZYGOUS UREA CYCLE DISORDER (*Case Report*)  
*Benjamin S. Williams, MD, MSc, Research*

Urea cycle disorders (UCD) are inherent hepatological lapses in the enzymatic metabolism and excretion of ammonia from circulation as urea(1). Hyperammonemia (HA) is aggressively neurotoxic, ranging from subtle changes in behavior to fatal brain herniations and comatose states(2). Predominantly, UCDs affect neonates who are homozygous recessive for urea cycle enzyme deficiencies; however, in stress states, such as trauma, infection, catabolism, and shock, heterozygous adult carriers of UCDs may experience HA. The most common suspected cause of HA in adults is chronic liver disease(3). Inborn errors of metabolism are often overlooked when diagnosing HA in adults(4). Therefore, it is imperative to expeditiously identify and effectively treat HA, as well as its potential causes.

Section Three

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- 17 YOU HAD ME AT MERLOT: A CASE OF ALCOHOL ASSOCIATED HEPATITIS (*Case Report*)  
*Tara Kronen, DO, University of Florida*

Alcohol-associated hepatitis (AH) is a clinical disorder characterized by jaundice, anorexia, tender hepatomegaly, and abdominal distention in individuals with chronic heavy alcohol use. Liver injury associated with alcohol use is typically seen in women who consume at least three drinks daily and in men who consume at least four drinks daily for more than 5 years. In these patients, laboratory values show moderately elevated transaminases with aspartate aminotransferase (AST) to alanine aminotransferase (ALT) ratio of 1.5 or greater, along with a total bilirubin level of > 3 mg/dL. When liver biopsy is performed, the main histological feature is steatohepatitis, with severe forms showing cirrhosis. As disease severity progresses, patients often develop bacterial infections, liver failure, and multiorgan failure with a mortality of 20-50% within 3 months. Several prognostic scores are used to determine disease severity, prognosis, and management. The model for end-stage liver disease with serum Na (MELD-Na) predicts 30-day mortality in AH patients, and Maddrey's discriminant function (mDF) determines if patients would benefit from pharmacotherapy. In patients with severe AH, as seen with mDF levels  $\geq 32$ , steroids 40mg/day are recommended. To determine the clinical response to steroids, the Lille score is used, which calculates clinical improvement after 7 days of steroids. If a response is seen, treatment continues for a total of 28 days, and if there is no response, steroid therapy ceases. Currently, new studies are evaluating the effectiveness of steroid response at 7 days vs 4 days. A retrospective study by Camelia et al determined that effectiveness can be seen as early as day 4, suggesting that the Lille score at 4 days could replace the 7-day score in predicting steroid response and 28-day mortality. Although this would minimize steroid use and decrease the risk of infections, our patient showed conflicting findings to this new theory.

- 18 IMMUNE-MEDIATED DASATINIB-INDUCED LIVER INJURY (*Case Report*)  
*Rafia Irfan Waheed, University of South Dakota*

Dasatinib is an FDA-approved tyrosine kinase inhibitor used as a second-line treatment for BCR-ABL-positive Chronic Myeloid Leukemia (CML) when first-line treatments have failed or are not tolerated. (1) While hepatotoxicity has been observed with other tyrosine kinase inhibitors, such as imatinib, it is rare with dasatinib. However, we present a unique case of immune-mediated dasatinib-induced liver injury.

- 19 PANCREAS BIFIDUM IN A PATIENT WITH SOLID PSEUDOPAPILLARY NEOPLASM OF PANCREAS (*Case Report*)  
*Rafia Irfan Waheed, University of South Dakota*

The bifid pancreatic duct refers to a condition where the dorsal pancreatic duct splits into two separate ducts instead of a single one due to its bilobed and split nature (1). Solid Pseudopapillary Neoplasm (SPN) of the pancreas, on the other hand, is a rare tumor accounting for about 0.9% to 2.7% of all exocrine pancreatic neoplasms in adults (2). It is constituted by poorly cohesive epithelial cells that create solid and pseudopapillary structures; the lack of distinct pancreatic epithelium differentiation sets it apart from other pancreatic tumors and contributes to its relatively less aggressive nature (2). We present a unique case of incidental finding of pancreatic bifidum in a patient with SPN. The relationship between bifid pancreatic duct and SPN is not fully understood, but anomalies in pancreatic duct development have been associated with certain pancreatic abnormalities including pancreatitis (3). The presence of a bifid pancreatic duct may be a congenital factor that could potentially contribute to the development of pancreatic neoplasms, including SPN. However, the specific mechanisms and causative factors linking these two aspects are not well-established.

- 20 NON-SPECIFIC SYMPTOMS OF ACUTE MESENTERIC ISCHEMIA AND IMPORTANCE OF HIGH DEGREE OF SUSPICION (*Case Report*)  
*Pooja Acharya, Burrell College of Osteopathic Medicine*

Acute mesenteric ischemia (AMI) is a rare life-threatening medical emergency characterized by loss or disruption of blood flow to parts of the small. In this case report, we show an adult patient presenting with risk factors and signs of AMI but not until after the patient developed bright red blood per rectum, that AMI was suspected and then she was transferred to vascular surgery for bowel ischemia.

- 21 HEPATOSPLENIC T-CELL LYMPHOMA DIAGNOSIS & MANAGEMENT IN MIDDLE-AGED ADULTS (*Case Report*)  
*Logan Baumberger, University of Nebraska College of Medicine*

Hepatosplenic T-cell lymphoma (HSTCL) is a rare and aggressive subtype of peripheral T-cell lymphoma (PTCL) characterized by its specific involvement in the liver, spleen, and bone marrow. This malignancy has been predominantly documented in adolescents and young adults, especially those undergoing immunosuppressive therapy for inflammatory bowel disease, hematologic disorders, and post-organ transplantation. However, a growing body of literature suggests an increasing number of cases observed in middle-aged adults. The clinical manifestations of this disease include hepatosplenomegaly and marked cytopenia with nonspecific symptoms such as fatigue, weight loss, and abdominal discomfort which makes the diagnosis elusive and frequently delayed.

- 22 A RARE CASE OF SPLENIC MARGINAL ZONE LYMPHOMA WITH TRANSFORMATION TO B-CELL PROLYMPHOCYTIC LEUKEMIA (*Case Report*)  
*Dileep K. Mandali, MD, Tulane University School of Medicine*

Splenic marginal zone lymphoma (SMZL) is a low-grade indolent non-Hodgkin lymphoma (NHL) that is extremely challenging to diagnose due to its rarity. Here we present a case of a rare entity transforming into a rarer more aggressive form of NHL, B-cell prolymphocytic leukemia (B-PLL). B-PLL and SMZL can present with splenomegaly, lymphocytosis, with the former typically presenting with more aggressive clinical course. It is important to differentiate these two entities which is done based on clinical characteristics, immunophenotype, and mutational analysis in order for targeted therapy.

- 23 A UNIQUE RIGHT UPPER QUADRANT ABDOMINAL RECTUS SHEATH HEMATOMA (*Case Report*)  
*Rupam Sharma, MD, Kern Medical*

Rectus sheath hematoma (RSH) is a medical condition characterized by the accumulation of blood within the fibrous covering of the abdominal muscles, known as the rectus sheath. Typically caused by trauma, strenuous activities including vigorous cough or anticoagulation medication use, this condition results in localized pain, swelling and a palpable mass in the abdominal area most commonly infraumbilically. As the blood collects within the sheath, it can lead to compression of nearby structures, potentially causing nausea, vomiting or even low blood pressure in severe cases. Herein described is a unique case of abdominal rectus sheath encounter presented in right upper abdominal quadrant.

Section Four

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- 24 PREGNANCY-INDUCED ATYPICAL HUS PRESENTING AS INTRAUTERINE FETAL DEMISE (*Case Report*)  
*Muhammad Ammar B. Hamid, MBBS, University of South Dakota*

Atypical Hemolytic uremic syndrome is a complement pathway-driven disorder characterized by microangiopathic hemolytic anemia, low platelet counts, and acute kidney injury. It is a rare entity amongst pregnant females involving one out of twenty-five thousand pregnancies (1). Most of its cases occur in the post-pregnancy period. Diagnosis of this condition is often delayed because of similarity with other similar disorders like thrombotic thrombocytopenic purpura and HELLP syndrome (2). Early recognition and risk factor stratification are important in these cases as they are associated with significant morbidity & mortality. Herein, we describe the case of a 25-year-old pregnant patient who presented due to intrauterine fetal demise in the 3rd trimester as an initial feature of atypical HUS.

- 25 CASE REPORT OF SUDDEN ACUTE LIMPING IN A PATIENT WITH A RARE MALIGNANT BONE TUMOR (*Case Report*)  
*Omer Qazi, University of Illinois Chicago*

Primary angiosarcoma of bone is an extremely rare and aggressive high-grade malignant vascular tumor. It accounts for less than 1% of all primary bone sarcomas and it is associated with poor prognosis. Most tumors are solitary and present on appendicular skeleton. Radiologically, they appear as ill defined, lytic destructive mass which erodes the cortex and causes periosteal reaction and can mimic multiple myeloma. The main differential diagnosis of primary bone epithelioid angiosarcoma includes osteosarcoma, metastatic carcinoma, and other less aggressive vascular tumors such as epithelioid hemangiomas (EHs), epithelioid hemangioendotheliomas (EHEs).

- 26 UNMASKING GRANULOMATOSIS WITH POLYANGIITIS: A DIAGNOSTIC ODYSSEY IN A PATIENT INITIALLY DIAGNOSED WITH GIANT CELL ARTERITIS (*Case Report*)  
*Yusuf Nawras, University of Toledo College of Medicine and Life Sciences*

Systemic vasculitis poses a diagnostic challenge due to its diverse manifestations across multiple organ systems. Anchoring bias can limit a comprehensive understanding, especially when encountering cases resembling common conditions like Giant Cell Arteritis (GCA). Both GCA and Antineutrophil cytoplasmic antibodies (ANCA) vasculitides, such as Granulomatosis with Polyangiitis (GPA), represent distinct entities. However, their concurrent occurrence underscores the importance of adopting a nuanced diagnostic approach. In this context, we explore a unique case of ANCA vasculitis initially presenting as GCA.

