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Abstract Booklet

ABSTRACTS

See **MSRD 2022 Event Webpage** for more information about the event

Oral Presentation Abstracts

Presenters are indicated with "*" next to their names.

O.01

ADJUVANT PROTON THERAPY FOR BREAST CANCER TREATMENT: WHY BLACK WOMEN MAY DERIVE A GREATER BENEFIT FROM THIS TREATMENT MODALITY.

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Breast cancer (BC) patients receiving radiation therapy (RT) may experience an increased risk of cardiovascular morbidities from a combination of cardiotoxic therapy, pre-existing comorbidities, and radiation dose to the heart. To mitigate cardiovascular events, proton therapy (PT) can be utilized to decrease radiation dose to the heart. Yet, PT remains a scarce resource in the United States, especially for marginalized populations in low socioeconomic areas. Black women are more likely to present with advanced breast cancer and are at higher risk for additional cardiac comorbidities when compared to other races. The purpose of our study is to compare the cardiovascular events and risk factors in Black women versus non-Black women before and after receiving PT for BC. We performed a retrospective chart review on 368 BC patients that received PT at the Maryland Proton Treatment Center from June 2016 to October 2021. Black patients comprised 30.7% of the population (White: 60.3%; other: 9.0%) and had lower median incomes ($p<0.001$) when compared to non-Black patients. Black women were more likely to have advanced-stage disease (stage IV: 7.1%vs.2.7%) and a higher mean total dose of RT given (60.86 Gy vs. 58.10 Gy; $p=0.026$). At consultation, Black patients had higher rates of diabetes ($p=0.008$), hypertension ($p<0.001$), higher mean BMI ($p<0.001$), and greater incidence of existing cardiopulmonary conditions ($p<0.001$). At follow-up, Black women continued to have higher rates of diabetes ($p=0.016$) and hypertension ($p<0.001$), along with a higher mean BMI ($p<0.001$). In this cohort, Black women were 2 times more likely to die than their non-Black counterparts (unadjusted HR: 2.295 95% CI: 1.046-5.035, $p=0.033$), with 5-year overall survival of 94% vs. 49%. Our preliminary results confirm that Black BC patients present with more aggressive disease with increased incidence of cardiovascular events and risk factors both before and after PT. This indicates that Black women may derive a greater benefit from advanced RT techniques, such as PT, which can decrease radiation dose to the heart, potentially diminishing further cardiopulmonary toxicity.

This research was supported in part by the Program for Research Initiated by Students and Mentors (PRISM), University of Maryland School of Medicine Office of Student Research and the Radiation Oncology Summer Fellowship Program, Department of Radiation Oncology, University of Maryland School of Medicine.

O.02

PROSTATE CANCER AND PODCASTS: AN ANALYSIS AND ASSESSMENT OF THE QUALITY OF INFORMATION ABOUT PROSTATE CANCER AVAILABLE ON PODCASTS.

Colin Scott*, Peter Campbell*, Peter Campbell[1], Amy Nemirovsky[2], Stacy Loeb[3], and Rena Malik[2], [2]Division of Urology, Department of Surgery, [1]University of Maryland School of Medicine, Baltimore, MD and [3]Department of Urology, New York University Grossman School of Medicine, New York, NY.

Podcasts have surged in popularity in the past decade, but little research has been done to assess their quality. It is estimated that 26% of all podcast listeners are above the age of 55, and many of these listeners are searching for healthcare information online. Past studies of online sources such as YouTube have found that their content on a variety of topics, including prostate cancer, was highly understandable to patients, but also contained a significant amount of misinformation. Our study sought to similarly assess and characterize the quality of prostate cancer content in podcasts. The term "prostate cancer" was searched on Spotify and Apple Podcast, and the first 50 unique and relevant podcast episodes from each platform were analyzed. Podcasts were evaluated for quality, understandability, and actionability using the validated DISCERN and PEMAT criteria, respectively. Misinformation was rated on a published Likert scale by comparing content to prostate cancer guidelines. Overall, 52% of podcasts were rated as low-moderate quality (DISCERN score <=3). As measured by the PEMAT criteria, 35% had poor understandability and 65% had poor actionability (<PEMAT <75%). Of the podcasts analyzed, only 27% provided a summary and 45% explicitly discussed shared decision making between physicians and patients. There were 43 podcasts that discussed prostate cancer treatments, and of these, 63% discussed potential alternative treatments and treatments' impacts on quality of life. Additionally, 13% contained moderate to high misinformation, and 7% had commercial bias. Many podcasts on prostate cancer are poor sources of quality information and are poorly understandable and actionable. Moreover, less than half of the podcasts explicitly supported shared decision making between physicians and patients, which is recommended in the guidelines. These results highlight the need for more high-quality and accessible content about prostate cancer to support patients' decision-making.

O.03

PERCENT GLEASON PATTERN 4 IN STRATIFYING THE PROGNOSIS OF FAVORABLE VS. UNFAVORABLE INTERMEDIATE-RISK PROSTATE CANCER. Claire Macatee*, Shu Wang[1], and Mohummad Siddiqui[1], [1]Division of Urology, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

This year, an estimated 248,530 men in the United States will be diagnosed with prostate cancer (PCa). Upon diagnosis, the existing system historically classifies intermediate-risk PCa as favorable if the biopsy demonstrates < 50% Gleason pattern 4 (GP4) and unfavorable if > 50% GP4. The favorable/unfavorable prognosis directly determines the treatment plan. However, research demonstrates stratifying intermediate-risk PCa into quantitative percent GP4 helps predict advanced disease at a level more specific than majority biopsy pattern. Due to the heterogeneity that exists in the intermediate risk PCa, there exists a clinical need for the determination of a threshold of percent pattern 4 for initiating definitive treatment. This study evaluates 73 patients with intermediate-risk PCa who had biopsies performed at UMMC from 2017 to 2021. 37 patients underwent radical prostatectomy surgery. Percent GP4 documented in biopsy reports was assessed in comparison to (1) tumor diameter and tumor volume on MRI and at prostatectomy, (2) tumor clinical stage and presence of extraprostatic extension (EPE) on MRI and prostatectomy, and (3) presence of perineural invasion and margin involvement at prostatectomy. Data suggests that suspicion for EPE on MRI is positively correlated with percent GP4 obtained from biopsy (R^2=0.895) and the correlation increases the further you stratify GP4 categories (R^2 = 0.8955, R^2 = 0.9112). EPE and margin involvement are significantly more likely to be observed at prostatectomy at 25-49 % GP4 compared to <25% GP4 (p= < .00001, p= 0.018). Further stratifying GP4 suggests stage T3 PCa and presence of EPE are significantly more likely to be observed at prostatectomy once GP4 reaches 21-30% (z= -2.69, p=0.007). Currently, 25-49 % GP4 is categorized as favorable risk, but we have MRI and prostatectomy evidence to suggest that within this range, there is increased risk for extraprostatic extension. Preliminary data suggests 21–30% GP4 range is a more clinically relevant cut off for favorable/unfavorable intermediate-risk PCa. This study will expand on this analysis by including more patients and investigating clinical outcomes in relation to GP4.

This research was supported in part by the Program for Research Initiated by Students and Mentors (PRISM), University of Maryland School of Medicine Office of Student Research.

O.04

THE ROLE OF ESTROGEN IN SEXUALLY DIMORPHIC REGULATION OF LOWER URINARY TRACT FUNCTION VIA POPULATION-3 NEURONS OF BARRINGTON'S NUCLEUS. Cassandra Seifert* and Hanneke Verstegen[1], [1]Division of Nephrology, Department of Medicine, Beth Israel Deaconess Medical Center, Boston, MA.

The lower urinary tract (LUT) is under the control of the brain and spinal cord. The pontine micturition center (PMC) drives micturition by innervating motor neurons that promote synergistic contractions of the bladder's detrusor muscle and relaxation of the external urethral sphincter (EUS). This circuit provides a switch between urine storage and voiding phases, allowing for biologically safe and socially appropriate voiding. Voluntary urination is learned throughout development and neurological disorders such as Alzheimer's disease and spinal cord injuries are associated with loss of voluntary control over micturition. Urinary incontinence has also been associated with loss of ovarian function and lower estradiol levels after menopause. Knowledge gaps in how dysfunction of the central nervous system and its modulators control LUT function impede the development of novel therapeutics to alleviate LUT symptoms. This research aims to elucidate the role of estrogen in sexually dimorphic regulation of LUT function at the level of Population-3 neurons of the PMC.

The PMC of Population-3 IRES-Cre female mice was bilaterally injected with a Cre-recombinase-dependent adeno-associated virus (AAV) carrying floxed Designer Receptor Exclusively Activated by Designer Drugs (DREADDs) hM3Dq (Gq). Three weeks after the injections, animals underwent micturition video thermography (MVT) preceded by an intraperitoneal (IP) injection of saline or Compound 21 (C21). Animals were then ovariectomized. Two weeks after ovariectomy, endogenous estrogen depletion was verified via vaginal cytology and MVTs were repeated. We found that ovariectomy results in a significant ($P<0.05$) increase in voiding frequency compared to pre-ovariectomy controls. However, selective chemogenetic stimulation of Population-3 neurons in the setting of estrogen depletion did not result in a significant ($P < 0.05$) change in voiding frequency compared to saline treatment. Therefore, preliminary data suggests that estrogen modulates voiding behavior via a mechanism independent of Population-3 neurons of the PMC.

This research was supported by the American Academy of Neurology 2022 Medical Student Research Scholarship.

O.05

EXPERIENCES WITH ABORTION IN A HOSPITAL-BASED OPERATING ROOM SETTING DURING COVID-19: A RETROSPECTIVE COHORT STUDY. Rachel Cermak*, Gracie Nichols[1], and Jessica Lee[2], [1]Department of Obstetrics, Gynecology and Reproductive Sciences, University of Maryland Medical System and [2]Department of Obstetrics, Gynecology and Reproductive Sciences, University of Maryland School of Medicine, Baltimore, MD.

While some data exists regarding abortion trends during COVID, research on hospital-based abortions in operating room (OR) settings is sparse. At an urban, hospital-based clinic, abortions are performed in an OR if an indication exists, including procedures >20 weeks gestation for fetal anomalies. We assessed trends in abortions necessitating the OR before and during COVID in a hospital where there were no COVID-related OR abortion restrictions. In this retrospective cohort study, we compared patients ages 15-49 years undergoing procedural abortion prior to the pandemic ("pre-COVID cohort" (March 5, 2019-February 25, 2020)) and at its onset ("COVID cohort" (March 18, 2020-March 26, 2021)). We collected electronic medical record data regarding socio-demographic characteristics, preabortal care, postabortal LARC, and OR indication. We analyzed data from 549 patients; we found that volume and proportion of abortions requiring OR decreased during COVID, but the change was not statistically significant (22% (62/281) pre-COVID vs. 17% (45/268) COVID,

p=0.12). We found no significant difference in socio-demographic factors, gestational age at procedure (18w3d vs.18w5d, p=0.64), interval between presentation and procedure, and whether postabortal LARC was placed. Indications for OR cases were not significantly different between cohorts; fetal anomalies >20 weeks was the most common indication with patient airway concerns being another common reason. Despite COVID-related strains on hospitals and impact of restrictions on abortion access, abortions requiring an OR were not significantly impacted at a hospital in a progressive state. Hospital-based abortion care and OR support remain crucial for safe and accessible abortion, especially during public health crises.

O.06

MITIGATING GENDER BIAS IN SURGICAL TREATMENTS: A QUALITATIVE SYSTEMATIC REVIEW. Emma Barry*, Mariam Elsafty*, Shirin Parsa*, Eyerusalem Workneh[1], Naveen Siddique Sheikh[2], and Rena Malik[3], [2]Stanford University, Stanford, CA and [3]Division of Urology, Department of Surgery, [1]University of Maryland School of Medicine, Baltimore, MD.

Gender Bias can be observed in many different healthcare sectors and there is increasing evidence of disparity in the surgical interventions being offered to women in comparison to men. This study aimed to identify strategies to mitigate gender bias in the context of surgical treatments. The following databases were searched on 19 April, 2022: Medline (Ovid), Embase (Elsevier), Cochrane Library (WileyOnline), and Scopus (Elsevier). The search strategy was adapted for each database and included a combination of keywords and subject headings pertaining to gender bias, surgery, and patients. The reference lists of all included articles were reviewed for additional relevant studies. Studies were included only if an intervention was conducted to determine which strategies reduced gender bias in surgical treatments, whilst studies done in low-resource countries were excluded. The articles retrieved by the search underwent abstract and full text screening. Relevant data was extracted from the included studies, and quality assessment was conducted using the CASP tool. A thematic analysis was performed to describe relevant findings. The database search retrieved 3,603 records, and 6 additional records were identified through reference review. After duplicates were removed, 2,138 records were screened. 7 articles were included in the final review with (1) intrinsic bias of predictive models, (2) disparity of access, and (3) lack of patient education being self-identified as major reasons for gender bias in surgical treatments. The three surgical domains in which interventions were performed included liver transplantation, radical cystectomy, and total knee arthroplasty. The identified strategies to reduce gender bias in these fields included correcting for MELD scores/increasing the use of living liver donors, increasing access to neoadjuvant therapies, and implementing patient decision aids, respectively. This systematic review demonstrates that different strategies have been implemented in order to mitigate gender bias in surgical treatments. However, despite the extensive research on gender disparities in surgical treatment, our analysis highlights the scarcity of research on the efficacy of mitigation strategies, and demonstrates the need for further attention to the topic of gender bias in surgery access.

O.07

THE ROLE OF EPITHELIAL-INTRINSIC IL-36R SIGNALING IN LUNG INFLAMMATION. Jenny Saito*, Sabrina Nolan[1], and Nathan Archer[1], [1]Department of Dermatology, Johns Hopkins University School of Medicine, Baltimore, MD.

Allergic diseases have been increasing in recent decades and currently affect nearly 20% of the human population. These include 200 million people with atopic dermatitis (AD) (including up to 20% of children and 5% of adults in the United States), 250 million people with food allergies, 400 million people with allergic rhinitis, and 200–250 million people with asthma. Certain studies have supported the concept of the atopic march, in which initial environmental allergen sensitization in the barrier-defective skin of patients with AD is thought to promote the subsequent development of other allergic diseases. However, the specific immune mechanisms that initiate in the AD skin to drive

ensuing allergic disease in other tissues is not entirely known. Previously, it was shown that IL-36R signaling was required to enhance the progression from AD skin inflammation to allergic lung inflammation. However, the differential contributions of skin and lung epithelial-specific IL-36R signaling that contribute to the atopic march remain unclear. To address this gap of knowledge, we performed *in vivo* model of epicutaneous *Staphylococcus aureus* and cockroach antigen exposure followed by intratracheal cockroach antigen elicitation in wildtype, K14-cre×IL-36Rfl/fl (keratinocyte-specific), and Nkx2.1-cre×IL-36Rfl/fl (lung epithelium-specific) mice. We evaluated skin and lung inflammation with image, histologic, and flow cytometric analyses. We discovered that both skin and lung epithelial IL-36R signaling were required for development of lung inflammation, weight loss, and neutrophil lung infiltration. Collectively, IL-36R signaling on keratinocytes and lung epithelial cells are a key mechanism in ensuing lung inflammation of atopic march.

This research was supported in part by University of Maryland School of Medicine Office of Student Research.

O.08

COVID CARD: A PILOT STUDY INVESTIGATING THE CLINICAL PERFORMANCE OF A POINT-OF-CARE, SEMI-QUANTITATIVE TEST FOR SARS-COV-2 ANTIBODIES. O. Insun Yoon*, Michael Sikorski[1], and R. Gentry Wilkerson[2], [2]Department of Emergency Medicine, [1]University of Maryland School of Medicine, Baltimore, MD.