- 27 EXPLORING OBESITY PARADOX IN VENTRICULAR TACHYARRHYTHMIA - POPULATION-BASED ANALYSIS (*T4 Research*)  
*Mohannad Al Akeel, MD, East Tennessee State University*

The rising prevalence of ventricular tachyarrhythmia (VTach) among hospitalized patients necessitates an investigation into its association with obesity, stratified by Body Mass Index (BMI). This study, utilizing the National Inpatient Sample (NIS) data from 2016-2020, not only examines the relationship between distinct obesity categories (BMI) and VTach incidence but also delves into the intriguing phenomenon of the obesity paradox in this context.

- 28 DEMOGRAPHIC ANALYSIS FROM PARTICIPANT FEEDBACK RESPONSES IN A LARGE COHORT STUDY (*T4 Research*)  
*Bayan A. Hammad, BSc, University of Illinois at Chicago*

Various factors account for higher retention rates in longitudinal cohort studies, including building community and reducing participant burden. Using participant feedback surveys allows study participants to voice their opinions about the study and share ideas for improvements. Addressing participant concerns and responding to their feedback may improve retention rates; however, little is known about which participants are most likely to give feedback.

- 29 USING QUALITATIVE APPROACHES TO RAPIDLY IDENTIFY BARRIERS TO CONNECTING FAMILIES TO MENTAL HEALTH SERVICES FROM FAMILY LAW SETTINGS (*T4 Research*)  
*Catalina M. Ordorica, MEd, MA, University of Illinois Chicago*

Divorcing or separating family law parties may benefit from being screened for legal and psychosocial needs and then connected to relevant care. Establishing such a triaging process would necessitate understanding the barriers and facilitators to connecting parties to care. Because the concept of family law triaging is nascent, few if any studies have leveraged qualitative data to understand key determinants to implementing a family law triage model.

- 30 EXPLORING THE CARDIOPROTECTIVE INFLUENCE OF AEROBIC CAPACITY IN CHRONIC KIDNEY DISEASE: INSIGHTS FROM NOVEL RAT MODELS (*T0 Research*)  
*Eshita Kashaboina, MD, University of Toledo College of Medicine and Life Sciences*

Exercise and increased aerobic capacity protect against chronic kidney disease (CKD) via attenuation of the inflammatory response associated with renal injury. CKD is a well-known factor in the development of cardiovascular diseases and is associated with cardiac fibrosis and remodeling. While previous studies have highlighted the impact of adenine-induced CKD on aortic calcification, the comprehensive exploration of how aerobic capacity influences the progression of CKD-induced cardiovascular disease, particularly in the context of cardiac health, remains limited. In this study, we utilized rat models selected for low response to aerobic training (LRT), exhibiting metabolic dysfunction, and models selected for high response to aerobic training (HRT), representing an "exercise" state. LRT models have previously been studied to show dysfunctional vascular contractility due to chronically activated proinflammatory markers. Thus, we aim to unravel the intricate association between exercise and cardiac diseases in CKD.

- 31 TYPE 1 DIASTEMATOMYELIA PRESENTING IN ADULTHOOD (*Case Report*)  
*Priyanshi Ashokbhai Joshi, MBBS, Independent Scholar*

Split cord malformation (SCM) is a rare congenital spinal dysraphism characterized by the caudal divergence of a single spinal cord into two or more hemicords. The split cords may each be enveloped in their own dural layer (SCM type 1), or both hemicords may be in the same dural pouch (SCM type 2). (1) Each hemicord contains a central canal, ventral, and dorsal horn enveloped in its own pia mater. Patients are commonly diagnosed in infancy, as they present with spinal deformities and caudal neurological deficits. Some patients remain asymptomatic with the dysraphism discovered later in adulthood. Due to its rarity, the literature predominantly comprises individual case reports or small case series.

- 32 RETINOPATHY OF PREMATURITY (ROP) IN INFANTS: MATERNAL RISK FACTORS AND NEONATAL IMPLICATIONS (*T4 Research*)  
*Rina Amin, MD, Baylor Scott and White Medical Center*

Identifying risk factors that impede the development of ROP and understanding its origin can aid ophthalmologists and neonatologists in conducting thorough screenings, making precise diagnoses, and halting the disease's progression.

Section Five

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- 33 DERMAL EXPOSURE TO HARMFUL ALGAL BLOOM TOXIN MICROCYSTIN-LR INDUCES INFLAMMATION AND DISRUPTION OF EPITHELIAL DIFFERENTIATION IN VITRO AND IN VIVO (*TO Research*)  
*Benjamin W. French, The University of Toledo*

Harmful algal blooms (HABs) are on the rise globally, including Lake Erie, which provides drinking water and recreational activities to 11 million people annually. HABs produce many cyanotoxins, with microcystin-LR (MC-LR) being one of most prevalent and potent among over 270 congeners. Dermal contact represents one of the most common exposure routes to HAB cyanotoxins and dermatologic symptoms represent one of the most common complaints after HAB exposure, yet there is little research regarding dermal exposure. As the skin barrier can be disrupted by pre-existing diseases such as chronic kidney disease (CKD) and atopic dermatitis (AD), understanding the impact of these common diseases on cyanotoxin susceptibility merits study. Work from our lab and others has shown that pre-existing diseases impacting the kidney increase susceptibility to MC-LR (orally an inhalation), yet there is limited research on the dermal route of exposure even in healthy skin.

- 34 METABOLIC REGULATION OF HEPATIC GENES INVOLVED IN METHIONINE AND HOMOCYSTEINE METABOLISM. (*TO Research*)  
*Izabela Hawro, PhD, University of Illinois at Chicago*

Metabolic dysfunction-associated liver disease (MASLD) is the leading cause of chronic liver disease. MASLD is prevalent in patients with obesity and insulin resistance, where it progresses to metabolic dysfunction-associated steatohepatitis (MASH) with steatosis, lobular inflammation, hepatocyte ballooning, and fibrosis. Of note, methionine and homocysteine (Hcy) metabolism is altered in MASLD and MASH. Hcy is an amino acid mainly synthesized and metabolized in the liver, in the S-adenosylmethionine-dependent transmethylation pathway (methionine cycle), and remethylated to methionine in hepatocytes by the betaine-homocysteine S-methyltransferase (BHMT). Elevated plasma Hcy levels are associated with inflammation and fibrosis and could promote MASH. Recently, we published that hepatocyte peroxisome proliferator-activated receptor gamma (Pparg) promotes diet-induced MASLD/MASH in male mice. This effect is negatively associated with the regulation of genes involved in the metabolism of methionine and Hcy.

- 35 THE HARMFUL ALGAL BLOOM ASSOCIATED TOXIN MICROCYSTIN DEMONSTRATES CONGENER SPECIFIC DIFFERENCES IN PRO-INFLAMMATORY NF-KB ACTIVITY IN HUMAN AIRWAY EPITHELIAL CELLS (*TO Research*)  
*Bivek Timalsina, The University of Toledo*

The cyanobacteria of the genus *Microcystis*, often constitute cyanobacterial harmful algal blooms (cHABs) and produce many forms of microcystin toxins as secondary metabolites. Investigations of exposure to these toxins have primarily focused on the oral exposure route. However, microcystin-leucine arginine (MC-LR) and microcystin-leucine alanine (MC-LA), two of the most toxic congeners of microcystin, have recently been shown to have the highest concentration in lake aerosol particles. We have shown that exposure to aerosolized MC-LR induces an asthma-associated inflammatory response in healthy human pulmonary epithelium. Furthermore, in vitro bioinformatic analysis from RNA sequencing data identified NF- $\kappa$ B as the primary driver of the inflammatory response. Nevertheless, MC congener differences in pulmonary inflammatory response have not been thoroughly investigated.

- 36 UNNECESSARY ANTIBIOTICS USE FOR COMMON RESPIRATORY ILLNESS IN URGENT CARE SETTING (*TO Research*)  
*Miriah K. Forness, University of North Dakota School of medicine and Health Sciences*

Inappropriate use of antibiotics for viral upper respiratory infections (URI), pharyngitis or bronchitis directly contributes to antibiotic resistance. Assessment of unnecessary antibiotics prescribing practices can lead to educational interventions that can reduce antibiotic resistance. We examined common reasons for inappropriate antibiotics prescription for nonspecific URI in a primary urgent care setting.

- 37 A FERROPTOSIS INHIBITOR INDUCES DEGRADATION OF S1PR1 AND CYTOSKELETAL ARRANGEMENT AND INCREASES MICROVASCULAR ENDOTHELIAL PERMEABILITY THROUGH A FERROPTOSIS-INDEPENDENT MANNER (*TO Research*)  
*Boina Borjigin, Ohio Stste University*

In the setting of acute inflammatory disease, microvascular endothelial permeability is abnormally increased, causing nearby tissue edema. This excess microvascular endothelial permeability is a hallmark of acute inflammatory disorders, such as acute lung injury. Sphingosine-1-phosphate (S1P) is a product of the metabolism of sphingosine lipids that enhances endothelial cell (EC) barrier via activation of its receptor S1PR1. RAS-selective lethal 3 (RSL3) is an inhibitor of GPX4 and has been well used as an inducer of ferroptosis.

- 38 TARGETING NLRP3 SPLICING VARIANTS WITH ANTISENSE OLIGONUCLEOTIDES TO CONTROL PATHOLOGICAL INFLAMMATION (*TO Research*)  
*Roni Klein, Rosalind Franklin University of Medicine and Science*

The innate immune system defends against pathogenic invaders and sterile insults. NLRP3 inflammasome activation, a key component of this defense mechanism, leads to IL-1 $\beta$ , IL-18 release and pyroptosis (inflammatory cell death). Aberrant NLRP3 activation is implicated in autoinflammatory, metabolic, and neurodegenerative diseases. To date, there are no approved NLRP3 inhibitors in the clinic. Alternative splicing of NLRP3 generates various mature RNA isoforms with distinct function. We hypothesize that manipulating alternative splicing using antisense oligonucleotides (ASOs) can be used to modulate NLRP3 activity and provide a means to treat NLRP3-driven inflammatory diseases.