The COVID-19 pandemic is the most serious population health crisis of our time and it has sparked a growing interest in the immune response and development of antibodies in patients. The COVID Card project is a prospective pilot study that sets out to evaluate the clinical performance characteristics (sensitivity, specificity, accuracy) of the COVID Card – a novel point-of-care, semi-quantitative test for circulating SARS-CoV-2 antibodies – as compared to a commercially available ELISA central lab test. The COVID Card is an agglutination assay performed at the bedside that is ready for interpretation within a matter of minutes. The ELISA test takes 2-3 days to be sent, processed, and resulted. In the COVID Card study, blood samples taken via venous blood draw are analyzed using both the novel COVID Card and commercial method. Blood from a fingerstick sample will also be tested on the COVID Card. A previous study of 200 stored blood samples of recovered COVID-19 patients and 200 negative controls showed promise – the COVID Card had a sensitivity and specificity similar to the ELISA. The results of our study may be used to in the development of additional trials such as to confirm if the detected antibodies are effective at neutralizing the SARS-CoV-2 virus. In the face of an evolving virus, rapid COVID antibody diagnostics could serve an incredibly important role in public health planning and prevention in communities around the world.

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O.09

COVID-19 HOTLINE DATA ANALYSIS - PRESENTING TO CAMPUS WITH SYMPTOMS DURING COVID-19. Adi Kadosh*, Amy Yarnell[1], Soren Bentzen[2], and Marianne Cloeren[3], [1]Center for Data and Bioinformation Services, University of Maryland Health Sciences and Human Services Library and [2]Division of Biostatistics and Bioinformatics, Department of Epidemiology and Public Health and [3]Division of Occupational and Environmental Medicine, Department of Medicine, University of Maryland School of Medicine, Baltimore, MD.

University of Maryland Baltimore (UMB) created a REDCap project to document the clinical recommendations of the nurse case managers working for the UMB COVID-19 hotline. This system aimed to be the single access point utilized by UMB faculty, staff and students and FPI employees to provide guidance in accordance with UMB protocols related to evaluation of symptoms that may be COVID-19 related, potential exposures and positive COVID-19 tests. Data on organization, role,

reason for the call, and vaccination status along with decisions and recommendations related to work/school attendance vs. quarantine/isolation were collected by the hotline team and entered into REDCap. This project will analyze the previously collected data from phone calls and subsequent case management to determine if early vaccination status impacted employee or students' decisions to be on campus with symptoms between March 2021 to June 2022. This study will seek to determine (1) if there was a difference in number of days on campus with symptoms for fully vaccinated and unvaccinated people, (2) if the decision to be on campus with symptoms potentially related to changes in understanding protection offered by COVID-19 vaccines over time, (3) if there were any differences in behavior between UMB faculty, staff and FPI employees, and UMB students, (4) if the decision to work varied based on symptoms, and (5) if the constellation of symptoms changed for vaccinated vs unvaccinated. This project is a secondary analysis of an existing data set that required cleaning before analysis. Different rules were created to retain calls that identified symptoms. New case IDs were generated based on initial call date and record ID, ultimately creating one row per case ID. To determine the number of days people had symptoms and whether they were on campus, we calculated the difference between last day on campus and symptom onset date. New vaccination statuses were assigned to each case based on rules combining information from the various vaccination information columns. ICTR Biostatistics Core will be performing the analysis of the data containing 2,621 cases.

O.10

VPR MODULATES METHYLATION OF THE HIV-1 RNA GENOME. Issac Chaudry*, Shuaikun Su[1], and Lishan Su[2], [2]Division of Virology, Pathogenesis, and Cancer, [1]Institute of Human Virology, University of Maryland School of Medicine, Baltimore, MD.

Human immunodeficiency virus type 1 (HIV-1) is the etiologic agent for acquired immunodeficiency syndrome (AIDS) that affects over 40 million patients worldwide. A hallmark of chronic HIV-1 infection is the gradual decline in CD4+ T-cells that leaves patients susceptible to opportunistic infections. HIV-1 instigates the depletion of CD4+ T-cells by promoting a systemic inflammatory state which is critically mediated by a group of accessory proteins encoded by the viral genome, including HIV-1 viral protein R (Vpr). Vpr is implicated in a variety of pathways post-infection, including modulating host immune responses. Our lab has recently shown that Vpr reprograms host E3 ligase to mark Tet2, a host epigenetic modifier, with a polyubiquitin tag for degradation by the proteasome. The Tet2 protein is a well-characterized epigenetic modifier that oxidizes 5-methylcytosine (5mC) to 5-hydroxymethylcytosine (5hmC) on DNA, and it is critical for modulating gene expression that leads to immune response arrest. Therefore, Vpr-mediated degradation of Tet2 prevents termination/resolution of immune activity – contributing to the systemic inflammation seen in HIV infection. We are interested in identifying novel Tet2 targets that may contribute to HIV pathogenesis. Tet2 is also known to catalyze 5mC oxidation to 5hmC in RNA; however, the exact functional role of 5mC or 5hmC in the HIV-1 viral genomic RNA (vgRNA) has remained elusive. Given that the 5mC/5hmC landscape on the vgRNA may impact HIV-1 replication and pathogenesis, we aim to study the effect of Vpr mediated degradation of Tet2 on 5mC to 5hmC conversion on the viral genome. We used a 5hmC-antibody to immunoprecipitate modified vgRNA from purified Vpr+ and Vpr- viruses and RT-qPCR to quantify relative 5hmC abundance. We show that Vpr-mediated Tet2 degradation reduced 5hmC abundance on vgRNA. We conclude that Vpr decreases 5hmC on the vgRNA with potential implications in viral replication and pathogenesis by modulating vgRNA stability, reverse transcription, splicing, translation, and/or immune sensing. These findings may lay the groundwork for novel therapeutics that target viral immune modulation.

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O.11

PREVALENCE OF UNMET NEEDS FOR ANCILLARY CARE SERVICES AMONG ADULTS WITH HIV BY PROVIDER TYPE. Celina Thomas*, John Weiser[1], Sharoda Dasgupta[1], and David Riedel[2], [1]Centers for Disease Control and Prevention, Atlanta, GA and [2] Department of Medicine, University of Maryland School of Medicine, Baltimore, MD.

Treatment of human immunodeficiency virus (HIV) is multifaceted, often involving both medical and non-medical services. Many HIV clinics provide ancillary care services (ACS) to reduce disparities that make it difficult to engage in continuous medical care. It has been shown that ACS decrease barriers to care and increase medication adherence, thus increasing viral suppression amongst people with HIV. Despite these services being available, about half of adults with HIV report having at least one unmet need for HIV care services. Additionally, studies have shown that the quality of HIV care is associated with physician type. However, there has been little research done including advanced practice providers, who have their own patients and provide treatment to people with HIV. Thus, it is essential to include these providers in analyses in order to encompass the full scope of HIV treatment. This project aims to examine the impact of provider type on patients' unmet needs for ACS and to determine if unmet needs for ACS differ amongst different provider types. The Medical Monitoring Project (MMP) was essential in estimating unmet needs for ACS amongst all adults with HIV in the United States. MMP is a project by the Centers for Disease Control and Prevention (CDC) that surveys adults in the U.S. with HIV each year, collecting various demographic and clinical characteristics from each participant. Patients were interviewed and medical record data was examined. 2019-2020 MMP data was used to determine the type of provider each participant primarily sees for care. Unmet needs will be evaluated with MMP survey responses that indicate which ACS participants needed and which services they did not receive. The prevalence of unmet needs for each ACS category will be assessed by demographic and clinical characteristics. Additionally, the prevalence of needs for certain ACS will be examined by provider type and needs will be listed as met or unmet. To measure absolute differences between groups, prevalence differences will be calculated using weighted percentages and logistic regression with predicted marginals, adjusting for potential confounding.

O.12

HEPATITIS C SCREENING AND TREATMENT AT THRIVE INFECTIOUS DISEASE CLINIC. Ayda Soltanian*, Sarah Schmalzle[1], and Shah Jawad Zafar[2], [1]Division of Infectious Disease, Department of Medicine, University of Maryland School of Medicine and [2]Division of Infectious Disease, Department of Medicine, University of Maryland Medical Center, Baltimore, MD.

Hepatitis C (HCV) is a viral blood borne infection that is a major cause of morbidity and mortality in the United States. Up to 85% of patients who acquire HCV develop chronic infection, which can remain asymptomatic until cirrhosis develops years later. Patients with HCV cirrhosis are also at risk of developing hepatocellular carcinoma (HCC). HCV screening is recommended in human immunodeficiency virus (HIV) primary care guidelines at entry to care for people diagnosed with HIV. This project aimed to assess the effectiveness of hepatitis C screening at THRIVE, a primary HIV clinic, caring for about 2300 people living with HIV (PLWH). A retrospective chart review was performed looking at patients over the age of 18 seen at THRIVE between 2011 to 2017. We performed chart review on PLWH to assess HCV screening rates. Patients with positive serum HCV antibody had further review of HCV care cascade, including serum HCV ribonucleic acid (RNA), Fibrosis scoring, HCV direct-acting antiviral prescription, and achievement of cure. We additionally checked Hepatitis A (HAV) and Hepatitis B (HBV) immunity status in these patients. Patients with HCV are screened for HAV and HBV immunity, and then vaccinated as needed, as outcomes are worse with co-infection with more than one hepatitis-causing virus. With HAV co-infection, this entails a higher risk of significant acute HAV infection and acute liver failure. With HBV co-infection,

there is a higher risk of developing cirrhosis long term. HBV also independently can cause HCC, even without the onset of cirrhosis a priori. Preliminary results indicate that 83.7% of all patients who were screened for HCV were antibody positive. Amongst PLWH, 85% tested positive for HCV antibody. These results suggest that HIV and HCV co-infection is present in the majority of patients, highlighting the importance of vigilant screening of PLWH.

This research was supported by the University of Maryland School of Medicine.

O.13

USING A MULTIMEDIA EDUCATION PROGRAM TO IMPROVE RETINOPATHY OF PREMATURITY EDUCATION AND FOLLOW UP. Susanna Yau* and Moran Levin[1], [1]Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

Retinopathy of prematurity (ROP) is one of leading causes of child vision loss, affecting infants born weighing less than 2.75 pounds or before 31 weeks gestation. Although most cases of ROP resolve on their own, many families skip follow up screening appointments, putting these infants at risk for vision loss. Previous studies have shown that increasing parental understanding of ROP can improve adherence to follow up screenings and treatment. We hypothesize that providing parents of ROP patients with a written handout, an educational video, and a website will increase understanding of ROP and follow up appointment attendance rates. We adapted our written handout from the current gold standard and rewrote it to a seventh grade reading level to comply with national guidelines. We also created an educational video, the first of its kind, which covers the same information as the handout and includes footage of an actual ROP exam and testimonies from parents of past ROP patients encouraging attendance at follow up appointments. To assess knowledge of ROP, we administer surveys both before and after providing families with the educational materials. Follow up attendance is tracked via chart review. Using the handout alone, we have enrolled 282 parents and seen a significant increase in survey scores from 58.8% questions correct to 91.8%. Follow up attendance also significantly improved from 68% to 82%. In the next phase of the study we predict that both knowledge scores and follow up attendance rates will increase further with the use of the video and the handout together.

This research was supported in part by the Program for Research Initiated by Students and Mentors (PRISM), University of Maryland School of Medicine Office of Student Research.

O.14

USING LASER SPECKLE CONTRAST IMAGING AND FLUORESCEIN ANGIOGRAPHY TO DETERMINE BLOOD FLOW IN INFANTS WITH RETINOPATHY OF PREMATURITY. Daniel Shats*, Tara Balasubramanian[1], Danielle Sidelnikov[1], Urjita Das[1], Moran Roni Levin[2], and Janet Alexander[2], [2]Division of Pediatric Ophthalmology and Adult Strabismus, Department of Ophthalmology and Visual Sciences, [1]University of Maryland School of Medicine, Baltimore, MD.

Retinopathy of prematurity (ROP) is a leading cause of childhood blindness as premature infant survival rates keep improving. Screening for ROP largely relies on binocular indirect ophthalmoscopy examinations, which are widely considered to be stressful to the infant. In some cases, intravenous fluorescein angiography (IVFA) may be used to better visualize the retinal vasculature and provide objective metrics for the ophthalmologist, further guiding treatment considerations. IVFA is rarely indicated due to its invasive nature. A novel modality, called laser speckle contrast imaging (LSCI), can provide objective blood flow metrics and is non-invasive. As of now, there is no clear clinical indication for LSCI in ROP screening. Our aim is to determine whether there is a correlation between blood flow metrics measured by IVFA with those measured by LSCI in patients with ROP. Five patients underwent both LSCI and IVFA imaging between May 2021 and July 2022. Nine LSCI metrics were obtained using the system's proprietary software, while five IVFA metrics were obtained.

These metrics were determined by visualizing filling times and using ImageJ. Pearson correlation coefficients were analyzed between all LSCI and IVFA metrics, and Student's t-tests were performed to determine any significant difference between moderate and severe ROP. There were seven statistically significant correlations, between AVTT and pBFVi (r = -0.942, p = 0.017), d1BFVi (r = -0.986, p = 0.002), d2BFVi (r = -0.986, p = 0.010), rMBFVi (r = -0.970, p = 0.006), fMBFVi (r = -0.969, p = 0.007), VRI (r = -0.971, p = 0.006), and VFI (r = -0.916, p = 0.029). None of the IVFA or LSCI metrics were able to significantly distinguish between moderate and severe ROP. The correlations found in this study indicate that LSCI is a valid imaging modality in quantifying blood flow in ROP. Expansion of this analysis to include more subjects could potentially highlight some metrics that allow us to differentiate severity of disease, and provide evidence for a subset of infants to receive a sensitive, objective, quick, and non-invasive imaging modality for management of their disease.

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O.15

CHARACTERIZATION OF THE ANTERIOR EYE IN TRISOMY 21 PATIENTS USING ULTRASOUND BIOMICROSCOPY. Esther Xu*, Dhruv Shah[1], Radhika Gholap[1], He Eun Forbes[1], Taylor Kolosky[1], and Janet Alexander[2], [2]Division of Pediatric Ophthalmology and Strabismus, [1]Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

Trisomy 21 (T21) occurs in 1 in 800 live births, making it a common birth abnormality. Individuals with T21 are at risk for many medical complications, including a variety of ophthalmic diseases. Cataracts are the most frequent vision-threatening intraocular pathology in patients with T21, with an incidence of 15%. In pediatric populations, cataracts can impair visual development if not caught and treated early. Understanding structural features in T21 eyes with and without cataract can optimize treatment strategies and detect childhood cataracts before complications arise. These structural features can be assessed through ultrasound biomicroscopy (UBM), a non-invasive, high-resolution imaging technique used to visualize the anterior segment of the eye. Previous research on this topic revealed that lens thickness and iris thickness are altered in T21 patients with cataract compared to controls. However, further research involving T21 patients with cataract compared to T21 patients without cataract is crucial to understanding how T21 affects eye structures. This case-control study utilized UBM imaging to compare structural features in T21 patients with and without cataract, compared to controls. 5 subjects (9 eyes) with T21 and cataract, and 7 subjects (11 eyes) with T21 without cataract were imaged using UBM, with 4:1 age-matching to healthy controls. Patients ranged from 1 month to 25 years old (mean = 9.06). 31 structural parameters were measured following a prospective image analysis protocol. Student's t-test showed control patients had a thicker maximum iris thickness than T21 patients with (p = 0.001) and without cataract (p = 0.006). T21 patients with cataract were found to have thinner lenses than T21 patients without cataract (p = 0.027) and controls (p = 8.61 x 10-5). This suggests features of the iris are associated with T21 regardless of cataract, while features of the lens were associated with T21 and cataracts. We anticipate these results will enhance our understanding of the unique structure of T21 eyes in the presence and absence of cataract, aiding in early diagnosis and treatment of childhood cataracts.

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O.16

CHARACTERIZATION OF THE IRIS, CILIARY BODY, AND LENS IN PEDIATRIC PRIMARY CONGENITAL GLAUCOMA USING ULTRASOUND BIOMICROSCOPY: A CASE-CONTROL STUDY. Radhika Gholap*, Esther Xu[1], and Janet Alexander[2], [2]Division of Strabismus and Pediatric Ophthalmology, [1]Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

Glaucoma is a rare but devastating cause of irreversible vision loss with variable incidence worldwide between 1:1,250 and 1:50,000. This study focused on Primary Congenital Glaucoma (PCG), defined as isolated, non-syndromic glaucoma occurring in the first three years of life. Glaucoma is defined by progressive degeneration of retinal ganglion cells due to elevated intraocular pressure (IOP) because of an imbalance in secretion and drainage of aqueous humor (fluid) in the anterior segment (AS) of the eye. Common ophthalmological findings include excessive tearing, photophobia, cloudy and enlarged cornea, and progressive peripheral vision loss. Currently, diagnostic tools for PCG are limited to measurement of IOP and clinical exams; however, IOP can be highly variable and notoriously difficult to measure accurately in infants and toddlers. We propose using ultrasound biomicroscopy (UBM), a noninvasive high-resolution real-time imaging technique. The aim of this study is to use UBM to identify quantitative differences in AS iris, ciliary body, and lens structures between 10 PCG subjects and 10 age-matched controls. Pediatric patients and controls (0.25-12.42 years) were enrolled, consented, and imaged with intra-operative UBM using a protocol developed at UMMS. Twenty-six AS parameters of the iris, ciliary body, and lens were measured in 80 UBM images with ImageJ software using another protocol developed at UMMS. 10 of the 26 parameters were found to be statistically significant between PCG and control eyes using student's t-test. Our data suggests that glaucomatous eyes' irises are longer, more curved, and thinner as seen by iris length (P=0.035), iris convexity (P=0.0002), and mid-iris (P=0.011) and peripupillary iris thicknesses (P=2.170 x 10-6), respectively. PCG eyes have larger angle-opening distance (P=3.018 x 10-7), larger angles between the trabecular meshwork-iris, iris-cornea, and ciliary body-cornea, and thinner lens (P=0.004). These results yield clinically meaningful information about anatomical differences in PCG patients, providing an additional avenue for clinicians to earlier diagnose glaucoma, determine severity, and initiate treatment.

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O.17

OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY AND ERYTHROCYTE-MEDIATED ANGIOGRAPHY: A QUANTITATIVE ASSESSMENT OF BLOOD FLOW IN GLAUCOMA. Allison Kang* and Osamah Saeedi[1], [1]Division of Glaucoma, Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

Vascular dysregulation is a key driver of glaucoma, but, until recently there were not methods to measure capillary blood flow in vivo accurately and precisely. We used erythrocyte mediated angiography (EMAv), a novel method that allows direct observation of erythrocyte movement and permits the precise quantification of capillary flowrates, to quantify unitless flow metrics produced by optical coherence tomography angiography (OCTA). OCTA as currently used can assess retinal vascular anatomy and densities noninvasively, but can only measure flow in unitless metrics, making comparison difficult. We analyzed previously collected EMAv and OCTA data from one nonhuman primate, which included of 14 capillaries at baseline intraocular pressure (IOP) and 10 at induced high-IOP conditions. OCTAs were analyzed using a neural-network based segmentation algorithm to map decorrelation signals within the superficial vascular plexus. Decorrelation signals were extracted for capillaries whose velocities were previously calculated using EMAv. OCTA capillary decorrelation

signals were compared to corresponding EMAv capillary velocities. Average OCTA decorrelation signal was 1.35 ± 0.52 and 0.79 ± 0.59 at low and high IOP conditions, respectively. Correlation between OCTA and EMAv were 0.01 at low IOP and 0.10 at high IOP. Our results showed different correlations between OCTA decorrelation signals and EMAv velocities at different IOP conditions, suggesting a potential threshold to OCTA in detecting high blood flow at lower IOP.

This research was supported in part by the Program for Research Initiated by Students and Mentors (PRISM), University of Maryland School of Medicine Office of Student Research and by Fight for Sight.

O.18

OCULAR BLOOD FLOW ASSOCIATION WITH RETINOPATHY OF PREMATURITY DISEASE STAGING USING LASER SPECKLE CONTRAST IMAGING. Danielle Sidelnikov*, Tara Balasubramanian[1], Daniel Shats[1], Urjita Das[1], Moran Roni Levin[2], and Janet Alexander[2], [2]Division of Pediatric Ophthalmology and Adult Strabismus, Department of Ophthalmology and Visual Sciences, [1]University of Maryland School of Medicine, Baltimore, MD.

Diagnosing and staging ROP in preterm infants is crucial to initiating early treatment and preventing irreversible vision loss. Current methods of diagnosing ROP are invasive and stressful to the infant and provide subjective assessments of the retina. Laser speckle contrast imaging (LSCI) is a non-invasive imaging technique that analyzes blur rate of red blood cells to generate blood flow measurements and objectively assess for stages of ROP. We tested the hypothesis that ocular blood flow metrics measured by LSCI will be associated with more advanced stages of ROP. In this prospective study, preterm infants at risk for ROP as well as healthy controls were enrolled (n=50). Demographics and clinical risk factors were obtained as potential predictors. Ocular exams were performed via standard binocular indirect ophthalmoscopy and LSCI. Correlation coefficients, logistic regression, and multivariate regression were used to determine associations between ocular blood flow metrics and ROP severity. 50 preterm infants were enrolled over a 2-year period in this prospective observational study. There is enough evidence to suggest that post-menstrual age (p-value = 0.031, 0.019), birthweight (p=0.037,0.027), and weight at exam can serve as linear predictors of blood flow velocity. Subjects within the more severe ROP staging group at maximal disease presentation had higher peak blood flow velocities than did the subjects within the less severe ROP staging group at maximal disease presentation (p = 0.047). Objective measurements of retinal blood flow captured through LSCI could improve our understanding, diagnosis, and staging of ROP.

This study was funded by the Proposed Research Initiated by Students and Mentors (PRISM) Program, (University of Maryland, School of Medicine), the National Capital Consortium - Pediatric Device Initiative, the Little Giraffe Foundation, and the NIH/National Eye Institute (NEI) 2019 SBIR Award R43EY030798.

O.19

PAIN AND STRESS RESPONSES DURING RETINOPATHY OF PREMATURITY SCREENING: NON-CONTACT LASER SPECKLE CONTRAST IMAGING VERSUS THE STANDARD OF CARE. Urjita Das*, Tara Balasubramanian[1], Daniel Shats[1], Danielle Sidelnikov[1], Sripriya Sundararajan[2], and Janet Alexander[3], [2]Division of Neonatology, [3]Department of Pediatrics, [1]University of Maryland School of Medicine, Baltimore, MD.

Retinopathy of prematurity (ROP) is a leading cause of childhood blindness worldwide and is caused by incomplete and abnormal retinal vascular development. The current standard of care for ROP, binocular indirect ophthalmoscopy (BIO), is widely considered to induce physiologic stress in infants, and the moment of initial speculum insertion has demonstrated to be the most painful part of the examination. This study compared BIO with laser speckle contrast imaging (LSCI), a method that captures ocular blood flow dynamics and provides quantitative measurements of ROP pathogenesis without contacting the eye. We hypothesized that LSCI will cause less physiologic stress to infants

compared to BIO. In this prospective comparative study, 73 ROP examinations were performed on infants (n=25) with gestational ages between 23-30 weeks and birthweights between 470-1915 grams. Infants received BIO-only or LSCI and BIO. Vital signs were compared pre-, during, and post-examination using Welch's t-test. N-PASS and PIPP-R behavioral pain scores were obtained during the examination and compared using the Wilcoxon rank sum test. Maximum heart rate was higher during BIO (182.7±16.8) compared to LSCI (170.7±11.3) ($p<0.001$). Maximum and minimum oxygen saturations were lower during BIO (96.5±4, 84.7±9.6) compared to LSCI (99.2±1.6, 89.9±8.3) ($p = 0.001$ and $p=0.013$ respectively). BIO was more stressful and painful as revealed by higher median N-PASS ($p<0.001$) and PIPP-R ($p=0.038$) scores compared to LSCI. BIO also had greater frequencies of adverse events (e.g. bradycardia, tachycardia) compared to LSCI. However, infants were more tachypneic during LSCI (125.0±18.1) compared to BIO (95.7±20) ($p<0.001$). LSCI is associated with less physiological stress compared to BIO. Without the use of a speculum, depressor, or bright retinal illumination, LSCI is a gentler method for ROP screening that minimizes the stressful experience for pre-term infants.

This study was funded by the Proposed Research Initiated by Students and Mentors (PRISM) Program, (University of Maryland, School of Medicine Office of Student Research), the National Capital Consortium - Pediatric Device Initiative, the Little Giraffe Foundation, and the NIH/National Eye Institute (NEI) 2019 SBIR Award R43EY030798.

O.20

HISTOLOGICAL EVALUATION OF THE CORNEA IN OCULAR GRAFT VERSUS HOST DISEASE IN A MURINE MODEL. Fernando Martinez Guasch*, Ellis Tibbs[1], Seema Sajjan[1], Andrew Li[1], Xuefang Cao[2], and Sarah Sunshine[1], [1]Department of Ophthalmology and Visual Sciences and [2]Department of Microbiology and Immunology, University of Maryland School of Medicine, Baltimore, MD.

Ocular graft versus host disease (oGVHD) affects ~50% of individuals who receive an allogenic hematopoietic stem cell transplantation for treating blood cancers. The mechanisms that cause oGVHD are incompletely understood, but are known to cause dry eye disease, decreased vision and in some cases corneal perforation. The objective of this study is to evaluate the histological and clinical findings of a murine model of oGVHD (n=15). We studied a haploidentical murine model of oGVHD (donor C57Bl/6; host B6D2F1). We hypothesized that with increasing clinical severity of oGVHD we would identify more autoimmune histological change. Specifically we measured lymphocyte infiltration within the cornea. To test this, each mouse underwent total body irradiation followed by injection of donor T and B cell depleted bone marrow +/- increasing doses of splenocytes to provoke more severe disease ($1x10^6$, $2x10^6$, $5x10^6$ cells). Control (n=3/group) mice did not receive splenocytes. Systemic GVHD and oGVHD scoring was performed weekly. Immunohistochemistry staining for CD3 was performed for one mouse within each group at the end of the experiment (Day 40). The haploidentical mice that received $5x10^6$ splenocytes had greater oGVHD scores compared to the mice that received lower or no splenocytes. CD3 staining of the corneas revealed the most lymphocytic infiltration occurred in the $5x10^6$ splenocyte mouse with 9 central epithelial lymphocytes/High Power Field (HPF) and 15 peripheral epithelial lymphocytes/HPF. All other mice developed 0 to 1 central and peripheral lymphocytes/HPV. The findings support our hypothesis that with increased splenocyte dosing there is increased autoimmune mediated changes that is consistent with our clinical findings. Furthermore, these findings support the hypothesis that this is an autoimmune mediated model of oGVHD. This pilot study provides the foundation to allow us to further study oGVHD and better understand the disease mechanism.

This project was funded by the Program for Research Initiated by Students and Mentors (PRISM) at University of Maryland School of Medicine Office of Student Research and the Eversight Cigarette Restitution Fund.

O.21

TEAR CYTOKINE PROFILING FOR OCULAR GRAFT VERSUS HOST DISEASE IN A NEW MULTIPLEX ASSAY. Andrew Li*, Sarah Sunshine[1], and Fernando Martinez Guasch[1], [1]Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

Nearly 50% of patients who have undergone allogeneic hematopoietic stem cell transplantation (aHSCT) as part of their cancer therapy achieve complete remission from their cancer and subsequently develop Graft versus Host Disease (GVHD), a chronic autoimmune disease that causes significant damage to many organs including their eyes. Quantifying specific cytokine changes in tears may reveal biomarkers and future treatment targets for patients with ocular GVHD (oGVHD). Compared to other assays, the IsoLight Codeplex Secretome assay (Isoplexis) has specific advantages for tear samples including high-throughput analysis, and small sample requirements, but has yet to be validated in tears. This study evaluates the tears of a patient with oGVHD utilizing the Isoplexis platform. As a pilot study, we collected a sample from normal and oGVHD patient tears. We analyzed samples on two separate backgrounds–standard Bovine Serum Albumin (BSA) background and artificial tears (ATs). The controls were ATs (negative) and a concentrated cytokine solution (positive). Analysis of 22 cytokines was performed. As expected, the cytokine levels of the artificial tears alone were below the limit of detection (LOD). The oGVHD patient tears showed elevated TNF-alpha, TNF-beta, perforin, MIP-1a, MIP-1β, MCP-1, IL2, IL4, IL5, IL-7A, IL9, IL-13, IL-15, IFN-γ, granzyme B, and GM-CSF with ATS background, but no cytokines above the LOD in the BSA background plate. The control tears had elevated IP-10. The elevated cytokines for the oGVHD patient corresponded to symptom severity and clinical findings. These results suggest that using ATs as the background in Isoplexis improves the sensitivity to detect tear cytokines. Findings of elevated IL-7A and GM-CSF in tears parallels literature findings for oGVHD. Further evaluation of samples will continue to validate the Isoplexis multiplex assay for tear cytokine analyses.

This project was funded by the Program for Research Initiated by Students and Mentors (PRISM) at University of Maryland School of Medicine Office of Student Research and the Eversight Cigarette Restitution Fund at University of Maryland Greenebaum Comprehensive Cancer Center.

O.22A

REPORTED FOOD INSECURITY, LIVING WITHIN A LOW-INCOME AND LOW FOOD ACCESS CENSUS TRACT, AND ASSOCIATED COMMUNITY HEALTH BARRIERS IN ONE URBAN REPRODUCTIVE CLINIC. Sanyukta Deshmukh* and Jessica Lee[1], [1]Division of Family Planning, Department of Obstetrics, Gynecology and Reproductive Sciences, University of Maryland School of Medicine, Baltimore, MD.

Understanding the relationship between food access at the community level and food insecurity and associated barriers at the individual level is essential to guiding clinical priorities for addressing food insecurity in reproductive clinics, as food insecurity has been associated with poor reproductive outcomes. We assessed the association between reported food insecurity for reproductive patients and living within a low food access low-income census tract. This is a sub-analysis of a cross-sectional community health survey provided to patients aged 15-75 years presenting for routine reproductive care at one urban academic Ob/Gyn clinic. Patients were classified as food insecure if they scored 1 or higher on the 6 Item Food Insecurity Module. Geocoded patient addresses were matched to census tracts in the 2019 USDA Food Access Research Atlas to identify participants living within a low income, low food access tract (LILA, at least 33% of the population lives ½ miles away from the nearest grocery store and poverty rate is 20% or greater). We used bivariate logistic regression to assess the association between reported food insecurity and living within a LILA tract. Patients were also asked to report whether transportation served as a barrier to care within Likert-Style questions. Means on these questions were compared by food security status using two-sample T-tests. Of the 180 enrolled, nearly half of the participants reported food insecurity (47%). 139/1390 tracts in Maryland

were represented in our study and 54% of our participants live in a LILA tract. We found that reported food insecurity was not associated with significant odds of living in a LILA area (OR=0.53, 95% CI [0.30-1.01]). Living within a LILA while food insecure was associated with ages between 18-35 years old (p=.033),but was not associated with other sociodemographic factors or reason for visit on chi-square analysis. Food insecure participants also reported significantly higher values for perceived transportation barriers to reproductive care appointments (p<.001). As reported food insecurity was not associated with living within a LILA area, providers cannot accurately assume which patients may struggle with food security based on their residence. This and the high prevalence of food insecurity in our clinic support the need for universal food security screening and intervention efforts of all patients during reproductive care appointments that also address associated barriers, such as transportation.

This research was supported in part by the Program for Research Initiated by Students and Mentors (PRISM), University of Maryland School of Medicine Office of Student Research.

O.23A

IS FOOD INSECURITY ASSOCIATED WITH PREVIOUS SPONTANEOUS OR INDUCED ABORTION? A SURVEY OF PATIENTS SEEKING REPRODUCTIVE CARE IN ONE URBAN CLINIC.

Sanyukta Deshmukh*and Jessica Lee[1], [1]Department of Obstetrics, Gynecology and Reproductive Sciences, University of Maryland School of Medicine, Baltimore, MD.