- 39 RATS SELECTED FOR AEROBIC CAPACITY DEMONSTRATE DIVERGENT CARDIORENAL ADAPTATIONS TO RENAL INJURY (*TO Research*)  
*Vaishnavi Aradhyula, University of Toledo College of Medicine and Life Sciences*

Chronic kidney disease (CKD) is a major cause of cardiovascular disease due to cardiorenal maladaptation. While sedentarism and low aerobic capacity are common causes of metabolic disease, high aerobic capacity, or aerobic endurance training, is an exercise intervention capable of improving cardiorenal changes. However, it is unknown how low vs. high aerobic capacity affects cardiorenal remodeling mechanisms. Rats selectively bred for low aerobic capacity (LRT) are animal models for metabolic dysfunction and chronic inflammation. In contrast, rats selected for high aerobic capacity (HRT) are models for a genetically untrained "exercise state". These models closely embody human phenotypes, as they present a genetically intrinsic disease state. Therefore, we questioned how kidney injury triggers divergent cardiorenal inflammatory cascades in rats bred for high vs. low aerobic capacity.

- 40 KAPOSI'S SARCOMA-ASSOCIATED HERPESVIRUS (KHSV) ASSOCIATED PRIMARY EFFUSION LYMPHOMA (PEL) TUMOR FORMATION IN NOD/SCID MICE IS INHIBITED BY LIPOXIN A4 TREATMENT (*TO Research*)  
*Natalia Chalupczak, BS, Rosalind Franklin University Chicago Medical School*

Kaposi's Sarcoma-associated Herpesvirus (KSHV) has been linked to Kaposi's Sarcoma (KS), B cell lymphoproliferative primary effusion lymphoma (PEL), and Multicentric Castleman's Disease (MCD).

Unfortunately, PEL has a poor prognosis. The current treatments for PEL rely on systemic chemotherapeutics that target DNA replication of all dividing cells, which were developed for non-virus-associated cancers. Therefore, there is a growing need to discover specific therapeutic targets for alternative treatment options for KS and PEL. Lipoxins are naturally occurring anti-inflammatories that help restore tissue homeostasis and reduce excess tissue damage.

- 41 BIOACTIVE LIPIDS AND FATTY ACIDS OF MILLETS IN HEALTH AND DISEASE (*TO Research*)  
*Sugasini Dhavamani, University of Illinois*

Minor and major Millets are one of the important cereals in the world for consumption. Major and minor millets are supreme staple food grain in many developing countries in Asia and Africa. But very little information is available on major and minor millets seed and oil in terms of its fatty acid composition, bioactive lipids, nutraceuticals and molecular species of lipids.

**Poster # Title/First Author**

**Section Six**

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- 42 IDENTIFICATION OF CANDIDATE GENES THAT REGULATE SEC23 EXPRESSION USING A GENOME-WIDE CRISPR ACTIVATION SCREEN. (*TO Research*)  
*Patrick J. Gallagher, University of Michigan*

Congenital Dyserythropoietic Anemia II (CDaII) is a recessively inherited disorder characterized by anemia, ineffective erythropoiesis, and disease-specific bone marrow findings caused by mutations in SEC23B. There are two SEC23 paralogues, SEC23A and SEC23B, components of coat protein complex II (COPII) vesicles. Despite the fundamental role of COPII vesicles in most/all cells, SEC23B-deficient individuals exhibit a phenotype only in erythrocytes. Our group recently demonstrated that increased SEC23A expression rescues the SEC23B-deficiency CDaII phenotype, demonstrating that SEC23B and SEC23A are functionally interchangeable, inferring activation of the SEC23A gene as a therapeutic strategy in CDaII.

- 43 USP17L13, ATG16L2, AND UBE2R2 ARE REQUIRED FOR THE MAINTENANCE OF EARLY ERYTHROID PROGENITORS (*TO Research*)  
*Rilie Saba, Michigan Medicine*

Erythrocytes (known as red blood cells or RBCs) are crucial for oxygen transport to all cells of the human body. Erythrocytes are produced in the bone marrow from hematopoietic stem cells, which give rise to erythroid restricted progenitors through a series of cell divisions as progenitors differentiate. In the final stages of erythroid differentiation termed terminal erythroid maturation (TEM), a proerythroblast (the first morphologically recognizable erythroid progenitor) undergoes 3-4 cell divisions to produce orthochromatic erythroblasts, which eject their nuclei and mature into reticulocytes, with the latter maturing into RBCs in circulation. Several disorders, such as the Congenital Dyserythropoietic Anemias (CDAs), result from defects in TEM. Better understanding of the genes that regulate TEM could lead to improved treatment options for disorders of abnormal RBC production. While several genes required for erythrocyte development have been identified already, many putative regulators of erythroid maturation remain poorly characterized.

We have performed a genome-scale CRISPR-Cas9 screen in the immortalized human erythroid progenitor cell line HUDEP2, in order to identify genes that are crucial for erythroid maturation. This screen identified several genes that may be required for erythroid development. We chose three genes (USP17L13, ATG16L2, and UBE2R2) that appear to be negative regulators of erythropoiesis for validation.

- 44 POST-TRANSLATIONAL MODIFICATION OF HUMAN IL-33 MEDIATED BY PROTEIN KINASE C FAMILY IMPACTS CYTOKINE INFLAMMATORY ACTIVITY (*TO Research*)  
*Morgan D. Payne, Washington University School of Medicine*

IL-33 is a proinflammatory cytokine that is upregulated in airway epithelium and propagates type-2 inflammation in chronic airway diseases such as chronic obstructive pulmonary disease (COPD) and asthma. While the abundance of IL-33 expression in airway epithelial cells is well characterized, the regulation of cytokine release and activity is not yet fully understood. We have described a role for alternative splicing in regulated cytokine secretion, with the IL-33 $\Delta$ 34 isoform (lacking exons 3-4) upregulated in COPD and tonically secreted from airway cells. Upon release, IL-33 interacts with its primary receptor ST2 and IL-1RAcP forming a ternary complex, allowing for the propagation of type-2 immune signaling.

- 45 F-BOX PROTEIN FBXL19 EXACERBATES H1N1-INDUCED LUNG INJURY (*TO Research*)  
*Huilong Chen, The Ohio State University*

The Skp1-Cul1-F-box protein (SCF) E3 ligase complex is one of the largest ubiquitin E3 ligase families. F-box proteins are major subunits within the SCF E3 ubiquitin ligases that recognize specific substrates for ubiquitination. Our previous studies have showed that FBXL19 limits the severity of bacteria-induced pulmonary inflammation; however, the role of FBXL19 in the pathogenesis of influenza A virus (IAV)-induced lung injury has not been revealed.

- 46 ADENINE-INDUCED KIDNEY INJURY WORSENS VASCULAR FUNCTION AND ANTIOXIDANT ACTIVITY OF RATS WITH INTRINSIC HIGH AEROBIC CAPACITY (*TO Research*)  
*Esha Kashaboina, University of Toledo College of Medicine and Life Sciences*

Considerable evidence indicates the role of exercise and increased aerobic capacity on protecting against oxidative stress that leads to chronic kidney disease (CKD). CKD is also one of the most common causes of cardiovascular diseases and vascular calcification. Previous studies have demonstrated the role of adenine-induced CKD in aortic calcification; however, the role of aerobic capacity in the progression of CKD-induced cardiovascular disease has not been thoroughly investigated. To understand the association between exercise and aortic disease, we used rat models selected for low response to aerobic training (LRT), presenting metabolic dysfunction, and models selected for high response to aerobic training (HRT), presenting an “exercise” state.

- 47 METHICILLIN-RESISTANT STAPH AUREUS (MRSA) UPREGULATES CYP1A1 TO MEDIATE ENDOTHELIAL DYSFUNCTION AND LUNG INJURY (*TO Research*)  
*Alison Ha, UIC*

Acute Respiratory Distress Syndrome (ARDS) is a life-threatening condition in which fluid accumulates in the pulmonary alveoli and causes respiratory failure. Methicillin-resistant Staphylococcus aureus (MRSA) is a prevalent pathogen capable of causing severe pneumonia and inflammatory responses that contribute to endothelial barrier disruption—a pivotal event in ARDS pathogenesis. Understanding the mechanisms regulating the integrity of the pulmonary endothelial barrier is crucial for advancing therapeutic strategies against ARDS. Epigenetic modifications, notably histone acetylation, are emerging as key contributors to ARDS development. Our previous ChIP-seq analysis unveiled that MRSA induces histone H3 acetylation in lung endothelial cells (EC) and identified CYP1A1 as one of the primary genes targeted by MRSA-induced acetylation.

- 48 RADIATION-INDUCED LUNG INJURY IS MEDIATED BY TRANSIENT RECEPTOR POTENTIAL MELASTATIN-2 (TRPM2) (*TO Research*)  
*Weiguo Chen, University of Illinois at Chicago*

Radiation-induced lung injury (RILI), a common complication in patients administered thoracic radiotherapy, is characterized by increased lung endothelial cell (EC) inflammation and permeability and is associated with significant morbidity and mortality. Although the etiology of RILI is poorly understood, a potential molecule of interest in this context is TRPM2 (transient receptor potential melastatin-2), an oxidant sensitive, non-selective, cation channel that is known to regulate EC permeability and cellular responses to radiation injury. As TRPM2 mediates oxidant-induced calcium entry and endothelial permeability we hypothesized that TRPM2 also promotes lung injury induced by radiation.

- 49 EPITRANSCRIPTOMIC REGULATION OF SPHINGOSINE-1-PHOSPHATE RECEPTOR 3 DURING ACUTE LUNG INJURY AND VENTILATOR INDUCED LUNG INJURY (*TO Research*)  
*Ying Liang, MD, PhD, florida international university*

Acute lung injury (ALI) and ventilator-induced lung injury (VILI) present substantial challenges in the intensive care unit (ICU), leading to unacceptable mortality rates without a cure. The sphingosine-1-phosphate receptor 3 (S1PR3), a G protein-coupled receptor, plays a crucial role in regulating vascular permeability and immune responses within the pulmonary microenvironment, emerging as a pivotal factor in ALI/VILI. However, the regulatory mechanisms governing the upregulated expression of lung endothelial S1PR3 and its specific functional role in ALI/VILI are not thoroughly characterized. Recent advancements in epitranscriptomic studies have suggested novel post-transcriptional modifications, especially N6-methyladenosine (m6A), as significant contributors to cellular responses. The m6A landscape that governs S1PR3 expression in lung endothelial cells during ALI/VILI remains unexplored.