Though living within a food desert has been linked to adverse pregnancy outcomes, there is limited research on the association of self-reported food insecurity and spontaneous abortions (SAB), and no research on induced abortions (IAB) and food insecurity. We assessed the association between reporting food insecurity and having previously experienced an SAB or IAB. This information may guide clinical intervention for those who have had or may go onto have SAB or decide to have an IAB. We conducted a sub-analysis of a cross-sectional community health survey provided to currently or previously pregnant patients aged 15-75 years presenting for routine reproductive care at one urban academic reproductive clinic. We classified patients as food insecure if they scored 1 or higher on the 6 Item Food Insecurity Module (marginal food security) within the survey. We abstracted prior obstetric history from the electronic medical record . We used summary statistics and chi squared analyses to compare food insecurity with categorical variables and two-sample t-tests to compare means of numerical variables. Of the 173 patients that completed the survey, nearly half of the participants reported food insecurity (49%). Close to one third of the participants had experienced SAB (31%), while 41% of the participants had experienced IABs, which is higher than the national averages for (25% for SAB, 23.7% for IAB). We found no significant association between reporting food insecurity and having a previous SAB (p = .08) or having a previous IAB (p=0.09). While the mean number of abortions throughout the participants lifetimes was slightly higher in patients that were food insecure (u=1.55 vs u=1.33), this difference was not statistically significant (p-value =.23). Additionally, an increasing food insecurity score was not associated with an increase in number of total abortions (R2=.008). Experiencing both food insecurity and SAB was associated with African American race (p-value < .05), but there were no other sociodemographic factors and reason for visit associated with history of both SAB or IAB and food security. Amongst women presenting for reproductive care at an urban clinic, we found a higher incidence of food insecurity than the national average of 10% suggesting that food security should be assessed at routine reproductive health visits. In a clinic with a higher prevalence of food insecurity, there may be stressors beyond food insecurity that can be associated with either spontaneous or induced abortion.

This research was supported in part by the Program for Research Initiated by Students and Mentors (PRISM), University of Maryland School of Medicine Office of Student Research.

O.24

INCENTIVIZING PROVIDER SERVICE IN MARYLAND'S UNDERSERVED AREAS: AN ANALYSIS OF THE MARYLAND LOAN REPAYMENT PROGRAMS IMPACT. Mary Carbonell* and Sara Seitz[1], [1]Maryland Department of Health, Baltimore, MD.

The Maryland Loan Repayment Programs, including the federally-funded State Loan Repayment Program (SLRP) and State-funded Maryland Loan Assistance Repayment Program (MLARP) provide educational loan repayment up to $100,000 to practitioners in exchange for primary care service in healthcare provider shortage areas for 2 years. Before this year, analysis of applicants and recipients has remained largely demographic with no insight into applicant motivation or program impact. With this in mind, the goals of this summer project were to do a more in depth analysis of applicant data, create an evaluation plan of data collection up to this point and changes moving forward, and develop a report of this year's data analysis to be presented to funding and legislative sources. All of the analysis was done using data collected and compiled by the State Office of Rural Health. This year there were 102 applicants, of these 79 were complete and eligible with 26 of those then selected as awardees. A large amount of demographic data was collected, most interestingly finding that a majority of eligible applicants (70.89%) and awardees (80.77%) identified as female and that there were far more black applicants (21.52%) and awardees (23.08%) compared to the percentage of black physicians nationally (5%). New questions on disadvantaged background status were included this application cycle, and it was found that 34.21% of applicants and 42.31% of awardees self-identified as such, indicating this may be some underlying motivation in going into underserved care. Average loan amount comparison was done across age, gender, race, license, and time out of school, however significance of these differences could not be commented on due to relatively small sample size. The total amount awarded over 2 years came to $2,056,908.00, leaving awardees with a remaining debt of $3,479,131.25 and all eligible applicants with $12,120,976.56. Moving forward, clearly there is a need to explore further funding options for practitioners going into underserved areas and for further analysis of future retention data to have a better conclusion on the loan repayment programs impact.

Funding for this research was provided by MPower.

O.25

EXAMINING THE ROLE OF VENTRAL PALLIDAL INPUTS IN STRESSED-INDUCED SOCIAL AVOIDANCE. Daisy Martinez*, Rianne Campbell[1], Geralin Love Virata[1], and Mary Kay Lobo[1], [1]Department of Anatomy and Neurobiology, University of Maryland School of Medicine, Baltimore, MD.

Depression is a highly variable disorder that affects millions of people worldwide and is associated with significant morbidity and mortality. Repeated stress alters excitatory signaling and cellular morphology throughout the reward system, which can increase an individual's vulnerability to developing depression and anxiety. Yet, it is still unknown how stress induces long term changes in the neural circuitry throughout the reward system to drive depressive-related behaviors. The ventral pallidum (VP), a critical node in the reward system, is involved in the expression of motivated behaviors, including processing both rewarding and aversive stimuli. Although much is known about VP outputs and downstream projections, the specific VP inputs involved in producing stress-related and depressive behaviors are still unknown. Furthermore, the VP has several afferent inputs that are linked to depressive behaviors, including the nucleus accumbens (NAc) and the basolateral amygdala (BLA). Therefore, we aim to determine the effects on chronic stress on VP circuit activity. Using viral retrograde labeling methods and immunohistochemistry, we are currently examining whether chronic social defeat stress affects activity within VP-projecting BLA and NAc neurons following a social interaction in male mice. We hypothesized that chronically stressed, socially avoidant mice will show increased expression of neuronal activation marker c-fos within NAc → VP and BLA → VP circuits,

suggesting increased circuit activity in comparison to both chronically stressed, socially active mice and their non-stressed controls. Overall, this work aims to elucidate the underlying mechanisms responsible for producing long-term changes in neural circuits that drive depressive-related symptoms and identify potential therapeutic targets.

This research is supported by the National Institute on Drug Abuse award number R01DA047843 and in part by the Program for Research Initiated by Students and Mentors (PRISM), University of Maryland School of Medicine Office of Student Research.

O.26

PRE-EXISTING PSYCHIATRIC ILLNESS RESULTS IN POOR AMBULATORY STATUS FOLLOWING MAJOR LIMB AMPUTATION IN PATIENTS WITH CHRONIC KIDNEY DISEASE. Natalie Chao*, Maria Som[1], Eyerusalem Workneh[1], Allison Karwoski[1], Eleanor Dunlap[2], and Khanjan Nagarsheth[2], [2]Division of Vascular Survery, [1]Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

Mental health status can affect post-amputation outcomes by exacerbating the emotional stress of undergoing surgery. This impact can be amplified by pre-existing comorbidities such as chronic kidney disease (CKD). Studies have shown that patients can experience high levels of depression symptoms after amputation, however there is no documented literature on the effect of pre-existing psychiatric illness on post-amputation outcomes. We aim to assess how a history of mood disorder affects ambulation outcomes for patients with pre-existing CKD who have undergone major lower limb amputations. We performed a retrospective chart review of 396 patients and identified 136 patients with pre-existing CKD who had received major lower extremity amputations. Patients were excluded if they did not have documented ambulation outcomes. Patients were classified as having a history of mood disorder if they had a history of bipolar and/or a history of depressive disorder as defined in the DSM-5. We recorded the history of mood disorder, level of amputation, independent ambulation status, and prosthesis usage. We performed Chi-Square tests and used $p < 0.05$ as our significance level. 58.2% (n = 67) of CKD patients with no psychiatric history are ambulating independently, whereas 33.3% (n = 7) of CKD patients with history of bipolar or depression are ambulating independently. Independent ambulation rates for patients with a history of mood disorder at above-knee (1/5, 20.0%) and below-knee (2/11, 18.2%) were significantly lower than above-knee (29/36, 80.6%) and below-knee (31/69, 44.9%) for patients without history of mood disorder. Patients with a history of mood disorder had lower rates of above-knee (⅔, 66.7%) and below-knee (2/11, 18.2%) prosthesis usage than patients without mood disorder above-knee (29/36, 80.6%) and below-knee (32/69, 46.4%). Our results were statistically significant as denoted by $p < 0.05$ for every Chi square test. CKD patients with mood disorder diagnoses correlate with lower rates of independent ambulation and prosthesis usage than CKD patients without mood disorder. The intersection of physical and mental well-being can further worsen the outcomes of patients with comorbidities such as CKD. Our findings highlight the need to provide adequate mental health resources in order to foster the motivation and mental wellness needed to achieve positive mobility outcomes.

O.27

BLACK MOTHERS' NEGATIVE PREGNANCY EXPERIENCES AND PERINATAL ATTACHMENT AND DEPRESSION: THE BUFFERING ROLE OF PRENATAL HEALTH PRACTICES. Maria Gianelle*, Justin Scott[1], Vivian Flanagan[2], and Brenda Jones Harden[1], [1]University of Maryland School of Social Work, Baltimore, MD and [2] School of Public Health, University of Maryland, College Park, College Park, MD.

The goal of this study was to examine whether barriers to accessing healthcare and negative pregnancy experiences would predict low-income, Black mothers' attachment and depressive symptoms across the perinatal period, and whether engaging in prenatal health practices would buffer against pregnancy experiences to promote postnatal maternal functioning. Participants were 118 low-

income, Black expecting women recruited from WIC and Early Head Start programs in a large metropolitan area. A prenatal assessment between 28- and 40-weeks gestation measured pregnancy experiences and prenatal health practices, and a postnatal assessment about 4 weeks postpartum measured maternal functioning in the form of attachment and depressive symptoms. Linear regressions with prenatal health practices included as a moderator suggested engaging in health practices during pregnancy could potentially buffer against barriers to accessing prenatal healthcare and negative pregnancy experiences to promote postnatal attachment, and buffer against prenatal depressive symptoms to reduce postnatal depressive symptoms. These results imply the need to increase recommended prenatal health practices among expecting women, especially those who have less access to adequate prenatal healthcare services or providers.

O.28

THE IMPACT OF PERINATAL THC AND STRESS ON MOTIVATION IN JUVENILE MICE. Mahima Dewan*, Jimmy Olusakin[1], and Mary Kay Lobo1[1], [1]Department of Anatomy and Neurobiology, University of Maryland School of Medicine, Baltimore, MD.

Medical marijuana has been legalized in over 30 states in the United States and is gaining popularity for treatment of many chronic conditions; however, the effects of marijuana use in the medical setting has been widely understudied. Delta-9-tetrahydrocannabinol (THC) is the main psychotropic chemical within marijuana that is often exploited for intoxication and medicinal use. Pregnant women will often use marijuana to control nausea or anxiety, and the effectiveness of marijuana in controlling these symptoms is likely due to an alteration of dopaminergic signaling in the nucleus accumbens. Although mild marijuana use has previously been implicated in increasing dopamine signaling, recent studies have demonstrated that chronic marijuana use actually downregulates dopamine signaling, leading to negative effects such as decreased motivation and depression. Due to similar mechanisms, perinatal stress has also been shown to negatively affect the cognitive development of fetuses. Our aim is to describe the compounding impact of perinatal stress and THC on cognitive function and goal-directed behavior in juvenile mice. Goal-directed behavior is assessed using a Y-maze barrier task on the following groups of mice: 1) pups of pregnant mice that are not exposed to chronic stress or THC use in utero, 2) pups of pregnant mice that are exposed to THC use in utero, 3) pups of pregnant mice that are exposed to chronic stress in utero, and 4) pups of pregnant mice that are exposed to both chronic stress and THC use in utero. Preliminary results indicate that both THC and stress impact maternal care of pups, which has a negative impact on pup neurodevelopment. We next aim to characterize how using THC, having chronic stress, or how both THC use and chronic stress in utero will impact goal-directed behavior in juvenile mice. Determining the impact of THC and stress in pregnant mice and their pups will support ongoing research regarding the effects of medical and recreational marijuana use in pregnancy.

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O.29

INVESTIGATING A NOVEL ANIMAL MODEL OF ANTI-NMDAR ENCEPHALITIS. Andres Chavez-Barragan*, and David R. Benavides[1], [1]Division of Multiple Sclerosis and Neuroimmunology, Department of Neurology, University of Maryland School of Medicine, Baltimore, MD.

Anti-N-methyl-D-aspartate receptor (NMDAR) encephalitis is the most common form of autoimmune encephalitis (AIE) that carries high rates of morbidity and mortality. There are significant unmet needs in the treatment of AIE. Previously established animal models of anti-NMDAR encephalitis have relied on passive transfer of patient-derived antibodies or immunization with conformationally intact NMDARs. Recent studies provide evidence for a novel paradigm that

induces anti-NMDAR encephalitis in rodents via NMDAR peptide immunization. We propose to establish this peptide immunization model of anti-NMDAR encephalitis to investigate regulation of neuronal synaptic signaling pathways *in vivo*. We hypothesize that immunization of adult mice with a peptide that encompasses the primary pathogenic epitope on NMDAR will induce a B-cell mediated autoimmune response that is reminiscent of anti-NMDAR encephalitis. Further, we hypothesize that this animal model will demonstrate aberrant neuronal synaptic signaling that are relevant to the pathophysiology of anti-NMDAR encephalitis. We evaluated the immunogenic potential of $GluN1_{359-378}$, a peptide resembling an amino acid sequence found within the previously identified pathogenic region of GluN1 subunit of NMDARs. We used western blotting and immunohistochemistry (IHC) to analyze serum of immunized mice against samples from HEK cells overexpressing NMDARs. Together, these studies will establish peptide immunization as a model for anti-NMDAR encephalitis and provide the framework for investigation of altered neuronal synaptic signaling in the pathophysiology of this disorder. The validation of this peptide immunization animal model stands as a promising development in the path to discovery of novel treatments for anti-NMDAR encephalitis.

O.30

HIKING AWAY THE BLUES: A CROSS-SECTIONAL STUDY LOOKING AT THE ASSOCIATION BETWEEN CONSECUTIVE TIME IN NATURE AND MENTAL HEALTH.
Emilie Disviscour Berman*, Daniel Gingold[1], and Doug Sward[2], [2]Division of Hyperbaric Medicine, [1]Department of Emergency Medicine, University of Maryland School of Medicine, Baltimore, MD.

This cross-sectional study intends to find the optimal length of time to spend in nature for mental health benefits and proposes that excess time in nature may have a detrimental effect. Previous studies have shown the causal role spending time in nature has on improving mental health, however no studies have looked at the association of various forms of prolonged exposures with mental health, particularly in the field (on trail). With the rising incidence in mental health conditions, and the significant morbidity associated with these conditions, it is essential to determine what role prolonged nature exposure has on mental health to further educate patients on appropriate lifestyle modifications they can make. If we want to use the benefits of nature to improve mental health conditions, we must know how to appropriately "dose" it. To do so, this study investigates the prevalence of depression among hikers on the Appalachian Trail based on various factors, primarily the length of time hiking on the trail. Additional factors like age, gender, hiking goals, education level, and layout of home community were also collected to correct for possible confounding variables. The level of depression is measured using the Center of Epidemiology Studies Depression Scale (CES-D), a well-validated 20-question survey commonly used to screen for depression. In this study, 334 hikers were surveyed along the Appalachian Trail, including 201 multi-day backpackers and 133 day hikers. Of all the hikers, 57 (17%) were depressed according to their CES-D score. The binary logistic regression of all hikers showed that the variables "time on trail" (measured in days), "age" (measured in years) and "home community" type all had a $p<0.05$. However, once the data had been segregated into day hikers and backpackers the significantly distributed variables changed. When looking at just day hikers "home community" and "age" affected level of depression, however when looking at just backpackers, no variables were significantly associated with level of depression. These findings may suggest that backpacking nullifies the effects that age and home community may have on mental health.

This research was supported in part by the Program for Research Initiated by Students and Mentors (PRISM), University of Maryland School of Medicine Office of Student Research.

O.31

THE K_{ATP} CHANNEL FORMS THE LINK BETWEEN METABOLISM AND EPILEPSY.
Darrian McAfee*, Mitch Moyer[1], Muzna Bachani[1], and Alexander Ksendzovsky[1], [1]Department of Neurosurgery, University of Maryland School of Medicine, Baltimore, MD.