- 50 INHIBITION OF GALNT1 ATTENUATES THE DEVELOPMENT AND PROGRESSION OF PULMONARY HYPERTENSION (*TO Research*)  
*Yangfan Jia, Indiana University School of Medicine*

Pulmonary arterial hypertension (PAH) exhibits characteristics akin to cancer-related cellular processes, notably endothelial to mesenchymal transition (EndoMT). N-acetylgalactosamine (GalNAc)-transferase 1 (GALNT1) and GALNT13, an isoenzyme sharing 84% homology, represent pivotal enzymes initiating the biosynthesis of Tn antigen. They emerge as potential candidate genes associated with pulmonary hypertension (PH) based on multi-omics profiling in patient cohorts. Dysregulated expressions of GALNTs and Tn have been observed across various cancer types, correlating with heightened metastatic propensity and adverse clinical outcomes. Nevertheless, the specific involvement of GALNT1-mediated truncated O-GalNAc glycosylation remains undefined in the pathogenesis of PAH.

**Poster # Title/First Author**

**Section Seven**

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- 51 ROLE OF INTERLEUKIN-1 RECEPTOR-ASSOCIATED KINASE 1 IN ENDOTHELIAL CELLS INJURY AND REPAIR (*TO Research*)  
*Jiaying Miao, Biomedical Science Graduate Program*

Interleukin-1 Receptor-Associated Kinase 1 (IRAK1), a serine-threonine kinase, has been demonstrated to play a key role in the regulation of innate immunity and inflammatory responses through toll-like receptors (TLRs) and interleukin-1 receptor (IL-1R). IRAK1 is hyperphosphorylated and ubiquitinated upon IL-1R or TLR activation, initiating immune responses through NFkB and MAPK pathways. IRAK1-deficiency mice have been shown to reduce neutrophil infiltration in the liver and IL-6 expression in plasma. Treatment of IRAK1 inhibitor could increase the survival rate dose-dependently in the CLP model. Additionally, the potential role of IRAK1 in mediating cellular proliferation and migration has been demonstrated in previous reports. Endothelial repair, mainly through migration and proliferation of

resident endothelial cells (EC), is essential for inflammation resolution and EC recovery after inflammatory injury. However, the role of IRAK1 in endothelial cell injury and repair has not been studied.

- 52 IMPAIRED LYSOSOMAL FUNCTION IS ASSOCIATED WITH LUNG ENDOTHELIAL PERMEABILITY AND INCREASED RELEASE OF EXTRACELLULAR VESICLES (*TO Research*)  
*Mohammed Yaman Al Matni, MD, University of Illinois Chicago*

Acute lung injury (ALI) is a potentially life-threatening inflammatory process that is characterized by increased lung endothelial permeability. Prior studies have demonstrated that injured lung endothelial cells (EC) secrete extracellular vesicles (EVs), which serve as both mediators and markers of EC dysfunction in ALI. In addition, dysregulation of autophagy contributes to lung EC dysfunction during ALI. Autophagy is dependent on healthy lysosomes fusing with autophagosomes and degrading their content. In contrast, when lysosomes are dysfunctional, autophagosome accumulation occurs and normal autophagy flux is inhibited. Interestingly, a few recent studies also link lysosome/autophagy inhibition to EV release. However, the potential role of lysosomal dysfunction in EC permeability and EV release is not well described.

- 53 THE ODDS OF TAKOTSUBO SYNDROME IN PATIENTS WITH IRRITABLE BOWEL SYNDROME: A 2016-2020 NIS STUDY (*T1 Research*)  
*Mohammad Darweesh, MD, ETSU Quillen college of Medicine*

This study delves into the odds of admission for Takotsubo Syndrome (TS) among patients with a history of Irritable Bowel Syndrome (IBS) using data from the National Inpatient Sample (NIS) spanning the years 2016 to 2020.

- 54 THE ROLE OF HEALTH POLICY RESOLUTIONS IN THE DISSEMINATION AND IMPLEMENTATION OF HEALTHCARE INITIATIVES IN ENVIRONMENTAL, OCCUPATIONAL, AND COMMUNITY MEDICINE (*T3 Research*)  
*Bella Z. Khatibshahidi, BS, The University of Toledo College of Medicine and Life Sciences*

The creation and promotion of policy resolutions, or written proposals, by organizations such as the American Medical Association (AMA) and state-specific Ohio State Medical Association (OSMA) can play a pivotal role in raising awareness and facilitating the dissemination and implementation of healthcare measures [1,2]. This is particularly true for addressing new and emerging healthcare issues such as those related to understanding and mitigating health effects associated with Harmful Algal Blooms (HABs) [3]. By endorsing resolutions, the medical associations leverage their influence to draw attention to pressing healthcare concerns, fostering a broader understanding of the impact of threats, such as HABs, on human health. This, in turn, aids in the dissemination of crucial information to healthcare professionals, policymakers, and the public. The resolutions provide a platform for collaboration, encouraging interdisciplinary efforts to address the multifaceted challenges such as those posed by HABs. Moreover, advocacy through resolutions serves to mobilize resources, promote research, and encourage the development of effective strategies for prevention, diagnosis, and treatment. While the dissemination of evidence-based practices through resolutions can contribute to the dissemination and implementation of emerging public health threats such as HABs, healthcare professionals are frequently unaware of the steps involved in navigating this process.

- 55 AEROBIC CAPACITY MODULATES RENAL RESPONSES IN CHRONIC KIDNEY DISEASE MODEL: INSIGHTS FROM LOW AND HIGH AEROBIC RESPONSE RAT MODELS (*TO Research*)  
*Snigdha Gorthi, University of Toledo College of Medicine and Life Sciences*

High aerobic capacity has been well studied to attenuate inflammatory progression to chronic kidney disease (CKD); however, the mechanisms of disease progression are unknown. Rat models generated by

selective breeding for low or high response to aerobic training (LRT and HRT, respectively) have been studied to investigate the role of aerobic capacity and susceptibility to disease progression. Our previous studies have shown that compared to HRT rats, LRT rats have increased risk for metabolic syndrome and age-related diseases including cardiovascular disease, diabetes, obesity, stroke, and liver disease. The role of aerobic capacity on renal function in the setting of CKD has yet to be investigated.

- 56 AN ASSESSMENT OF A LOCAL D&I INVESTIGATOR NETWORK, USE OF SERVICES, AND EFFORTS TO ATTRACT A DIVERSE COHORT OF EARLY CAREER IMPLEMENTATION SCIENTISTS (*T3 Research*)  
*Maggie Padek Kalman, MPH, MSW, University of Kansas Medical Center*

A diverse workforce representative of populations served is an aspiration of the Dissemination and Implementation field and embedded in goals to build capacity of the D&I workforce. However, little research describes the diversity of the current workforce. We assessed current assets, opportunities, and diversity of D&I efforts at a network of academic centers in the Midwest and sought to characterize network investigators and those supported by two services offered.

- 57 TO GIVE OR NOT TO GIVE? A RETROSPECTIVE COHORT STUDY OF THE ADMINISTRATION OF IV ALBUMIN AFTER THORACENTESIS REVEALS SPONTANEOUS BACTERIAL EMPYEMA (*T3 Research*)  
*Preeti Gupta, MD, MPH, University of Illinois Chicago*

Spontaneous bacterial empyema (SBEM) is an infection of the pleural space, in the absence of pneumonia, that is detected in 15% of patients with cirrhosis and hepatic hydrothorax. It carries a high in-hospital mortality of 20-38%. Treatment consists of prompt initiation of a third-generation cephalosporin or carbapenem. Some experts also suggest giving IV Albumin, due to the proven benefit in spontaneous bacterial peritonitis (SBP), though it has not been studied specifically in SBEM.

- 58 UTILIZING RADIOMIC SOFTWARE TO ELUCIDATE THE RELATIONSHIP BETWEEN 18FDG UPTAKE ON PET/CT STUDIES AND LFTS (*T1 Research*)  
*Zeel N. Modi, MD, University of Illinois Chicago*

Hepatic sarcoidosis has the potential to progress to cirrhosis. Due to the lack of clinical markers, the gold standard for diagnosis is liver biopsy. Notably, 18FDG-PET/CT has emerged as a tool to detect organ-specific disease activity; however, there is a paucity of data assessing the utility of this modality in hepatic sarcoidosis. Thus, this pilot study aims to assess the concordance between radiologist and radiomic software interpretation in determining liver involvement of sarcoidosis on 18FDG-PET/CT, the impact of utilizing a blood pool versus liver background measurement on study interpretation, and the association between FDG uptake and liver function tests (LFTs).

- 59 ASSESSING THE BLEEDING RISK AFTER CORONARY REVASCULARIZATION IN ACUTE MYOCARDIAL INFARCTION PATIENTS WITH ANTIPHOSPHOLIPID ANTIBODY SYNDROME DURING INDEX HOSPITALIZATION AND AT RE-ADMISSION (*T4 Research*)  
*Abdul Wali Khan, MBBS, University of Missouri Kansas City School of Medicine*

Antiphospholipid antibody syndrome (APS) is a clinical and laboratory diagnosis characterized by an increased risk of both venous and arterial thrombosis, including acute myocardial infarction (AMI). However, the risk of thrombosis and bleeding after coronary revascularization are not well known in this high-risk cohort.

**Poster Session**  
**Tuesday, April 9, 2024**  
**1:45 pm – 3:00 pm**  
**Renaissance Ballroom**

**Poster # Title/First Author**

**Implementation Science**

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- 61 PARTICIPANT PREFERENCES, EXPECTATIONS, AND EXPERIENCES RECEIVING INDIVIDUAL RESEARCH RESULTS (*T3 Research*)

*Denise Kent, PhD, RN, University of Illinois Chicago*

Disclosing individual research results with participants is not standard practice in research. A 2018 report by the National Academy of Science, Engineering, and Medicine suggested that return of individual research results to study participants may increase public engagement and trust in the research enterprise. It is possible that the return of individual research results to study participants may increase public engagement and trust in the research enterprise. This improvement may translate into greater efficiency, generalizability, and diversity in research.

- 62 IMPLEMENTING ALCOHOL MISUSE SCREENING, BRIEF INTERVENTION, AND REFERRAL TO TREATMENT (IAMSBI RT) IN PEDIATRIC TRAUMA CENTERS: A QUALITATIVE PROCESS EVALUATION (*T3 Research*)

*Kelli Scott, PhD, Northwestern University Feinberg School of Medicine Center for Dissemination and Implementation Science*

Screening, Brief Intervention, and Referral to Treatment (SBIRT) is an evidence-based approach for identifying and providing indicated brief intervention for adolescents with risky alcohol and other drug use. The American College of Surgeons has mandated screening and brief intervention in level 1 trauma centers. Despite this mandate, pediatric trauma centers face numerous barriers and have yet to widely implement SBIRT.

- 63 STOCK INHALERS IN ILLINOIS: USING PERSONAL EXPERIENCES TO UNDERSTAND THE INNER CONTEXT (*T3 Research*)

*Paige L. Hardy, MPH, University of Illinois Chicago*

School-based asthma management is integral to providing a healthy asthma environment for all children. Stock inhalers are undesignated asthma medications that can be provided to any person in respiratory distress at school by nurses or trained personnel, as permitted by Illinois Public Act 100-0726 (1). However, only 399 stock inhaler uses were reported to the Illinois State Board of Education from 48 districts over the 2022-2023 school year, suggesting an implementation gap (2).

- 64 SPANISH TRANSLATION OF THE EXPERT RECOMMENDATIONS FOR IMPLEMENTING CHANGE (ERIC) TAXONOMY (*T4 Research*)

*Amelia E. Van Pelt, PhD, MPH, Northwestern University*

On average, it takes 17 years to translate evidence-based interventions into practice. Implementation science offers systematic approaches to close this research-to-practice gap and achieve public health impact. However, unequal application of implementation research occurs, as most of the implementation science “resources” (e.g., frameworks and taxonomies) exist in English. Linguistic inaccessibility creates a barrier to the conduct of implementation research among non-English-speaking populations, so

translation of resources is needed for greater equity. Translation of implementation science resources into Spanish could facilitate wide-spread reach, as Spanish is one of the most spoken languages around the world.

- 65 ASSESSING ORGANIZATIONAL DETERMINANTS FOR IMPLEMENTATION AND DELIVERY OF THE NATIONAL DIABETES PREVENTION PROGRAM IN RURAL COMMUNITIES THROUGH COOPERATIVE EXTENSION (*T3 Research*)  
*Anna Gorczyca, University of Kansas Medical Center*

The National Diabetes Prevention Program (NDPP) has been effective at preventing type 2 diabetes across the U.S. however there is a significant inequity of available programs in rural compared to urban communities due to the limited health infrastructure. The Cooperative Extension System (Extension) employs Family and Consumer Science (FCS) professionals delivering health promoting programs within the community and can improve the reach and accessibility of the NDPP to rural populations. Currently, 23 Extension organizations are CDC-recognized NDPP providers; however, there is limited evidence on organizational determinants to support implementation of health promoting programs. Guided by the Consolidated Framework for Implementation Research (CFIR) we assessed factors influencing health promotion program success to identify implementation strategies to test in future research.

- 66 THE RELIABILITY OF PROVIDER SELF-REPORT FOR CONTINGENCY MANAGEMENT FIDELITY IN OTP SETTINGS (*T4 Research*)  
*Sara Becker, PhD, Northwestern Feinberg School of Medicine*

Contingency management (CM) is an evidence-based intervention for individuals with opioid use disorder, yet uptake in opioid treatment programs (OTPs) is low. Promoting CM implementation in OTPs requires systems for ongoing fidelity monitoring. Observer ratings are the gold-standard but are difficult to implement in real-world settings.

- 67 USER FEEDBACK TO REFINE A DIGITAL HEALTH PARENTING INTERVENTION (*T3 Research*)  
*Sara Becker, Northwestern Feinberg School of Medicine*

User feedback is essential for refining digital health interventions to better meet participant needs. Parent SMART (Substance Misuse among Adolescents in Residential Treatment) is a technology-assisted parenting intervention designed for parents of adolescents in residential care. In a pilot randomized trial of 61 parent-teen dyads, Parent SMART demonstrated feasibility, acceptability, and preliminary effectiveness in improving parental monitoring and communication as well as reducing adolescent drinking and school-related problems.

- 68 INCREASING OUT-OF-SCHOOL TIME PROGRAM CAPACITY FOR RESEARCH THROUGH SUCCESSFUL COMMUNITY-ACADEMIC-FUNDER PARTNERSHIP (*T3 Research*)  
*Melanie Tran, MA, University of Illinois at Chicago*

Quality out-of-school time (OST) programs promote academic, physical, and mental health benefits and prevent health problems in youth. OST programs value quality improvement (QI), which is vital for effective programming, but find research intimidating and inaccessible. Funders seek to support data-driven programs. Despite mutual interests, there are limited examples of successful collaboration focused on fostering quality research practices. This project demonstrates partnership among a coalition/funder, youth organization, and research team to enhance OST organizations' capacity to engage in systematic data collection and analysis. This project is uniquely community-driven and funder-led, emphasizing grassroots leadership and resources.

- 69 SPORTS-BASED YOUTH DEVELOPMENT STAFF WELL-BEING: A MIXED METHOD ANALYSIS (*T3 Research*)  
*Melanie Tran, MA, University of Illinois at Chicago*

Sports-Based Youth Development (SBYD) programs are out-of-school time (OST) programs that address persistent health inequities, exacerbated by the COVID-19 pandemic and heightened racial tensions in the U.S. SBYD staff, who are critical supports for youth, often report stress, which is associated with program quality and youth outcomes (Durlak et al., 2010; Frazier et al., 2020). While there is general knowledge from the broad OST literature, there is limited research specifically about SBYD workforce well-being. To best support them, there is a need to capture a nuanced understanding of staff well-being specific to context (Larson et al., 2015).

**Poster # Title/First Author**

**Basic Science**

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- 70 INDOLE-3-ACETIC ACID PROTECTS AGAINST LIPOPOLYSACCHARIDE-INDUCED EC DYSFUNCTION AND LUNG INJURY THROUGH THE ACTIVATION OF USP40. *(TO Research)*  
*Nargis Shaheen, PhD, The Ohio state university*

: Lung microvascular endothelial cell (EC) dysfunction is the pathological hallmark of acute respiratory distress syndrome (ARDS). Protein ubiquitination plays a critical role in the regulation of protein homeostasis, a process reversed by deubiquitinating enzymes (DUBs). We have revealed that ubiquitin-specific peptidase 40 (USP40) preserves endothelial integrity by targeting heat shock protein HSP90 $\alpha$ . Overexpression of USP40 reduces lipopolysaccharide (LPS)-induced expression of ICAM1 and VCAM1, leukocyte-EC adhesion, and hyperpermeability in ECs. Indole-3-acetic acid (IAA, 3-IAA), a plant hormone of the auxin class, is essential for embryogenesis and cell development. Auxin derivate indole-3-propionic acid (IPA) has been reported to improve the intestinal barrier by enhancing epithelial barrier and mucus barrier. However, little is known of the biological role, metabolism, or mechanisms of action of indole derivatives.

- 71 EXPRESSION OF A  $Ca^{2+}$ -ACTIVATED CHLORIDE CHANNEL ANOCTAMIN-1 IN THE MITOCHONDRIA INDUCES CELL PROLIFERATION. *(TO Research)*  
*Matthew W. Dugan, University of Minnesota*

Anoctamin-1 (Ano1) forms a  $Ca^{2+}$ -activated chloride channel and regulates cell proliferation in endothelial cells (ECs). We previously reported that Ano1 is overexpressed in pulmonary artery ECs isolated from patients with idiopathic pulmonary hypertension (PH). Although Ano1 was originally reported as a plasma-membrane channel, recent studies from our group and others suggest that Ano1 is also expressed in the inner mitochondrial membrane. However, it is still unknown whether mitochondria-localized Ano1 is involved in cell proliferation signaling. Our main hypothesis is that overexpression of Ano1 under PH increases the amount of mitochondrial Ano1, which partly contributes to the generation of hyperproliferative phenotypes of pulmonary artery ECs in PH patients.

- 72 EVALUATING LIPOXIN'S ANTI-ANGIOGENIC AND ANTIVIRAL POTENTIAL IN IN VIVO MICE MODELS OF PRIMARY EFFUSION LYMPHOMA (PEL) *(TO Research)*  
*Jack Pinkerton, MS, Rosalind Franklin University of Medicine and Science*

Kaposi's sarcoma-associated herpesvirus (KSHV), also termed human herpesvirus 8 (HHV-8), is etiologically associated with Kaposi's Sarcoma (KS), B cell lymphoproliferative primary effusion lymphoma (PEL), and Multicentric Castleman's disease (MCD). PEL has a poor prognosis, and current treatments for PEL rely on systemic chemotherapeutics developed for non-virus-associated cancers that target DNA replication of all dividing cells. There is an emerging need to find specific therapeutic targets for alternative treatment options for KS and PEL.

Lipoxins are endogenously produced anti-inflammatories that function in the restoration of tissue homeostasis and the reduction of excess tissue damage. Our preliminary in vitro study demonstrated that lipoxins induced anti-tumorigenic effects on KS and PEL cells and raised the possibility that therapeutic administration of lipoxins may prove beneficial in an in vivo PEL mouse model. Murine models of PEL present a phenotype comparable to human PEL.

73 RENOPROTECTIVE ROLE OF PARAOXONASE-1 IN AN ADENINE INDUCED MODEL OF CHRONIC KIDNEY DISEASE (*T0 Research*)

*Prabhatchandra Dube, PhD, University Of Toledo*

Paraoxonase-1 (PON1) is a lactonase enzyme produced in the liver and circulates bound to HDL. PON1 contributes to HDL's antioxidant, anti-inflammatory, and anti-atherogenic properties. Reduction in PON1 activity results in oxidative stress, and is associated with poor clinical outcomes in the context of chronic kidney disease (CKD). However, the mechanism behind reduced PON1 activity and adverse events in CKD remains unclear.

74 VERTICAL SLEEVE GASTRECTOMY REDUCES SENESCENT SIGNAL IN FEMALE MICE (*T0 Research*)

*Samuel T. Saghafi, University of Wisconsin-Madison*

Bariatric surgery is currently the most effective treatment for obesity and Type 2 Diabetes (T2D). Vertical Sleeve Gastrectomy (VSG) is the most commonly performed bariatric surgery where approximately 70% of the stomach is removed. Patients often experience dramatic weight loss and remission of chronic conditions like T2D, kidney disease, and NAFLD. The exact mechanisms for these improvements remain unclear. Recent studies have identified pancreatic beta cell and adipose tissue senescence as an important factor in the pathophysiology of T2D. Since VSG decreases adiposity and chronic inflammation, and improves beta cell function we investigated the link between bariatric surgery and senescence. The cell cycle inhibitor, p16, was used as a marker for senescent cells.