Although the mechanisms underlying epileptogenesis are unknown, studies suggest that dysregulation in neuronal activity could be a result of ATP-dependent potassium (K_{ATP}) channel modulation. The K_{ATP} channel acts as a metabolic sensor that restores a neuron's membrane potential during times of high energy demand by releasing potassium. Studies have implied a link between the K_{ATP} channel and neuronal hyperactivation through its role in the ketogenic diet's treatment of epilepsy. The purpose of this study was to determine whether K_{ATP} channel inactivation leads to neuronal hyperactivation. To study this, we used a low Mg^{2+} *in vitro* model of neuronal hyperactivation to assess if K_{ATP} channel inhibition leads to pathological neuronal firing. We showed an increase in baseline neuronal bursting in cultures treated with low Mg^{2+} for 10-days compared to controls. We then probed the K_{ATP} channel's involvement in elevated burst frequency with 10 uM of tifenazoxide (a specific K_{ATP} channel activator). We found a significant reduction in neuronal burst frequency after 24 hours in low Mg^{2+} vs. control cells (56% vs. 32.6% respectively ($p < 0.05$)). Interestingly, we also observed a significant upregulation of lactate dehydrogenase A (LDHA) protein in the hyperactive low-Mg^{2+} group compared to controls (68% LDHA expressing neurons vs. 27% in controls, respectively ($p < 0.05$)). Finally, we evaluated the role of the K_{ATP} channel in seizure generation in a pentylenetetrazole (PTZ) model of epilepsy. We compared heterozygous Kir6.2 (a pore subunit of the K_{ATP} channel) with control mice injected with PTZ. We preliminarily found that partial K_{ATP} knockout mice had more seizures on average after the initial injection of a PTZ compared to controls. Our findings suggest that K_{ATP} channel inhibition may contribute to neuronal activation in culture and seizures in a mouse model of epilepsy. We plan to further describe the K_{ATP} channel's role in neuronal activation and seizures and investigate LDHA as a potential upstream regulator of K_{ATP} channel inactivation.

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O.32

DISTINCT PAIN TRAJECTORIES FOLLOWING SUBARACHNOID HEMORRHAGE ARE ASSOCIATED WITH CEREBRAL VASOSPASM AND DELAYED CEREBRAL ISCHEMIA.

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Aneurysmal subarachnoid hemorrhage (SAH) is a devastating neurologic injury with high morbidity. Debilitating headache and chronic pain often persist following the acute thunderclap headache. Cerebral vasospasm and delayed cerebral ischemia (DCI) are late complications of SAH and may represent modifiable causes of secondary brain injury. The relationship between headache pain following SAH and risk of vasospasm and/or DCI has not been explored. The objective of this study was to identify pain trajectories that can predict patients who are at risk for DCI. It was hypothesized that patients reporting increased pain would go on to develop vasospasm and DCI at higher rates. A retrospective review of 305 patients with aneurysmal or perimesencephalic SAH was completed at a tertiary neurocritical care unit from 2015-2019. Pain scores were collected over fourteen days and were analyzed using group-based trajectory modeling to identify individual pain trajectories. The primary outcomes of interest were vasospasm and DCI. Multivariable logistic regression was utilized to identify independent predictors of each outcome. Vasospasm location was analyzed as a covariate in an exploratory analysis. Five distinct pain trajectories were identified during the fourteen days following subarachnoid hemorrhage, two of which were associated with vasospasm. Trajectory groups were roughly similar in terms of age, sex, race, and comorbid conditions. Age, clinical severity,

and trajectory group were found to be independent predictors of vasospasm and DCI. Trajectory groups with low pain scores were found to have higher rates of anterior cerebral artery vasospasm. These findings suggest that distinct inpatient pain trajectories following subarachnoid hemorrhage can predict secondary brain injury, and that patients experiencing anterior cerebral artery vasospasm may be less likely to report pain during hospitalization.

This research was supported in part by the Program for Research Initiated by Students and Mentors (PRISM), University of Maryland School of Medicine Office of Student Research.

O.33

DIFFERENTIAL EXPRESSION OF CANNABINOID RECEPTOR SUBTYPES IN THE DEVELOPING MEDIAL AMYGDALA IN THE RAT. Neema Moin Afshar*, Jonathan VanRyzin[1], and Margaret McCarthy[2], [1]Department of Anatomy and Neurobiology and [2]Department of Pharmacology, University of Maryland School of Medicine, Baltimore, MD.

Current trends in the legalization of marijuana within the United States have resulted in increased use of THC-containing substances, including during pregnancy. Epidemiologic studies have shown executive and visual-problem solving deficits in children exposed to marijuana perinatally.1 However, effects of perinatal THC exposure on the developing brain have yet to be elucidated. Exposure to exogenous cannabinoids may disrupt developmental processes driven by endocannabinoid signaling. Recent preclinical work shows that endocannabinoid signaling within the developing amygdala results in microglial phagocytosis of astrocytic progenitors, which is sexually dimorphic, with male rats experiencing greater endocannabinoid tone and phagocytosis than female rats, important for appropriate development of social play circuitry. Although, the exact signaling pathway for these effects have not yet been identified. We hypothesize that differential expression of cannabinoid receptor 1 (CB1) and cannabinoid receptor 2 (CB2) on microglia between sexes is essential for the dimorphic phagocytosis of astrocytic progenitors in the medial amygdala. To test this, we performed in situ hybridization on brain tissue collected from postnatal day 4 rats (N = 6 females, 6 males) and examined the transcriptional patterns of cannabinoid receptor subtypes within microglia and newborn cells of the medial amygdala. We found no significant difference in the transcriptional patterns between sexes when looking at microglia (CB1: $t(5)=0.041$, $p=0.701$; CB2: $t(5)=1.817$, $p=0.222$). However, newborn cells expressing Ki67 had significant differences in their transcriptional pattern between sexes. Females had higher proportion of CB1 and CB2 positive newborn cells ($t(5)=3.427$, $p=0.009$) while males had higher proportion of CB1 positive newborn cells ($t(4)=3.634$, $p=0.013$). These results demonstrate a potential protective function for CB2 receptors on newborn cells. Our ongoing works seeks to further classify the transcriptional patterns within neuronal constituents of the medial amygdala as well as to examine the functional impact of these differences on phagocytosis of astrocytic progenitors in this region.

This research was supported by NIH MSTP T32.

O.34

MYELOPEROXIDASE MEDIATED NEUROINFLAMMATION FOLLOWING EXPOSURE OF RATS TO UNDER-VEHICLE BLAST PLUS CONTROLLED CORTICAL IMPACT TRAUMATIC BRAIN INJURY. Lidia Castillo*, Julie Proctor[1], Boris Piskoun[1], Parisa Rangghran[3], Amanda Hrdlick[1], and Gary Fiskum[1], [1]Department of Anesthesiology, University of Maryland School of Medicine, Baltimore, MD.

Combat-related traumatic brain injury (TBI) is a significant cause of morbidity and mortality in the military. Warfighter trauma victims are typically evacuated from combat zones between one to three days in order to expedite definitive care. However, the reduced ambient pressure (hypobaria) that occurs during aeromedical evacuation worsens outcomes for TBI patients. Myeloperoxidase is secreted by various inflammatory cells and plays a key role in neuroinflammatory processes. When MPO is released in excess, it can result in cytotoxic effects of surrounding normal tissues and lead to

chronic inflammation. This study aims to examine the effects of hypobaria in a distinctly different rat model of polytrauma consisting of under-vehicle blast combined with mild TBI induced by controlled cortical impact (CCI). Adult rats were secured within restraints to the top of a metal plate and an explosive was detonated beneath the plate, generating a vertical hyper-acceleration of approximately 1800 G force. Rats were anesthetized and mild TBI was induced via CCI. 24 hours later, rats were exposed to simulated aeromedical evacuation under normobaric (sea level) or hypobaric (equivalent to 8000 feet altitude) conditions where the oxygen concentration was adjusted to normoxic (21 or 28%) conditions for 6 hours. Anesthetized rats were then euthanized by perfusion with paraformaldehyde at 2 or 14 days post-injury. Perfused brain sections were immunostained using antibodies against MPO, a marker of neutrophil and astrocyte infiltration. MPO positive cells were classified into neutrophils, perilesional astrocytes, and penumbral astrocytes and then stereologically quantified using a Zeiss AxioImager 2 motorized microscope. There was a two-fold increase in neutrophils at 2 days which returned to sham levels by 14 days in both hypobaric and normobaric conditions. There was a seven-fold increase in perilesional astrocytes at 2 days as well which was not significantly different from shams at 14 days. These results show that blast polytrauma induces acute MPO mediated neuroinflammation at 2 days post-injury that is not further exacerbated by exposure to hypobaria.

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O.35

PREFRONTAL CORTEX ACTIVATION PREDICTS IMPULSIVENESS IN CHILDREN WITH SLEEP-DISORDERED BREATHING. Nidhi Mathew*, Ali Jounghani[1], Kevin Pereira[2], Heather Bortfield[1], and Amal Isaiah[2], [1]Division of Cognitive and Information Sciences, University of California Merced School, Merced, CA, and [2]Department of Otorhinolaryngology - Head and Neck Surgery, University of Maryland School of Medicine, Baltimore, MD.

Pediatric Sleep Disordered Breathing (SDB) is associated with numerous cognitive and behavioral consequences in young children such as impulsivity and deficits in inhibitory control. The dysfunction is theorized to be a result of structural and functional changes in the prefrontal cortex (PFC), and this underlying mechanism required further verification. A prospective study was conducted on children with and without SDB between the ages of 5-14 to further investigate the role of the PFC in mediating such neurobehavioral changes. The participant's response inhibition was assessed through a Go-No-Go task, in which the children were asked to respond to the "go" stimuli and withhold responses during a "no-go" stimuli. During these blocks, hemodynamic activation in the brain was measured through functional near infrared spectroscopy (fNIRS) by assessing changes in the oxyhemoglobin (HbO) levels. The Behavior Rating Inventory of Executive Function (BRIEF) scores for subjects were calculated based on parent-reported behavior. In the cohort of 24 children, (aged 7.2±2.8, 12 Male, 12 Female), children with SDB showed significantly lower accuracy on the Go-No-Go task (87.5±12.2%) when compared with children without SDB (75.2±15.1%). Additionally, the fNIRS-derived HbO contrast between the Go and Go-No-Go blocks predicted the accuracy on No-Go trials when measured within 5 regions of the PFC (Pearson's r=0.40-0.52; P=0.007-0.03) regardless of SDB presence. Weaker correlations were also found with various domains of BRIEF(r=0.38-0.56; P=0.02-0.50). Thus, this study identified a strong relationship between hemodynamic activation in the PFC and accuracy on Go-No-Go tasks. The preliminary results presented here suggest the potential for fNIRS as an assessment of SDB neurobehavioral morbidity and a potential marker for the reversal of changes through treatment of the disease.

O.36

ANTITHROMBOTICS AND STROKE SURVIVAL IN PATIENTS WITH CONCURRENT BLUNT CEREBROVASCULAR INJURY AND TBI. William Kelley*, Deborah Stein[1], Thomas Scalea[1], and Margaret Lauerman[1], [1]Division of Critical Care and Trauma, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

Blunt cerebrovascular injury (BCVI) with concurrent traumatic brain injury (TBI) presents a conundrum for clinicians due to increased risk of both ischemic stroke and bleeding. We aimed to better understand the effect of antithrombotic treatment following BCVI on the timing of strokes in these patients, given the time-dependent nature of TBI bleeding complications. We hypothesized that antithrombotics would be associated with fewer and later strokes in patients with BCVI and TBI. Patients with BCVI and TBI were selected from a database of BCVI patients previously obtained for an observational trial. TBI was defined as head Abbreviated Injury Scale (AIS) > 0. A Kaplan-Meier survival analysis and log-rank test were performed comparing those who received antithrombotics prior to stroke or discharge without stroke to those who did not. 488 patients were included; 347 received antithrombotic therapy and 141 received no antithrombotic therapy prior to stroke or discharge. Patients who were not given antithrombotics had significantly worse TBI (mean head AIS 3.6 vs. 2.6, $p<.001$), BCVI grade (grade I-V 32.6, 31.2, 12.1, 17.0, 1.4 percent respectively vs. 42.9, 26.8, 11.5, 16.1, 0.0 percent respectively, $p=.05$), Injury Severity Score (mean 33 vs. 22, $p<.001$), and motor Glascow Coma Score (mean 1 vs. 6, $p<.001$) at admission than those who were given antithrombotics. Antithrombotics were associated with lower stroke rate (17/347 4.9% vs. 15/141 24.1%, $p<.001$) and longer stroke-free survival ($p<.001$). Glasgow Outcome Scale (mean 2 vs. 4, $p<.001$), and overall mortality (46.1% vs. 7.2%, $p<.001$) were also worse in the non-antithrombotics group. The vast majority received only antiplatelet treatment over their hospital stay (279/347, 80.4%), while 22 patients (6.3%) received an anticoagulant and 46 patients (13.3%) received both antiplatelet and anticoagulant therapy. No patients experienced worsening TBI as a result of antithrombotic treatment. Multivariate regression showed that the observed survival benefit in those treated with antithrombotics was likely due to differences in systolic BP and antiplatelet treatment, not treatment timing or BCVI grade.

O.37

RETROSPECTIVE REVIEW OF PEDIATRIC 1ST METACARPAL FRACTURES: EPIDEMIOLOGY, OUTCOMES, COMPLICATIONS. Lindsay Kohan*, Catherine May[1], and Joshua Abzug[1], [1]Division of Pediatrics, Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

The treatment and outcomes surrounding first metacarpal fractures have been well documented in adults but there is limited literature pertaining to these fractures in the pediatric population. The purpose of this study was to assess the epidemiology, treatment, and outcomes of pediatric and adolescent first metacarpal fractures. A retrospective review was performed to identify all pediatric and adolescent patients treated for a first metacarpal fracture over a 13-year period. Patient demographics, mechanisms of injury, fracture pattern, immobilization type, immobilization length, length of follow-up, patient outcomes, and complications were recorded. Simple statistical analysis was performed. 58 patients with an average age of 11.9 years (SD: 3.1 Range: 1-17 years) were identified. 72% (N=42) of patients were male. The most common mechanism of injury was sports participation (N=20), followed by a fall (N=16), and an altercation (N=11). The average time from initial injury to evaluation was 8.1 days (SD: 8.7; Range:1-42 days). The most common fracture location was the metacarpal base (N=22; 38%) and 13 (22.4%) patients had concomitant injuries. Of the 58 patients, 53 (91.4%) were treated non-operatively with immobilization for an average of 29.9 days (SD: 8.0). Five (8.6%) patients were treated operatively, three with a CRPP and two with ORIF. The average time to removal of hardware was 30.6 days (SD: 1.8). Of the 55 patients with sufficient follow-up data, one (1.8%) patient was noted to have a complication which was persistent thenar pain

that resolved with formal therapy. The average time to return to activity was 31.2 days (SD:10.8). The vast majority of pediatric and adolescent first metacarpal fractures can be successfully managed through non-operative means with minimal complications expected. When surgical intervention is warranted, excellent outcomes can be expected. Further studies assessing pediatric first metacarpal fractures treated operatively and their associated complications are warranted.