75 BASELINE RELATIONAL COORDINATION PRIOR TO IMPLEMENTATION OF REFLEX GENOMIC TESTING IN AN ACADEMIC CANCER CENTER (*T3 Research*)

*Zseraldina Ferenczi, MPA, University of Kansas Medical Center*

Precision oncology offers promise for cancer patients but lacks equitable reach and creates bottlenecks in care. Revision of professional roles, specifically reflex testing, which reassigns genomic testing responsibilities from oncologists to pathologists, is an evidence-based implementation strategy well-matched to precision oncology determinants. However, role revision requires effective inter-team communication. We sought to assess communication support needs prior to reflex testing implementation.

76 MATERNAL AND INFANT OUTCOMES IN RHEUMATOID ARTHRITIS: A NATIONAL SURVEY (*T3 Research*)

*Mohammad Al Bataineh, MD, University of Missouri-Columbia*

Rheumatoid arthritis (RA) is a chronic autoimmune disorder characterized by joint inflammation and systemic manifestations. The intersection of RA with pregnancy presents unique challenges and concerns. Women of childbearing age with RA often grapple with the implications of their condition on both fertility and pregnancy outcomes. The fluctuating course of RA, coupled with the potential effects of pharmacological treatments, raises critical questions about maternal and fetal health. Furthermore, the disease's remission and exacerbation dynamics during pregnancy are complex and not fully understood.

**Poster # Title/First Author**

**Applied Science**

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- 77 INVESTIGATING IMMUNE PROFILES IN DIFFERENTIATED THYROID CANCER BY MULTIPLEX IMMUNOFLUORESCENCE (*T1 Research*)  
*Kemal Hajric, University of Nebraska-Lincoln*

As the most common endocrine malignancy in the United States (U.S.), differentiated thyroid cancer (DTC) accounts for 3.8% of all cancers in the U.S., with roughly 10% of cases progressing to distant metastatic DTC, which is associated with a poor five-year survival outcome despite conventional management, including surgery and radioactive iodine ablation. Recently, novel immunotherapies have garnered attention as a viable therapeutic resource for patients with advanced DTC. However, the response to therapy has been variable and unpredictable, which may be associated with an immune suppressive circulating phenotype. Nonetheless, the intra-tumoral immune infiltrate remains to be elucidated, demonstrating a critical need to address the gap in understanding in order to better prognosticate the disease, ultimately allowing for a personalized approach to thyroid cancer care.

- 78 RETHINKING PREDICTIVE VALUES OF IGE AND SKIN PRICK TESTS: INSIGHTS FROM ORAL FOOD CHALLENGES IN CHILDREN WITH PEANUT ALLERGY DIAGNOSES (*T1 Research*)  
*Christopher M. Launius, BS, Michigan Medicine*

Peanut allergy is a significant public health concern, and accurate diagnosis early in life can impact allergic natural history via early feeding and oral immunotherapy. Diagnostic testing, including peanut-specific immunoglobulin E (IgE) and skin prick tests (SPT), impose elevated false positive predictions for peanut allergy diagnosis.

- 79 A BLUEPRINT FOR DEVELOPING A RESEARCH-COMMUNITY PARTNERSHIP TO UTILIZE REAL WORLD DATA (*T1 Research*)  
*Grace Cua, MSW, University of Illinois at Chicago*

Real-world data (RWD) may offer insights into mental health treatment as usual and illuminate targets for implementation and translation. This requires strong research-community partnerships (RCP).

- 80 PREDICTING THYROID CANCER BEHAVIOR BY AUTOIMMUNE BIOMARKERS (*T2 Research*)  
*Patrick Loucks, University of Nebraska Medical Center*

Every year there are an estimated 43,720 new cases of thyroid cancer each year with 2,120 of these cases being fatal. The most common form of thyroid cancer is differentiated thyroid cancer (DTC) which is more common in persons with thyroid autoimmunity but the association with DTC severity remains unclear.

**Poster # Title/First Author**

**Educational / Outcome Research**

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- 81 NAVIGATING ASTHMA DISPARITIES AND SCHOOL-BASED STOCK INHALER PROGRAM IMPLEMENTATION CHALLENGES ON THE NAVAJO NATION (*T4 Research*)  
*Ashley A. Lowe, PhD, MSPH, University of Arizona*

Asthma prevalence among school-aged children living on the Navajo Nation is twice as high as the national average of 8.2%,<sup>1,2</sup> and most Navajo children do not have access to a short-acting beta agonist

(albuterol sulfate) while at school. The Community Asthma Program (CAP) is a multi-component, evidenced based program aimed at reducing pediatric asthma disparities.<sup>3</sup> CAP worked with participating Diné (Navajo) schools across three Navajo Agencies: Tuba City, Chinle and Fort Defiance, Arizona. K-12 school staff were provided with evidenced-based training including Open Airways for Schools® and Asthma 101, as well as training on how to implement a Stock Inhaler Program. A stock inhaler program provides schools with a single albuterol inhaler and supply of disposable valved-holding chambers that can be used by any student at the school who experiences respiratory distress.<sup>4</sup> Programs implemented in the State of Arizona have exhibited effectiveness in mitigating absenteeism and minimizing the loss of classroom instruction.<sup>5,6</sup> These initiatives have proven successful in preventing severe outcomes, such as sending students to the emergency department.<sup>5,6</sup> Despite dedicated implementation support in Diné schools, this indigenous-led stock inhaler program has encountered various barriers hindering its widespread adoption. This study aims to describe both the barriers and facilitators influencing the implementation of the program in Diné schools and their impact on the translational timeline.

- 82 A STATE-WIDE EVALUATION OF THE IMPLEMENTATION OF EVIDENCE-BASED SUICIDE PREVENTION GUIDELINES IN JUVENILE DETENTION CENTERS (*T4 Research*)  
*Brittany Rudd, PhD, University of Illinois Chicago*

Juvenile detention centers implement a wide range of suicide prevention practices. However, the quality of that implementation varies across centers and appears to be poor on average. Poor implementation may increase safety risks for youth detained at the centers, including minoritized youth, who are over-represented in juvenile detention. However, few studies have used mixed methods data to methodologically assessed the quality of suicide prevention implementation, and its potential association with a) youth suicidality while detained, and b) leaders' perceptions of their role in suicide prevention.

- 83 CONTINGENCY MANAGEMENT IN OPIOID TREATMENT PROGRAMS: FEEDBACK FROM LEADERS AND PROVIDERS ON BARRIERS TO AND FACILITATORS FOR SUSTAINMENT (*T4 Research*)  
*Sara Becker, PhD, Northwestern Feinberg School of Medicine*

Contingency management (CM) is one of the most effective adjunctive behavioral interventions for persons with opioid use disorder, yet one of the least available interventions in opioid treatment programs (OTPs). Project MIMIC is a NIDA-funded, 28-site, cluster randomized trial evaluating two multi-level implementation strategies to promote the sustained delivery of CM.

- 84 NEONATAL HYPOGLYCEMIA AND RISK OF LONG-TERM NEURODEVELOPMENTAL OUTCOMES (*T4 Research*)  
*Manisha K. Singh, DO, Baylor Scott and White*

Hypoglycemia is the most common metabolic problem in neonates, especially during transition from the intrauterine to their extrauterine environment. 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. Neonatal hypoglycemia is linked to poor neurological outcomes. It can cause changes in the developing brain, but the effect of hypoglycemia and neurodevelopment into childhood is not well established. In newborns with hypoglycemia, long-term neurologic consequences, such as epilepsy and cognitive impairments have been documented. Furthermore, studies have documented a relationship between neonatal hypoglycemia and increased risk of cognitive deficits in early childhood.

## High Impact Case Report

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- 85 DESMOID-TYPE FIBROMATOSIS OF THE PANCREAS (*Case Report*)  
*Muhammad Abdurrahman Butt, MBBS, Shifa College of Medicine*

Desmoid-type fibromatosis (DTF) are rare fibrous benign neoplasms that are locally invasive but lack malignant potential. They are frequently the extracolonic manifestation of familial adenomatous polyposis (FAP) and its subtypes and are rarely isolated/sporadic. They may be extra-abdominal, intra-abdominal, or of the abdominal wall. (1) Incidence of intra-abdominal DTF is low, and fewer than a hundred cases have been reported since the 1960s. We present a case of sporadic isolated pancreatic desmoid fibromatosis in a young female.

- 86 SYNOVIAL FLUID ANALYSIS IN CHECKPOINT INHIBITOR INDUCED INFLAMMATORY ARTHRITIS (*Case Report*)  
*Mary Katherine L. Anderson, MD, University of Nebraska Medical Center*

Immune checkpoint inhibitors (ICIs) are increasingly used in the treatment of advanced malignancy but can cause a wide range of side effects, including inflammatory arthritis. Severe ICI-induced inflammatory arthritis (ICI-IA) is rare, and its distinguishing clinical features are not defined.

- 87 LEMIERRE SYNDROME BEYOND THE NORM: PULMONARY INVOLVEMENT IN THE ABSENCE OF INTERNAL JUGULAR VEIN THROMBOPHLEBITIS (*Case Report*)  
*Halah Alfatlawi, MD, University of Toledo*

Lemierre Syndrome (LS) is a disease that often begins with an oropharyngeal infection that causes surrounding inflammation and thrombus formation in the internal jugular vein. (1) Septic emboli commonly follows and may spread to the lung, joints, soft tissues, intra-abdominal organs, and brain. (2) Here is a rare case of LS with pulmonary and renal involvement and a clinical picture mimicking granulomatosis with polyangiitis. It stands apart as a distinct case of LS as it lacks the typical thrombophlebitis of the internal jugular vein.

- 88 AN UNUSUAL PRESENTATION OF THROMBOTIC MICROANGIOPATHY (*Case Report*)  
*Heidi Christian, MD, University of Illinois Hospital and Health Sciences System*

Malignant hypertension is a severe and potentially life-threatening form of hypertension, characterized by a rapid and significant increase in blood pressure, leading to organ damage. This condition is considered a medical emergency, and eye abnormalities, including papilledema, may serve as the initial indication of hypertension.