O.38

MODIFIED FRAILTY INDEX HELPS PREDICT MORTALITY AND AMBULATION IN PATIENTS WITH CHRONIC KIDNEY DISEASE FOLLOWING MAJOR LOWER EXTREMITY AMPUTATION. Maria Som*, Natalie Chao[1], Allison Karwoski[1], Luke Pitsenbarger[1], Nora Dunlap[2], and Khanjan Nagarsheth[2], [2]Division of Vascular, [1]Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

Major lower extremity amputation (LEA) is associated with high rates of morbidity and mortality at 1-year in up to 50% of patients. Frailty has also been linked to adverse postoperative events in vascular surgery. This study examines if the modified frailty index (mFI) predicts outcomes such as mortality, ambulation, prosthesis use, re-amputation, hospital re-admission, and follow-up after major LEA. Data from patients who underwent major LEA from 2015 to 2022 at a large tertiary care referral center was collected retrospectively. Patients were stratified into 2 risk groups based on the 5 item mFI: non-frail (mFI<3) and frail (mFI≥3). Outcome analyses were performed using chi squared analyses. Our sample consisted of 382 patients who underwent major LEA, of whom 179 (46.9%) received below knee amputations, 113 (29.6%) received above knee amputations and 40 (10.5%) received through knee amputations. The mean mFI was 1.78 with 89 (23.4%) patients defined as frail and 292 (76.6%) defined as non-frail. Frail and non-frail patients differed significantly on mortality at 1 year ($p<0.001$) but did not differ on ambulatory status, re-amputation, follow up, or re-admission. In patients with chronic kidney disease (CKD, n=125, 32.7%), frail and non-frail patients differed significantly on mortality at 1 year ($p=0.023$), ambulation ($p=0.010$), and prosthesis use ($p=0.047$). Meanwhile in patients without chronic kidney disease (CKD), frail and non-frail patients did not differ on outcomes. In patients with history of psychiatric illness, frail and non-frail patients did not differ. However, in patients with no history of psychiatric illness, frail and non-frail patients differed on hospital re-admission at 30 days ($p=0.029$) and 90 days ($p=0.011$), mortality at 1 year ($p<0.001$), and ambulatory status ($p=0.045$). In conclusion, frailty as measured with the mFI predicted mortality at 1-year after major LEA. The mFI was also a valuable predictor of post-amputation ambulatory status, prosthetic use, and hospital readmission in patients with chronic kidney disease and no history of psychiatric illness.

O.39

EFFECTS OF PERIOPERATIVE VIDEO EDUCATION ON PATIENT POSTOPERATIVE NARCOTIC USE. Cameron Lingenfelter*, Lauren Sands*, Mohit Gilotra[1], Kevin Wendeu-Foyet[2], and Evan Honig[2], [1]Division of Shoulder and Elbow Surgery, [2]Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

Total Shoulder Arthroplasty (TSA) and rotator cuff repairs are indicated in the management of a diverse array of shoulder pathologies. To optimize outcomes, shoulder slings are used to immobilize the affected upper extremity during the acute phase of healing. Recent research has assessed the financial and social factors that impact patient adherence to orthopedic care plans, finding that socioeconomic deprivation is associated with an increased risk of suboptimal fracture care compliance. Ongoing studies performed by the Gilotra et al. research group have identified patient assistance at home and the extent of patient understanding of sling importance to be predictive factors in sling wear time (Gilotra, Addona, Livesey, Weir). Our specific aim over the summer of 2022 was to conduct an RCT assessing the impact of video education on patient understanding of post-operative narcotic use, as measured by a Recollection of Post-Operative Care (RPOC) survey. The survey asks

two key questions: "How many narcotic pills were you expected to take in the first 2 weeks?" and "How many narcotic pills did you actually take in the first 2 weeks?" Twenty post-operative patients completed study protocols. Compared to the control group, study group patients report being expected to take fewer narcotics during the two-week postoperative period at both two-weeks (P=0.024). At six weeks, the patients recalled being expected to take fewer narcotics during the first two weeks postoperatively (P=0.014). Treatment group patients reported actually consuming a significantly lower number of narcotics at two weeks (P=0.034) when compared to the control group. Interestingly, although the two patient treatment groups display statistically significant differences in the number of narcotic pills that they consumed at two-weeks, there is no significant difference in VAS pain score at two-weeks (P=0.676). Though preliminary in nature, these analyses suggest that patients who viewed the perioperative education video perceive that they are expected to take fewer narcotics at two weeks and six weeks, and ultimately report taking fewer narcotics at 2-weeks; there is no difference in the groups' pain scores. Our study suggests that educational videos may be an important piece of holistic pain management after elective orthopaedic procedures.

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O.40

FREQUENCY AND CHARACTERISTICS OF LABRAL INJURIES IN OPERATIVE ACETABULAR FRACTURES. Shirin Parsa*, Maria Som*, Nathan O'Hara[1], M. Gerard-Paul Slobogean[1], and Robert O'Toole[1], [1]Division of Trauma, Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

Acetabular fractures are challenging injuries with a significant portion of patients having unsatisfactory outcomes requiring conversion to total hip arthroplasty. This study was performed to identify the frequency and characteristics of labral injuries and other soft tissue pathology in operatively treated acetabular fractures. This was a prospective observational cohort completed at a Level I trauma center. Study subjects included patients with an acetabular fracture treated with open reduction internal fixation (ORIF) through a posterior approach. Injury features were prospectively collected, including the frequency of femoral head cartilage lesions, marginal impaction, osteochondral fragments, gluteus minimus injury, posterior wall comminution, contusion of the sciatic nerve, posterior labral injury and characteristics, and joint capsule detachment. The main outcome measurement was frequency of associated labral injuries and other soft tissue pathology. Of the sample, 53 of 71 acetabular fractures (75%) demonstrated a labral injury. Labral injuries most commonly represented a detachment of the posterior inferior labrum (n = 38, 78%). Fractures with a labral injury had a higher frequency of gluteus minimus damage (92% vs. 61%) and fracture patterns involving the posterior wall (89% vs. 50%). Fracture dislocations and detachment of the joint capsule were also associated at a trend level (62% vs. 33%, 60% vs. 33%). In conclusion, labral injuries may have clinical implications and warrant further investigation to assess the relationship with patient outcomes.

This research was supported by funding from AO Trauma North America.

O.41

A RETROSPECTIVE COHORT STUDY OF LATARJET SHOULDER SURGERY: TWO-YEAR PREDICTORS OF IMPROVED OUTCOMES AND PROMIS PHYSICAL FUNCTION. Antoan Koshar*, Evan Honig[1], and R. Frank Henn III[2], [2]Division of Sports Medicine, [1]Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

Anterior shoulder instability is a common orthopedic pathology that often requires surgical stabilization. The Latarjet procedure stabilizes the anterior aspect of the shoulder to prevent instability. No prior studies have investigated the utility of the Patient-Reported Outcomes Measurement Information System (PROMIS) in a strictly Latarjet population. The purpose of this study was to

identify independent predictors of better outcomes and improvement from baseline PROMIS Physical Function (PF) scores. We hypothesized that PROMIS PF would significantly improve postoperatively and be significantly associated with baseline functional status and socio-demographic factors. A cohort of 68 Latarjet patients were consented and enrolled into the Maryland Orthopedic Registry (MOR). 44 patients completed questionnaires prior to surgery and again two years postoperatively including PROMIS in six domains (PF, Pain Interference (PI), Social Satisfaction (SS), Fatigue, Anxiety, and Depression), Musculoskeletal Outcomes Data Evaluation and Management System (MODEMS) expectations domain, Marx Activity Rating Scale (MARS), Tegner Activity Scale (TAS), and the American Shoulder and Elbow Surgeons (ASES) assessment. Mean PROMIS PF improved from 45.7 to 55.9 two years following Latarjet shoulder surgery ($P < 0.0001$). Greater two-year PROMIS PF was significantly associated with younger age, less comorbidities, greater education, employment status, prior injury, and lower ASA score and improvement in PF with prior injury. Greater postoperative PROMIS PF was associated with better preoperative PROMIS PF, PI, and Fatigue and MARS. More improvement from baseline was associated with better preoperative PROMIS SS and TAS. Multivariable analysis adjusting for confounding identified inability to work, lack of prior shoulder injury, and greater baseline PROMIS PI as independent predictors of worse two-year PROMIS PF. Independent predictors of greater improvement from baseline were prior injury and lower baseline PROMIS SS. To our knowledge, this study analyzed the largest cohort of Latarjet surgeries examining PROMIS PF to determine preoperative predictors of Latarjet outcomes.

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O.42

EVALUATION OF INTRAOPERATIVE SUBJECTIVE STABILITY TESTING IN REVERSE TOTAL SHOULDER ARTHROPLASTY ACCORDING TO LEVEL OF PHYSICIAN TRAINING. Lauren Sands*, Andrew Tran[1], Cameron Lingenfelter[2], and Mohit Gilotra[3], [3]Division of Shoulder and Elbow, [1]Department of Orthopaedics, [2]University of Maryland School of Medicine, Baltimore, MD.

Reverse total shoulder arthroplasty (RTSA) is an increasingly popular shoulder surgical procedure which allows for active elevation and stability, despite an insufficient rotator cuff, through the stable fulcrum of the tensioned deltoid muscle. Patients who undergo RTSA generally show long term improvement, but possible post-operative complications include pain, loss of motion, and prosthetic instability. Soft tissue compressive forces, which are primarily achieved through the deltoid, are thought to contribute to the stability of RTSA. In fact, most cases of early instability can be attributed to inadequate tissue tension from inaccurate component size or component malposition. Thus, optimizing the elasticity of the deltoid in RTSAs would prove beneficial for reducing prosthetic instability. Intra-operative assessment of deltoid tension remains subjective and there are currently no non-invasive methods for objectively assessing deltoid elasticity and tension intraoperatively during a RTSA. Instead, proper implant size is determined by several manual tests, as no test alone is inherently accurate in assessing stability. Therefore, this prospective cohort study sought to objectively evaluate the accuracy of physicians at varying levels of training in determining relative implant size with subjective intraoperative manual testing during RTSAs. For each patient, either an attending, junior resident, or senior resident was tasked with exchanging several randomly determined sizes of the spacer portion of the implant, while the other two physicians were blinded to these varying sizes. The blinded evaluators completed three trials of subjective manual tests to assess if the implant size was larger, smaller, or the same as compared to a standard. At the present date, data has been collected on 7 patients, with the aim to complete trials on a total of 10 patients. Preliminary data seems to suggest a weak correlation between the number of years of training and the ability to accurately determine the correct implant size, although this is limited by our small sample size. This demonstrates the need for

further work in the field to develop a more objective method of assessing proper implant sizing intraoperatively based on deltoid tension.

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O.43

THE IMPACT OF NEIGHBORHOOD SOCIOECONOMIC STATUS, RACE AND ETHNICITY, AND LANGUAGE ON PRENATAL DIAGNOSIS OF CONGENITAL HEART DISEASE. Maria Gianelle*, Shifa Turan[1], Jamie Mech[1], and Alicia Chaves[2], [1]Department of Obstetrics, Gynecology and Reproductive Sciences and [2]Division of Pediatric Cardiology, Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD.

Congenital heart disease (CHD) is the most prevalent birth defect. This study aimed to assess whether prenatal diagnosis (PD) of CHD and time of the diagnosis are associated with maternal race, ethnicity, neighborhood SES, and language. In this retrospective cohort study, we analyzed data on 163 patients who underwent surgical intervention for CHD within 30 days of birth between 2011 and 2020 at the University of Maryland Children's Hospital. A neighborhood SES score was calculated using the mother's address at time of discharge and 6 SES variables from US Census block group data with a previously published method by Diez Roux, et al. Neighborhood SES did not impact the likelihood of receiving a PD of CHD; however, patients of Latino ethnicity were 3.2 times and non-English preferred language patients were 5.1 times more likely to not receive a PD. Patients whose preferred language was a non-English language received a prenatal diagnosis 5.3 weeks later, resulting in the PD being made in the third trimester rather than the second. Patients from the highest quartile SES received an earlier prenatal diagnosis, although this association was less significant when controlling for insurance type and preferred language. Significant disparities in PD of CHD were seen in patients of Latino ethnicity and patients who prefer non-English language. Better understanding of the root causes of these disparities will be important to guide interventions to reduce these disparities.

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O.44

CHRONIC KIDNEY DISEASE PREDICTS GREATER 5-YEAR MORTALITY FOLLOWING MAJOR LIMB AMPUTATION. Luke Pitsenbarger*, Maria Som[1], Natalie Chao[1], Eyerusalem Workneh[1], Nora Dunlap[2], and Khanjan H. Nagarsheth[2], [2]Division of Vascular, Department of Surgery, [1]University of Maryland School of Medicine, Baltimore, MD.

Several studies have demonstrated that End-Stage Renal Disease (ESRD) predicts greater mortality after major lower extremity amputation (MLEA). However, it remains poorly understood whether this finding extends to patients with earlier stages of Chronic Kidney Disease (CKD). We aimed to assess outcomes for patients with any stage of CKD in a retrospective chart review of all patients who underwent MLEA at a large tertiary referral center from 2015 to 2022. Adults with below-knee, through-knee, or above-knee amputations were included. Patients were stratified by renal dysfunction: None, Mild (CKD1 & 2), Moderate (CKD3a and 3b), or Severe (CKD4 or 5 or ESRD on dialysis). Outcomes were compared with Chi-Square bivariate analysis followed by multivariable Cox regression and Kaplan-Meier analysis. All tests were two-tailed with a significance threshold of $p < 0.05$. The study included 398 patients with a mean postoperative survival time of 39 ($\pm$ 26) months. CKD diagnoses were present preoperatively in 139 patients (34.9 %) including 80 patients (20.1 %) with ESRD. More advanced stage of CKD was associated with preoperative diagnoses of Diabetes Mellitus, Hypertension, Hyperlipidemia, Peripheral Vascular Disease, Coronary Artery Disease, Heart Failure, and Opiate Abuse. More advanced stage of CKD was also associated with more frequent postoperative Acute Kidney Injury as well as less 1-year follow-up and greater 1- and 5-year mortality. Kaplan-Meier analysis showed less 5-year survival for patients with any stage of CKD (62%) compared to patients without CKD (81%; $P < 0.001$). Greater 5-year mortality was independently

predicted by moderate CKD (hazard ratio (HR) 2.37, 95% CI: 1.14-4.94, P = 0.02) as well as severe CKD (HR 2.09, 95% CI: 1.24 - 3.51, P = 0.005). These findings demonstrate that more advanced stage of CKD is associated with greater long-term mortality following MLEA. Further, even when controlling for the associations between CKD and many comorbidities, moderate and severe CKD remain significant predictors of greater long-term mortality. These findings highlight the importance of early diagnosis and treatment of CKD for improving both patient outcomes and health expenditures.

O.45

EARLIER CLOSURE OF GUILLOTINE MAJOR LOWER EXTREMITY AMPUTATION IS ASSOCIATED WITH SHORTER HOSPITAL LENGTH OF STAY WITHOUT INCREASED RISK OF POST-AMPUTATION INFECTIONS. Eyerusalem Workneh*, Allison Karwoski[1], Natalie Chao[1], Luke Pitsenbarger[1], Nora Dunlap[2], and Khanjan Nagarsheth[2], [2]Division of Vascular, [1]Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

Staged surgery with open guillotine amputation (OGA) prior to a definitive major lower extremity amputation (LEA) has been shown to be effective for sepsis control and improving wound healing. Studies have evaluated postoperative complications including infection rate, return to operating room for re-amputation, and amputation failure following OGA. However, the role of timing to close OGA for predictive outcomes remains poorly understood. We aim to assess outcomes of LEA related to time of OGA closure. Data from patients who underwent major LEA from 2015 to 2021 was collected retrospectively. Inclusion criteria were below knee amputations, through knee amputations, or above knee amputations performed at a large tertiary care referral center. Next, patients who had OGA for emergent control of sepsis and removal of infected tissues, were selected out. Patients who died before amputation closure were excluded. Post-amputation outcomes, including wound infection, sepsis, length of stay (LOS), postoperative ambulation, and 30-day mortality were reviewed. Univariate and multivariate analysis was performed to assess outcomes. Statistical significance was set at $p < 0.05$. 407 patients underwent major LEA, of whom 268 (65.8%) were male and 166 (40.8%) were white. Of that, 158 patients underwent OGA for source control. The time of closure (TOC) ranged from 1-33 days with a median TOC of 4 days (IQR from 3 to 7). The LOS ranges from 3-205 days with a median of 15 days (IQR from 10 to 22). Patients with early closure ($\leqslant$ 4 days) had significantly shorter LOS ($\leqslant$15 days of LOS) compared to patients with late closure (> 4 days) (62.5% vs 35.7%, P< 0.001). There was no difference in post-amputation surgical site infection (35.2% vs 47.1%, P = 0.130), sepsis (9.1% vs 15.7%, P=0.204), post-operative ambulation (55.8% vs 58.0%, P= 0.788), or 30-day mortality (4.5% vs 7.1%, Likelihood ratio = 0.486) between time to close groups. Earlier closure of open guillotine amputation is associated with shorter hospital length of stay. Additionally, there is no significant relationship between TOC and post-operative morbidity, rates of ambulation, or 30-day mortality. In an era of limited resources and hospital beds, these findings suggest earlier closure may contribute to shorter hospital stays with no negative impacts on outcomes.

O.46

CASE REPORT: DIRECT AORTIC ACCESS FOR ENDOVASCULAR THORACOABDOMINAL ANEURYSM REPAIR USING A BIFURCATED ENDOGRAFT AS A BRANCHED DEVICE. Jeffrey Lu*, Shahab Toursavadkohi[1], and Michael Hall[1], [1]Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

Aortic aneurysms (AA) are a common complication in patients with large-vessel vasculitis, such as late phase Takayasu Arteritis (TA), that often requires surgical management to prevent a lethal rupture. Historically, mainstay of treatment of AA in the setting of arteritis was traditional open repair. However, in this case study an alternative surgical approach was devised to successfully treat an extent III thoracoabdominal aortic aneurysm (TAAA) in a patient with a diagnosis of TA and a complex surgical history that made her high risk for an open surgical intervention. This case study will

summarize a hybrid surgical approach to successfully exclude a TAAA and revascularize the superior mesenteric artery and left renal artery by directly accessing the infrarenal aorta and using a bifurcated abdominal aortic endograft as a two-vessel branched device.

O.47

POST-OPERATIVE OUTCOMES FOLLOWING MAJOR LOWER EXTREMITY AMPUTATIONS ARE DEPENDENT ON SURGICAL SERVICE LINE AND PATIENT FRAILTY. Allison Karwoski*, Eyerusalem Workneh[1], Maria Som[1], Luke Pitsenbarger[1], Eleanor Dunlap[2], and Khanjan Nagarsheth[2], [2]Division of Vascular, [1]Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

Multiple surgical disciplines are capable of performing and managing urgent or emergent major lower extremity amputations (LEA). It is established that outcomes for this patient population are quite variable based on comorbid conditions and frailty. This study seeks to determine if the primary surgical service performing major LEA affects re-amputation rates, ambulation status, or mortality-based outcomes. We conducted a retrospective chart review of 464 patients who received major lower extremity amputations at our institution between November 2015 and October 2021. Frailty was calculated with the 5-factor modified Frailty index (mFI-5) and patients were categorized into frail or non-frail. Post-amputation outcomes including post-operative ambulation with prosthesis, 30-day and 1 year re-amputation, and 30-day and 1 year mortality were recorded and compared between vascular, orthopedic, and trauma surgery services. Statistical analysis was performed for outcome measures and p-value of < 0.05 was considered significant. Vascular surgeons performed 219 cases (51.4%), orthopedic surgeons performed 75 cases (17.6%), and trauma surgeons performed 132 cases (31%). Open, or guillotine amputations were performed by all services evaluated. There were 361 non-frail patients in this cohort. Within the non-frail group, 68% of trauma surgery patients got re-amputated in 30 days, followed by 61% of orthopedic surgery patients, and 58.7% of vascular surgery patients ($p<0.001$). Orthopedic surgery had the highest rates of patients who achieved post-operative ambulation with a prosthesis, followed by vascular surgery, and trauma surgery (68.3% vs. 35% vs. 33.7%, $p<0.001$). There were no differences between surgical specialties in 30-day and 1 year mortality and 1 year re-amputation. There were no differences between surgical specialties in 30-day and 1 year mortality, 30-day and 1 year re-amputation, and post-operative ambulation with a prosthesis in the 103 frail patients.

In non-frail patients, the surgical specialty performing the lower extremity amputation had an effect on post-operative outcomes. In frail patients, post-operative outcomes were dependent on comorbid conditions more so than surgical service.

O.48

A CROSS-SECTIONAL ANALYSIS OF AMERICAN INSURANCE COVERAGE OF ENDOVENOUS LASER ABLATION FOR GREATER & LESSER SAPHENOUS VARICOSE VEINS. Chinenye Onyima*, Nicholas Hricz[1], Roland Zama[2], Michael Ha[1], and Yvonne Rasko[1], [1]Division of Plastics Surgery, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD and [2]Department of Surgery, Georgetown University School of Medicine, Washington, DC.

Varicose veins are enlarged and twisted veins that result from low functioning venous valves, with the greater and lesser saphenous vein being some of the most commonly affected. In severe cases, they can cause both psychosocial concerns and physical manifestations including skin discoloration, wounds, and burning sensations. These symptoms can be managed with endovenous laser/radiofrequency ablation, which are variably covered. The authors assessed insurance coverage of all indications of endovenous laser/radiofrequency ablation and their medical necessity criteria. A cross-sectional analysis was conducted of 57 insurance policies for endovenous laser/radiofrequency ablation. The insurance companies were selected based on greatest state enrollment and market share.

A web-based search and telephone interviews were utilized to identify the policies. Medically necessary criteria were then extracted from the publicly available policies. Of the 57 insurance policies assessed, 36 (63.2%) provide coverage for endovenous radiofrequency or laser ablation. There were six indications for coverage, the most common being the demonstration of valvular reflux (n=28, 77.7%). Of the 28 companies that indicated coverage for valvular reflux, 19 (52.8%) specifically required saphenous reflux. Significantly more companies required saphenous reflux vs other specified types of valvular reflux (52.8% vs 8.3%, $p<0.001$ for saphenous vs junctional reflux and 52.8% vs 16.7%, $p=0.003$ for saphenous vs nonspecific). There is a great discrepancy in insurance policy criteria for coverage of endovenous laser/radiofrequency ablation for the treatment of varicose veins, especially regarding the requirements for valvular reflux.

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O.49

THE USE OF EXTRACORPOREAL MEMBRANE OXYGENATION FOR COVID-19 IS NOT ASSOCIATED WITH IMPROVED PULMONARY FUNCTION OR 6-MINUTE WALK TESTS AT FOLLOW UP. Mackenzie Snyder*, Binta Njie[1], Hatoon Abbas[2], Noel Britton[3], and Andrea Levine[4], [2]Division of Pulmonology and Critical Care Medicine, Department of Medicine, [1]University of Maryland Medical System, and [3]Division of Pulmonology and Critical Care, Department of Medicine, Johns Hopkins University, and [4]Division of Pulmonology and Critical Care, Department of Medicine, University of Maryland School of Medicine, Baltimore, MD.

Veno-venous extracorporeal membrane oxygenation (ECMO) is a salvage therapy for patients with severe hypoxemic respiratory failure. The overall mortality benefit remains debated and little is known about the long-term recovery of ECMO survivors. This study aims to examine long-term functional outcomes in COVID-19 patients who were managed using ECMO compared to patients who required ICU care but did not receive ECMO. We performed a multi-center retrospective cohort study of adult patients admitted to the ICU or cannulated for Veno-Venous ECMO for COVID-19 who then presented to the Post-ICU follow up clinic between April 1, 2020 and September 1, 2022. We performed nonparametric comparisons of categorical variables using Chi Square tests or Fisher's Exact test and of continuous variables using Wilcoxon Rank Sum tests. We used both univariate and linear regression to assess the relationship between ECMO and our primary outcomes: pulmonary function tests (PFTs) and six-minute walk test (6MWT). A total of 43 COVID-19 patients were analyzed; 17 received VV-ECMO and 26 were in the ICU but did not receive ECMO (non-ECMO). The median age of the ECMO patients was 43 compared to 51 years old for the non-ECMO patients ($p=0.02$). Patients in the ECMO group had a higher Sequential Organ Failure Assessment (SOFA) score. The median length of hospitalization, ICU stay, and days of mechanical ventilation were significantly longer for the ECMO group compared to the non-ECMO group. There was a significant reduction in the FVC % predicted in the ECMO group (66.4%) compared to the non-ECMO group (82.0%), but no other significant differences in PFTs or 6MWT. ECMO use was associated with a 13% reduction in the predicted TLC when compared to the non-ECMO group ($p=0.04$). When adjusting for age and SOFA score, ECMO use did not predict any significant changes in the PFTs or 6MWT compared to the non-ECMO group. Our findings suggest that there are no significant differences in lung function or 6MWT when comparing COVID-19 ICU patients to COVID-19 ECMO patients. However, patients who were managed with ECMO have longer hospital and ICU stays and a longer duration of mechanical ventilation.

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O.50

PULMONARY FUNCTION ASSOCIATED WITH SYSTEMIC METAL EXPOSURE IN VETERANS WITH TOXIC EMBEDDED METAL FRAGMENTS. Emma Lawrence*, Joanna

Gaitens[1], Clayton Brown[2], Danielle Glick[3], Melissa McDiarmid[1], and Stella Hines[1], [1]Division of Occupational and Environmental Medicine, Department of Medicine, [2]Division of Biostatistics and Informatics, Department of Epidemiology and Public Health, and [3]Division of Pulmonary and Critical Care, Department of Medicine, University of Maryland School of Medicine, Baltimore, MD.

Veterans deployed to Southwest and Central Asia since 9/11 have increasingly reported respiratory symptoms and unusual conditions such as constrictive bronchiolitis. Inhalational injury has been associated with respiratory symptoms and histologic lung changes; however, the effect of systemic metal exposure, including metals released from embedded fragments incurred from shrapnel injuries, on lung function, is relatively unknown. We hypothesized that veterans with higher urine metal content will have different pulmonary function test (PFT) values when compared to those with lower urine metal content. Veterans drawn from the US Department of Veterans Affairs' (VA) Toxic Embedded Fragment (TEF) registry at six VA medical centers completed medical history and exposure questionnaires, along with PFT and spot urine collection, between 2018 and 2020. PFT outcomes included forced vital capacity (FVC), forced expiratory volume in 1 second (FEV1), total lung capacity (TLC), functional residual capacity (FRC), residual volume (RV), and the diffusion capacity for carbon monoxide (DLCO). Urine samples were analyzed for 13 metals commonly found in fragments or known to cause adverse pulmonary effects. We characterized creatinine-adjusted urine metal concentration as "normal" or "elevated" based on established reference ranges. Veterans with elevation in one or more metals were characterized as exposed. PFT outcomes in exposed veterans were compared to unexposed veterans with no urinary metal elevations. Associations were further adjusted for demographics, occupational exposures, and smoking using linear regression. 369 veterans completed assessments. Most participants were white (63%), male (96%), and approximately half had ever smoked. 24.4% of veterans had elevated metal content detected in their urine. There were no significant differences in FVC, FEV1, FEV1/FVC, TLC, FRC, RV, or DLCO in metal-exposed veterans compared to unexposed veterans. Elevated levels of urinary metals, as a reflection of systemic metal exposure, does not appear to influence lung function, as quantified by PFTs, among post-9/11 veterans with TEFs at the concentrations observed in this population.

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O.51

PULMONARY CONTUSION: AUTOMATED QUANTITATIVE VISUALIZATION WITH DEEP LEARNING. Nathan Sarkar*, Peter Campbell[1], Udit Khetan[1], Mustafa Khedr[1], and David Dreizin[2], [2]Department of Diagnostic Radiology and Nuclear Medicine, [1]University of Maryland School of Medicine, Baltimore, MD.

Pulmonary contusions are a common computed tomography (CT) finding in thoracic trauma, and previous reports have shown that the extent of pulmonary contusion, measured semi-automatically, is an independent risk factor for the development of Acute Respiratory Distress Syndrome (ARDS). Rapid fully-automated quantitative visualization of pulmonary contusion is needed for point of care use. This study aims to 1) train and validate a deep learning (DL) model for segmenting pulmonary contusion and 2) assess the relationship between volume of pulmonary contusion and ARDS. Patients with pulmonary contusion (n=302) were identified from reports between 2016-2021. The pulmonary contusion volume was then manually segmented. This segmentation data was used to train nnU-net, a state-of-the-art ensemble DL method in five-fold cross-validation. Clinical data was obtained from the medical record. Criteria for exclusion from the clinical analysis included absence of records sufficient to determine ARDS status, and catastrophic head injury. Volumes were divided into quartile ranges. Mean ground-truth volume was 757 mL (range: 4-6633 mL). Volume Similarity Index and mean Dice score were 0.82 and 0.67. Interclass correlation coefficient, Pearson r, and Bland-Altman mean bias (manual minus automated) were 0.90, 0.91, and 60.5 mL. Of the 280 patients included in the clinical analysis, 38 patients developed ARDS. Automated contusion volume was associated with ARDS ($p = 0.003$) and need for mechanical ventilation ($p < 0.0001$). At volumes of 100, 1000, and

3000 mL, % probability of ARDS was 8%, 17%, and 35%. Those in the top quartile (> 891 mL) were 4.4-fold more likely to require mechanical ventilation compared to the bottom quartile (< 95 mL), and required longer ventilator times among mechanically vented patients (p=0.002). Factors also contributing to ARDS development included systolic blood pressure (p=0.02), O2 saturation (p = 0.01), and the injury severity score (ISS) (p < 0.001).

Automated DL-based quantitative visualization of pulmonary contusion yielded reliable results. Patients with higher volumes were at greater risk of ARDS and require longer periods of mechanical ventilation.

O.52

THE VALUE OF DETAILED FIRST-TRIMESTER ULTRASOUND SCREENING IN THE ERA OF NON-INVASIVE PRENATAL TESTING. Nicol Tugarinov*, Grace Lechmann*, Erkan Cagliyan[1], Arica Stockett[2], Kristyn Esteves[1], and Shifa Turan[1], [1]Division of Maternal Fetal Medicine, Department of Obstetrics, Gynecology and Reproductive Sciences, University of Maryland School of Medicine, Baltimore, MD.

Non-invasive prenatal testing (NIPT) is a prenatal screening method developed to utilize the presence of cell-free fetal DNA in maternal blood to detect common fetal aneuploidies. Before 2020, NIPT was only recommended for advanced maternal age and those with risk factors for a complicated pregnancy. In 2020, however, the American College of Obstetricians and Gynecologists recommended that NIPT be offered to all pregnant women. Previous data has shown the benefit of combined detailed first trimester ultrasound (FTU) and NIPT testing for positively predicting fetal abnormalities. Despite this, FTU is not a mandated prenatal screening method in all obstetric centers. Our aim is to analyze fetal abnormality findings detected on FTU to determine the added benefit of performing FTU in addition to NIPT. We performed a single site retrospective chart review, collecting electronic medical record data from patients seen at the Center for Advanced Fetal Care at the University of Maryland Medical Center for first-trimester prenatal screening from January 2020 - January 2022. A total of 1,096 pregnancies fit our inclusion criteria. 45 fetuses (4%) had a high risk NIPT. 90 fetuses (8%) had at least 1 abnormal ultrasound finding reported. Of 146 total ultrasound abnormalities detected, 98 were first trimester screening markers or soft markers, involving 59 (5.3%) fetuses. 48 of the ultrasound abnormalities were structural defects, involving 31 (2.8%) fetuses. The most common screening marker detected was an absent nasal bone (28%). The most common structural defect was cardiac in nature (11.6%). Overall, 116 fetuses were screened high risk either by NIPT (n=26), FTU (n=71), or both NIPT and FTU (n=19). In summary, the incorporation of FTU screening findings identified 71 additional fetuses (6.3%) that would have otherwise been screened low risk by NIPT alone. Finally, combined FTU and NIPT screening identified significantly more high-risk fetuses than NIPT alone (p<0.0001). FTU remains a valuable screening method that should be used in combination with NIPT in low-risk pregnancies.

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O.53

MASSIVE HYDROCELES AS A PRESENTING SYMPTOM OF NEPHROTIC SYNDROME. Jessica Palmer*, Nicholas Musacchio[1], Gianna Stoleru[1], and Lee-Ann Wagner[1], [1]Department of Medicine, University of Maryland School of Medicine, Baltimore, MD.