Thrombotic microangiopathy (TMA) represents a potential complication of malignant hypertension. The prevailing hypothesis regarding the pathophysiological mechanism of TMA in the context of markedly elevated blood pressure involves direct damage to the vascular endothelium. This initial event triggers platelet aggregation and the formation of thrombi, resulting in organ damage and concurrent vascular wall thickening. There exist various types of TMA with distinct disease mechanisms, such as genetic or acquired etiologies. The majority of patients with TMA exhibit an acquired form, presenting with characteristic hematologic findings of microangiopathic hemolytic anemia (MAHA) and thrombocytopenia. Uncommonly, there are cases of focal/multifocal TMA, either acquired or genetic, manifesting exclusively in specific organs, including the kidneys, central nervous system, and/or the heart.

- 89 CONQUERING THE DEPTH OF PYOGENIC BRAIN ABSCESS: A TALE OF TRIUMPH IN AN IMMUNOCOMPETENT ADOLESCENT (*Case Report*)  
*Rayan Elhag, MD, Englewood health*

A brain abscess is an intraparenchymal collection of pus, it's a rare disease with the incidence of 1–2% in the western countries. (1) Here, we present a case of pyogenic brain abscess in an immunocompetent adolescent without prior known risk factors.

- 90 RECOVERY OF REGIONAL MYOCARDIAL FUNCTION IN A TAKOTSUBO SYNDROME BY ECHOCARDIOGRAPHY  
*(Case Report)*  
*Aiai Chu, Gansu Provincial Hospital*

Takotsubo syndrome (TTS), also known as stress-induced cardiomyopathy, broken heart syndrome, apical ballooning syndrome, and apical ballooning cardiomyopathy, is typically a transient left ventricular dysfunction induced by psychological or physical stress. The risk of TTS in females is 10 times higher than in males, and it is most observed in postmenopausal women<sup>1-3</sup>. Despite its reversibility, during follow-up, TTS is associated with a high incidence of severe adverse in-hospital events and complications.

**Translational Science Oral Sessions I, II, and III**  
**Tuesday, April 9, 2024**  
**3:15 pm – 4:40 pm**

**Title/First Author**

**Translational Science Oral Session I** \_\_\_\_\_

HEALTHCARE STAKEHOLDERS' PERSPECTIVES ON CENTRALIZING PATIENT'S TOBACCO TREATMENT (*T3 Research*)

*Adrienne L. Johnson, PhD, University of Wisconsin Center for Tobacco Research and Intervention*

Cigarette smoking is the leading preventable cause of death and disability in the U.S., resulting in almost half a million deaths per year (1). Evidence-based tobacco treatment can double or triple individuals' chance of successfully quitting smoking. However, health care systems report challenges in implementing and maintaining tobacco treatment programs, including lack of resources to provide these services, and increased burden on staff providing counseling and follow-up services in addition to their usual practice. Centralized tobacco treatment models can help address gaps in tobacco treatment access.

FORMATIVE PERCEPTIONS ON A STRUCTURED TRANSFER MODEL FOR INTER-ICU TRANSFER - A QUALITATIVE ANALYSIS IN A LARGE HEALTH SYSTEM (*T3 Research*)

*Chuanfen Ni, MSW, Northwestern University Feinberg School of Medicine*

Acute respiratory failure (ARF) requiring mechanical ventilation is the most common reason for an ICU admission with a mortality rate of 30%.<sup>1</sup> Currently, one in 30 ICU patients with ARF are transferred from a lower-resourced (“sending”) hospital to a higher-resourced (“receiving”) hospital (known as inter-ICU transfer), based on the premise that transfer will increase the likelihood of patient survival.<sup>2,3</sup> However, no uniform guidance exists to help clinicians decide why or when patients should be transferred.<sup>4</sup> This lack of guidance contributes to inequities in transfer rates and delays in transfer leading to negative impacts on quality of care and patient centered outcomes.

THE INFLUENCE OF TRANSPORTATION BARRIERS ON MINORITY PATIENTS' HOSPITALIZATION OUTCOMES (*T3 Research*)

*Jun Lu, University of Illinois Chicago*

Healthcare-related transportation barriers are a prevalent concern in the United States, particularly among low-income and other disadvantaged populations. These transportation barriers result from long distances to health care, financial constraints, and limited social support, contributing to barriers in accessing healthcare, medications, and healthy food. However, limited research exists on how transportation barriers are associated with post-hospitalization outcomes.

FEASIBILITY OF IMPLEMENTING A 1-MONTH APP-BASED MEDITATION PROGRAM WITH LEGAL-INVOLVED YOUTH ON PROBATION (*T3 Research*)

*Ashley D. Kendall, PhD, University of Illinois Chicago*

Young people are arrested at high rates in the U.S., particularly in minoritized communities [1,2]. Youth brought into the legal system experience stark behavioral health disparities in the interrelated areas of substance use, sexual health, and mental health compared with peers who have not been arrested [3,4]. Low emotion regulation appears to be a common mechanism underpinning these disparities and it can be improved via mindfulness meditation [5,6]. Moreover, meditation can be taught by smartphone app, holding the potential to reach youth on probation—who constitute over 80% of all young people in the

legal system—in their daily lives [7,8]. Unfortunately, low app adherence (i.e., low ongoing usage) is a pervasive issue that has stymied broader efforts to successfully implement health apps with legal-involved youth [9,10]. As part of an NIH-funded study (K99/R00DA047890), we collaborated closely with youth and other stakeholders in Chicago Cook County, the 2nd largest juvenile legal system in the U.S., to systematically identify the determinants (i.e., barriers and facilitators) of implementing a 1-month mindfulness meditation app with youth on probation and develop a package of corresponding implementation strategies to promote app adherence. The implementation strategies included recording the meditations with a guide youth perceived as trustworthy, minimizing in-app data collection to respect youths' privacy concerns, and programming an adaptive intervention design to automatically identify low app adherence prompt youths' re-engagement. We then conducted a fully remote hybrid type 2 effectiveness-implementation pilot randomized controlled trial (RCT) with n=70 youth on probation. This work was guided by the EPIS (Exploration Preparation Implementation Sustainment) implementation science framework.

**PARTNERING WITH COMMUNITY OPIOID TREATMENT PROGRAMS TO CO-DESIGN MEASUREMENT-BASED CARE: A MIXED METHODS ANALYSIS (T3 Research)**

*Kelli Scott, PhD, Northwestern University Feinberg School of Medicine Center for Dissemination and Implementation Science*

Overdoses involving opioids continue to be a leading cause of death in the United States. Medication for opioid use disorder (MOUD) is the gold standard evidence-based intervention for OUD, however many patients discontinue MOUD within a few months of initiation. Adjunctive psychosocial interventions can improve MOUD engagement, however, high patient volumes in opioid treatment programs (OTPs) limit their feasibility. Measurement-based care (MBC), a flexible, transtheoretical evidence-based intervention that systematically tracks and shares patient treatment progress, holds promise to enhance MOUD outcomes.

**IMPLEMENTING A SEXUAL AND REPRODUCTIVE HEALTH WORKSHOP FOR LATINA TEENS AND THEIR FEMALE CAREGIVERS: FINDINGS FROM THEATER TESTING AND PILOTING (T3 Research)**

*Kate G. Merrill, PhD, University of Illinois Chicago*

Latina teens are disproportionately impacted by adverse effects of risky sexual behavior, including sexually transmitted infections and unplanned pregnancy. Floreciendo is a sexual and reproductive health workshop for Latina teens (14-18 years) and their female caregivers (e.g., mothers, aunts, sisters), which we adapted from the evidence-based IMARA program.

**COMMUNITY GRAND ROUNDS: UTILIZING A COMMUNITY AND UNIVERSITY PARTNERSHIP ON CHICAGO'S SOUTH SIDE ADDRESSING SOCIAL DETERMINANTS OF HEALTH AS A STRATEGY TO IMPROVE COMMUNITY INTEREST IN RESEARCH (T4 Research)**

*Natalie Watson, MA, University of Chicago*

Community Grand Rounds (CGR) is a series of bidirectional educational seminars, planned in conjunction with community partners that (1) establishes a bidirectional communications process that influences trans-disciplinary research based on identified community needs, (2) provides information about community resources that can support health and well-being, (3) provides opportunities for bi-directional learning and engagement, and (4) provide medical students and graduate medical education trainees with opportunities to engage with and learn about health concerns directly from community members in a community setting.

Translational Science Oral Session II

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MULTI-OMICS ANALYSES OF ETHANOL RESPONSES REVEALS NOVEL REGULATORY MECHANISMS OF SARCOPENIA IN ALCOHOL-RELATED LIVER DISEASE *(TO Research)*

*Nicole Welch, MD, Cleveland Clinic Lerner College of Medicine*

Sarcopenia occurs at a greater rate in alcohol-associated (ALD) than other etiologies of liver diseases(1). Hypotheses driven approaches have shown impaired protein synthesis and increased autophagy flux in skeletal muscle in response to ethanol. We hypothesized that ethanol causes intersecting perturbations across multiple cellular pathways. We evaluated the global molecular and metabolic landscape in the skeletal muscle in response to ethanol using complementary, integrated untargeted approaches. Artificial intelligence/machine learning tools were used to investigate ethanol (alcohol, EtOH)-related changes in murine C2C12 and human inducible pluripotent stem cell (hiPSC) derived myotubes, and skeletal muscle tissue from ethanol-fed (EF) mice and humans with ALD.

SIRT1 DOWNREGULATION-MEDIATED PROTEIN ACETYLATION CONTRIBUTES TO GUT LEAKINESS AND ENDOTOXEMIA IN THIOACETAMIDE-INDUCED LIVER FIBROSIS THROUGH THE GUT-LIVER AXIS AND THE PROTECTION BY MELATONIN *(TO Research)*

*Wiramon Rungratanawanich, PhD, National Institute on Alcohol Abuse and Alcoholism (NIAAA), NIH*

More than 1.5 billion people suffer from chronic liver diseases with an annual rate of 2 million deaths worldwide. Patients with advanced liver fibrosis or cirrhosis secondary to alcohol-associated/metabolic-associated liver disease (ALD/MALD) are commonly observed with high levels of serum endotoxin or endotoxemia, gut dysbiosis, and increased intestinal permeability (gut leakiness). However, the causal mechanisms of gut leakiness and its role in promoting liver fibrosis are still elusive. To date, there is no FDA-approved drug for effectively treating liver fibrosis.

C-SRC ACTIVATES CARDIAC FIBROBLASTS AND PROMOTES RIGHT VENTRICULAR FIBROSIS IN PULMONARY ARTERIAL HYPERTENSION *(TO Research)*

*Madeline Kelly, University of Minnesota*

Introduction/Background: Recent clinical studies showed the potential link between right ventricular (RV) fibrosis, poor function of the pressure-overloaded RV, and mortality in the patients with pulmonary arterial hypertension (PAH). However, no therapies are currently available for specifically targeting RV fibrosis. The animal studies showed the significant contribution of an oxidative stress-sensitive tyrosine kinase c-Src in the development of left ventricular (LV) hypertrophy and failure. However, it is still not clear whether c-Src has pathological roles in RV under PAH. We previously reported that c-Src can phosphorylate mitofusin 2 (Mfn2), a key protein forming tethering structure between endoplasmic reticulum (ER) and mitochondria (Mito), which decreases the ER-Mito distance possibly via the conformational changes of Mfn2, facilitates ER-to-Mito Ca<sup>2+</sup> transfer, and increases in reactive oxygen species in adult human cardiac fibroblasts (CFs) from healthy donor.

TESTING THE EFFECTS OF STIMULATED EXERCISE ON CARDIAC DEVELOPMENT IN DROSOPHILA MELANOGASTER EXPRESSING COVID-19 GENES *(TO Research)*

*Gabriella D. Boehm, Florida Atlantic University/Michigan State University*

While there have been many studies showing the effects of COVID-19 on the human body, there is still a gap in knowledge as to how it directly affects the heart, specifically on someone who is physically active.

HYPOXIA-INDUCED PEROXISOMAL STRESS MEDIATES CYTOTOXICITY OF APOL1 VARIANTS (*TO Research*)  
*Sethu M. Madhavan, MD, The Ohio State University*

Common variants in the APOL1 gene (G0: reference gene, G1: S342G & I384M and G2: del N388 & Y389) are critical drivers of chronic kidney disease (CKD) in individuals of African ancestry. APOL1 kidney disease risk variants (KRVs) activate spatially diverse cellular pathways, resulting in podocyte dysfunction, cytotoxicity, and the development of CKD. However, not all individuals with APOL1 KRVs develop kidney disease. These inherent differences in disease susceptibility could be due to the influence of genetic modifiers, which are gene(s) that can reduce or modify the impact of disease-causing monogenic mutations.

INVESTIGATING MAJOR INTERACTION PATTERN AND SIGNALING PATHWAY OF 20-HETE WITH NA/K-ATPASE (NKA) IN KIDNEY (*TO Research*)  
*Dhilhani Faleel, MSc, University of Toledo*

The important role of Na/K-ATPase (NKA) as a membrane pump in facilitating ion transport, coupled with its distinctive role as a signaling receptor, holds considerable significance in cellular processes. Our previous in silico and in vitro studies, have highlighted the interaction between NKA and the arachidonic acid metabolite 20-Hydroxyeicosatetraenoic Acid (20-HETE), leading to downstream signaling through the Src-Erk kinase pathway. Despite these insights, the precise molecular mechanisms underlying this interaction remain unknown.

OUTCOMES AND COMPLICATIONS OF HEART FAILURE WITH IRON DEFICIENCY ANEMIA: A NATIONWIDE ANALYSIS (*T4 Research*)  
*Eun Seo Kwak, University of Toledo*

Heart failure is a pressing public health concern, affecting millions in the United States and projected to rise significantly by 2030. Iron deficiency, prevalent in nearly half of ambulatory heart failure patients, contributes to anemia and diminishes patient outcomes. Despite advancements, limited data exist on the impact of iron deficiency anemia on acute heart failure hospitalizations outcomes.

**Title/First Author**

## **Translational Science Oral Session III**

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HEMIN- INDUCED NECROTIC PULMONARY ARTERY ENDOTHELIAL DYSFUNCTION AND CAPILLARY LEAK IS REGULATED BY TOLL-LIKE RECEPTOR 4 (*TO Research*)  
*Grace A. Ogunbile, University of Illinois at Chicago*

Acute chest syndrome is a severe pulmonary complication of sickle cell disease and is the leading cause of respiratory failure and mortality in these patients. The pathophysiology of ACS is not completely understood but pulmonary vascular leak as a result of acute intravascular hemolysis and release of extracellular hemin is a likely mechanism. Hemin exposure has been shown to cause endothelial dysfunction via necroptosis in pulmonary artery endothelial cells.

ACTIVATOR PROTEIN TRANSCRIPTION FACTORS REGULATE HUMAN IL-33 EXPRESSION AND SPLICING FROM NON-CANONICAL PROMOTERS IN CHRONIC AIRWAY DISEASE (*TO Research*)  
*Ghandi Hassan, MD, Washington University in St. Louis*

Interleukin-33 (IL-33) is a cytokine that is central to the propagation of type-2 immune signaling in chronic airway diseases such as asthma, and chronic obstructive pulmonary disease (COPD). IL-33 is abundantly

expressed in the respiratory epithelium, but the cellular mechanisms that regulate cytokine expression in airway basal cells remain undefined. Multiple different IL33 transcripts derived from distinct promoters are accessioned and denoted IL33A1, A2, B, and C.

TRIGGERING FERROPTOSIS BY TARGETING ABCB7 CAN POTENTIATE CISPLATIN ACTION IN PEDIATRIC GROUP 3 MEDULLOBLASTOMAS *(T0 Research)*

*Sidharth Mahapatra, MD, PhD, University of Nebraska Medical Center*

Rapidly dividing cancer cells accumulate iron to support an elevated need for essential cellular processes.<sup>1</sup> However, free iron can disrupt the lipid bilayer to generate lethal lipid hydroperoxides, culminating in programmed cell death (PCD) by ferroptosis.<sup>2,3</sup> Tight compartmentalization of cellular iron, facilitated by iron transporters, and enrichment of ferroptosis regulator genes protect cancer cells from ferroptosis.<sup>2-5</sup> The enrichment of ferroptosis regulator genes confers aggressiveness to over 20 tumor types.<sup>4,6</sup>

Medulloblastoma (MB) is the most common malignant pediatric brain tumor and a leading cause of cancer-related childhood mortality, with group 3 tumors (G3MB) being the most aggressive with 5-year survival < 50%.<sup>7,8</sup> These aggressive tumors enrich iron transport and glutathione metabolism, activating iron-sulfur (Fe-S) cluster binding and inhibiting reactive oxygen species (ROS) generation. This unique signature may enable G3MBs to withstand oxidative stress and ferroptosis, enhancing their proliferative and aggressive phenotype. Cisplatin, a classic G3MB chemotherapeutic agent, can trigger ferroptosis.<sup>9-12</sup> However, its toxicity has precluded effective dosing in pediatric G3MB patients, resulting in rapid recurrence that can further reduce survival to < 10%.

A TRANSCRIPTOME-BASED APPROACH TO DRUG REPURPOSING FOR AGGRESSIVE GROUP 3 MEDULLOBLASTOMAS *(T0 Research)*

*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 distinct molecular subgroups of MB: WNT, SHH, group 3 (G3) and group 4 (G4). Current treatment protocols consist of surgical resection followed by craniospinal irradiation and chemotherapy, but fail to capitalize on these “molecular grades,” guided only by histologic tumor grade and stage. As a result, molecular subgroup-specific prognoses vary widely, from >95% five-year survival in WNT MB to < 50% five-year survival in G3MB. Moreover, G3MB patients are uniquely plagued by rapid recurrence rates due an inability to tolerate maximal chemoradiation therapies and more aggressive disease course. As such, there is great need to address these outcome disparities, specifically in G3MB.

EPITHELIAL-DERIVED BIOMARKERS IN CHRONIC LUNG ALLOGRAFT REJECTION *(T1 Research)*

*Lucy S. Cohen, Washington University School of Medicine*

Lung transplant (LTx) recipients have worse graft function and survival than other types of solid organ transplant due to development of chronic lung allograft rejection (CLAD). CLAD is most commonly due to bronchiolitis obliterans syndrome (BOS), where development of an obstructive ventilatory defect is not explained by other causes. The pathologic feature of BOS is obliterative bronchiolitis (OB), which is not detected by transbronchial lung biopsy. A diagnostic tool identifying subclinical CLAD/BOS could lead to treatments that preserve allograft function. Recent studies have illuminated epithelial damage and subsequent stem cell exhaustion in the surface airway epithelium (SAE) and submucosal glands (SMG) as features of chronic rejection.

LUNG ENDOTHELIAL CELL BARRIER PROTECTION BY ESTROGEN IS ASSOCIATED WITH INCREASED EXPRESSION OF CLAUDIN-5 AND SHINGOSINE KINASE-1 *(T0 Research)*

*Yulia Epshtein, UIC*

Acute lung injury (ALI) and Acute Respiratory Distress Syndrome (ARDS) are characterized by endothelial cell (EC) barrier disruption resulting in increased lung vascular permeability. Several reports have identified sex differences with respect to ARDS incidence and outcomes while estrogen has been identified as EC barrier protective. Notably, estrogen, which has a number of effects on vascular function, increases expression of claudin-5, a tight junctional protein that promotes lung vascular protection in ALI, and activates sphingolipid signaling in EC, which has also been implicated in EC barrier regulation and ALI protection.

#### CLINICAL CHARACTERISTICS OF SARCOIDOSIS PATIENTS WITH ELEVATED SSERUM CHITOTRIOSIDASE LEVELS (*T2 Research*)

*Ahmed Mahgoub, MBBS, University of Illinois Chicago*

Sarcoidosis is a systemic inflammatory disease characterized by granulomatous inflammation that most commonly affects the lungs. Up to 50% of individuals with sarcoidosis manifest with paradoxical peripheral lymphopenia that is associated with more severe disease. Chitotriosidase, a chitinase produced by activated innate immune cells including macrophages and dendritic cells, stimulates the production of the cytokines TNF- $\alpha$  and IFN- $\gamma$  and carries out other immunomodulatory roles. Elevated serum chitotriosidase is a biomarker of sarcoidosis activity that correlates with serum ACE levels and disease severity on chest imaging. Despite the immunomodulatory role and phenotypic associations, the relationship between elevated serum chitotriosidase and lymphocyte counts has yet to be determined.