The defining features of nephrotic syndrome include proteinuria, hypoalbuminemia, and peripheral edema. The most common presenting symptom in patients is edema, which most frequently affects the lower extremities. We present the case of a 46-year-old male with a history of bilateral hydroceles, hypertension, heart failure, chronic kidney disease, and type II diabetes who presented with subacute, progressive, massive scrotal swelling, found to have increases in his baseline creatinine, with etiology ultimately determined to be nephrotic syndrome. As unique treatments may be targeted

at nephrotic syndrome, it must be considered in the differential for patients with worsening kidney function and edema of any kind.

O.54

MANAGEMENT OF ZYGOMATICOMAXILLARY COMPLEX FRACTURES AT A LEVEL 1 TRAUMA CENTER: RETROSPECTIVE STUDY AND REVIEW OF LITERATURE. Pharibe Pope*, Meryam Shikara[1], Kimberly Oslin[2], Joshua Yoon[3], Kalpesh Vakharia[1], and Natalie Justicz[1], [1]Department of Otorhinolaryngology - Head and Neck Surgery, [2]University of Maryland School of Medicine, Baltimore, MD and [3]Department of Surgery, George Washington University School of Medicine, Washington DC.

Zygomaticomaxillary complex (ZMC) fractures represent the second most common facial fracture pattern behind nasal fractures. Composed of the zygomatic arch, inferior and lateral orbital rims, and the anterior and posterior maxillary sinus walls, ZMC fractures influence facial structure, function, and appearance. The three-dimensional structure of the ZMC makes it difficult to optimally repair, and repair can result in facial asymmetry, injury to the orbit, and numbness. This retrospective review of ZMC fractures aims to identify whether patient demographics, ZMC fractures patterns, and management decisions contribute to patient outcomes after repair of ZMC fractures. We conducted a retrospective review of 165 patients presenting to Shock Trauma Center in 2018-2019 with ZMC fractures. Demographics, medical history, and operative details were collected. Using R (www.R-project.org), Chi-square, Fisher's Exact, Kruskal Wallis, and Wilcoxon Rank Sum Tests, we identified associations between the variables collected. 83% of patients presenting with ZMC fractures were males, and the most common mechanism of injury was assault (27.3%), followed by falls (16.4%) and motor vehicle collision (16.4%). 93% of ZMC fractures were associated with orbital fractures. Of the sample, 57 (34.97%) ZMC fractures were comminuted, and 132 (80.98%) were displaced. Displaced and comminuted fractures were significantly more likely to be operated on. Data for 102 (62%) patients was available on follow-up visits. Among the surgical group, the most common complications were facial edema (30.65%), paresthesia (30.65%), and ocular complications (24.42%). Following observational management, the most common complications were ocular complications (27.5%), paresthesia (15%), and facial edema (12.5%). This study highlights outcomes after surgical and observational management of ZMC fractures.

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O.55

IMPROVEMENTS IN PATIENT THROUGHPUT AFTER CREATION OF AN INTEGRATED MAXILLOFACIAL TRAUMA SERVICE. Seray Er*, Joshua Yoon[1], Cynthia Yusuf[2], Eric Resnick[2], and Michael Grant[3], [1]Department of Surgery, George Washington University Hospital, Washington DC and [3]Division of Plastic and Reconstructive Surgery, Department of Surgery, [2]University of Maryland School of Medicine, Baltimore, MD.

In July 2017, an integrated Maxillofacial Trauma Service (MFTS) at a single-level I trauma center was created incorporating plastic surgery, otolaryngology, oral & maxillofacial surgery, and oculoplastics. This change was implemented to expedite surgical care for facial trauma patients. This study aims to analyze the outcomes and throughput of patients with orbital fractures before and after the creation of the MFTS. A retrospective chart review was conducted of 203 consecutive patients with orbital fractures at the trauma center from 2015 to 2019. Data were collected on demographics, symptoms on presentation, orbital fracture characteristics, surgical characteristics, and follow-up outcomes. Pre- and post-MFTS groups had 74 and 129 patients identified, respectively. There was a significant increase in patients who had a change in surgical service after the MFTS was created ($p=0.012$). Patients with a change in surgical service also had higher injury severity scores on average (19.2 vs. 15.2, $p=0.040$) and a higher likelihood of globe/soft tissue repair ($p=0.005$). Of patients who

had surgery on admission, there was a significant decrease in the average length of stay (10.8 days vs. 4.59 days, p<0.001) and days from initial evaluation to surgery (3.98 vs. 1.93, p<0.034) when comparing pre- and post- MFTS groups. There were no significant differences in follow-up time or postoperative outcomes. Adequate surgical timing is imperative in the management of orbital fractures for the prevention of functional impairment. The creation of an integrated MFTS reduces delays in surgical treatment, and improves patient throughput, without any significant differences in outcomes.

O.56

A RETROSPECTIVE REVIEW OF PROPHYLACTIC PARASPINOUS SOFT TISSUE AND SKIN RECONSTRUCTION. Madeline Brown*, Michael Ha[1], Seray Er[1], Salman Choudhry[2], Richard Smith[3], and Yvonne Rasko[1], [1]Division of Plastic Surgery, Department of Surgery, University of Maryland School of Medicine and [3]University of Maryland School of Dentistry, Baltimore, MD, and [2]Anne Arundel Medical Center, MD.

Complex spinal surgery can create devastating postoperative wound complications, such as hardware exposure, reoperation and potential hardware loss. Paraspinous muscular flaps have been suggested to aid in the wound closure and healing in these patients. Literature has previously shown that muscle flap complication rates have ranged from 19-40 percent, with a reoperation rate of up to 12 percent. In this study, researchers investigated the effectiveness of prophylactic closure of spinal wounds with muscle flaps to improve patient surgical outcomes and management approaches. An institutional review board- (IRB)-approved retrospective study was conducted on 229 patients who underwent paraspinous reconstruction surgery following a complex spinal operation. The surgeries were performed at the University of Maryland Medical Center between August 2011 to April 2022. Patient demographics, clinical profile, procedures, and outcomes at a minimum 90-days post-operatively were statistically analyzed. 145 patients received a prophylactic flap while the remaining 84 patients underwent a salvage flap operation. The mean age was 60.2 and the average BMI was 29.1 with the majority of participants being either overweight (24.8%) or obese (41.4%). The average length of operation time was 8.26 days, however, patients stayed ranged anywhere between 0 and 37 days. Negative pressure wound therapy was used on 131 prophylactic patients (90.3 %). There was a total of 52 readmissions (36.5%) with 20 patients being admitted within a 90-day period from surgery (13.8 %). This data supports the argument that paraspinous flaps are a useful adjunct to complex spinal surgery to aid in would healing.

O.57

FACIAL TRAUMA MANAGEMENT DURING THE COVID-19 PANDEMIC. Suneet Waghmarae*, Saikrishna Gourishetti[1], Meryam Shikara[1], and Kalpesh Vakharia[2], [2]Division of Head & Neck Surgery, [1]Department of Otorhinolaryngology - Head and Neck Surgery, University of Maryland School of Medicine, Baltimore, MD.

Facial trauma is managed with a combination of open and closed treatment modalities; however, the impact of the Covid-19 pandemic on facial trauma management remains uncertain. To determine whether the management of facial trauma varied following the Covid-19 pandemic. A retrospective review of 127 adults at The R Adams Cowley Shock Trauma Center at the University of Maryland between March 2019 and March 2021. Adults were stratified into pre-Covid (before March 2020) and post-Covid groups. Open reduction internal fixation (ORIF) alone, maxillomandibular fixation (MMF) alone, ORIF and MMF, and closed reduction. Of the 127 patients, 66 were treated pre-Covid (52%) and 61 post-Covid (48%). While the prevalence of mandible fractures did not differ (pre-Covid, n=39, 59%; post-Covid, n=42, 69%; p=0.33), the use of MMF alone decreased significantly (pre-Covid, n=9, 23%; post-Covid, n=1, 2%; p=0.005). Among those with condylar fractures, a greater proportion of post-Covid patients underwent ORIF and MMF (n=4, 100%) versus pre-Covid patients (n=2, 15%; p=0.006). In contrast, while the prevalence of displaced nasal bone fractures decreased (pre-Covid, n=21, 32%; post-Covid, n=4, 7%; p=0.0007), management with closed reduction did not

differ (pre-Covid, n=23, 96%; post-Covid, n=11, 85%; p=0.27). While the clinical characteristics of patients presenting with facial trauma did not differ significantly following the Covid-19 pandemic, the role of MMF in the management of mandible fractures changed significantly.

O.58

MALPRACTICE LITIGATION IN ABDOMINOPLASTY. Nicholas Hricz*, Allison Karkowski[1], Michael Ha[2], and Yvonne Rasko[2], [1]Department of Medicine and [2]Division of Plastic Surgery, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

Abdominoplasty is one of the most common cosmetic operations performed in the United States. This procedure comes with risks that range from pain, scarring, and even death resulting in patients seeking legal action. In this study, we aimed to identify trends in abdominoplasty malpractice litigation to reduce future litigations. The Westlaw legal database was utilized for all recorded abdominoplasty malpractice cases resulting in jury verdicts and settlements. Cases had to be directly related to injury after an abdominoplasty. Details of the cases were extracted by looking at trends in defendant training, plaintiff demographics, liability, injuries, and fiscal awards. 90 unique cases related to abdominoplasty malpractice were identified. Plaintiffs were predominantly female (n = 82, 91.1%). Most surgeons underwent a general surgery residency with a plastic surgery fellowship (n = 64, 71.1%). The average amount of years of practice was 18.2 years. Only 10% of defendants (n = 9) were cosmetic fellowship trained with 22.2% of these cases resulted in a monetary award. The majority of cases (n = 66, 73.3%) were found in favor of the defendant. Monetary awards averaged $623 453 (range = $11 000 – $3 335 000), while settlements averaged $1 008 333. Alleged liability was most for gross negligence (n = 37, 41.1%) with 24% of cases resulting in monetary awards. Necrosis was the most claimed injury in 14 cases (15.5%), with 2 cases (14.3%) resulting in monetary awards. 57 cases (63.3%) underwent a congruent surgery with 22.2% (n = 13) resulting in a monetary award. Abdominoplasty is a popular cosmetic procedure that comes with risks and complications. Negligence was the most common reason for successful litigation in this study. Having a cosmetic surgery fellowship was associated with a lower rate of successful malpractice suits.

O.59

EVALUATION OF PRE-OPERATIVE EFFORTFUL LISTENING PERFORMANCE USING FUNCTIONAL NEAR-INFRARED SPECTROSCOPY (FNIRS). Audrey Zauher* and Amal Isaiah[1], [1]Department of Otorhinolaryngology - Head and Neck Surgery, University of Maryland School of Medicine, Baltimore, MD.

An estimated 27% of U.S. children are diagnosed with recurrent middle ear infections, or recurrent acute otitis media (RAOM). When left untreated, the detrimental impact of RAOM on children's ability to understand speech in the presence of competing noise, known as effortful listening, can result in poor classroom performance. Tympanostomy tube (TT) placement is the first line of treatment for RAOM, while watchful waiting (WW) with repeat assessment is an acceptable alternative. Despite TT placement being the most common childhood surgery performed in the U.S., the neural mechanisms of the speech and language outcomes in these children remain uncertain. To address these gaps in knowledge, we will evaluate the impact of TT placement on children's brain outcomes by measuring performance on an effortful listening task. To assess the extent of brain activation underlying this task, we will use functional near infrared spectroscopy (fNIRS), a novel, non-invasive, and child-friendly functional imaging technique. Using fNIRS coupled with the effortful listening task, we will measure the neural activation of the prefrontal cortex (PFC), a region of the brain central to attention and executive functioning. In 128 children aged 18 months to 5 years, we will compare the outcomes on the task, as well as the accompanying PFC activation, between two groups: 1) those receiving TTs and 2) those eligible to receive TTs, but whose caregivers elect for WW. Children receiving TTs will complete the task before and after TT placement, while children whose caregivers elect for WW will complete baseline and follow-up assessment at 6 months. We hypothesize that the

children receiving TTs will achieve greater accuracy during the effortful listening task following TT placement compared to the children whose caregivers elect for WW. In addition to their superior performance on the task, we anticipate that children receiving TTs will also have greater PFC recruitment during the task. Together, these results will provide the first evidence of the potential neurobiological basis for the outcomes of RAOM and one of the most common pediatric surgical procedures.

This research was supported in part by the Program for Research Initiated by Students and Mentors (PRISM), University of Maryland School of Medicine Office of Student Research.

O.61

PERFORMANCE OF AN ARTIFICIAL INTELLIGENCE PULMONARY EMBOLISM TRIAGE TOOL DURING A GLOBAL CT CONTRAST SHORTAGE. Youngjae Cha*, George Morcos[1], Paul Yi[1], and Jean Jeudy[1], [1]Department of Diagnostic Radiology and Nuclear Medicine, University of Maryland School of Medicine, Baltimore, MD.

In April 2022, a COVID-19 lockdown in Shanghai caused a global shortage of iodinated contrast media (ICM), threatening contrast-enhanced CT scan performance. Consequently, the American College of Radiology recommended lower-than-normal ICM doses for CT scans. This strategy may have unanticipated consequences for artificial intelligence (AI) CT triage tools optimized for standard ICM doses. We compared the diagnostic performance of an FDA-cleared AI triage tool for pulmonary embolism (PE) detection on CT angiography (CTA) scans obtained with standard vs reduced ICM dosing. On 4/28/2022, our institution initiated a contrast conservation protocol, reducing the CTA ICM dose from 80 to 50 mL. We identified all adult (>18 years) CTA studies performed at our center during two time periods: Phase 1 (baseline protocol, 2/28 - 4/2/2022) and Phase 2 (modified protocol, 5/2 - 6/4/2022). Patient age, sex, and site of CTA acquisition were collected. Each study's ground truth was classified as positive/negative for PE based on the original interpreting radiologist's report with discordant diagnoses adjudicated by a fellowship trained cardiothoracic radiologist with 18 years of experience. All CTA studies were evaluated at time of acquisition by a commercial FDA-cleared AI tool for PE detection and triage (Aidoc, Tel-Aviv, Israel). AI results were compared to ground truth with calculation of discordance rates, sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV). In phases 1 and 2, 452 (41 PE-positive [9.1%]) and 384 (32 PE-positive [8.3%]) CTA studies were performed, respectively (p=0.8). There were no significant differences in patient age, sex, or imaging site between phases (p>0.3). Discordance rates between AI and radiologist ground truth were not significantly different between phase 1 (2.4%; 11/452) and phase 2 (2.9%; 11/384) (p=0.8). There was no significant difference in sensitivity, specificity, PPV, or NPV between the phases (p>0.4). The results suggest that CTA AI triage tools perform as expected. We cautiously recommend their continued use even with reduced-contrast CTA protocols.

Poster Presentation Abstracts

Presenters are indicated with "*" next to their names.

P.01

COMPARING ADVERSE MATERNAL AND FETAL OUTCOMES IN SYMPTOMATIC VERSUS ASYMPTOMATIC COVID-19 INFECTION. Brianna Dubose*, Yazmeen Tembunde[1], and Beth Pineles[2], [1]University of Maryland School of Medicine, Baltimore, MD, and [2]Department of Obstetrics, Gynecology and Reproductive Sciences, University of Pennsylvania School of Medicine, Philadelphia, PA.

Among pregnant people, coronavirus disease 2019 (COVID-19) can lead to adverse outcomes, but the specific pregnancy outcomes that are affected by the disease are unclear. In addition, the effects of asymptomatic SARS-CoV-2 infection and symptomatic COVID-19 have not been clearly identified. To evaluate the associations between asymptomatic SARS-CoV-2 infection and symptomatic COVID-19 and cesarean delivery, preterm delivery, preeclampsia, and stillbirth. We conducted a retrospective cohort study (April 2020 – May 2021) of deliveries from U.S. hospitals in the Premier Healthcare Database. The primary outcomes were cesarean delivery, preeclampsia, preterm delivery, and stillbirth. To estimate the effect of asymptomatic SARS-CoV-2 infection, we selected people without viral pneumonia and compared those with COVID-19 (Group 2) to those without COVID-19 (Group 1). To estimate the effect of symptomatic COVID-19 illness, selected people with COVID-19 and compared those with viral pneumonia (Group 3) to those without viral pneumonia (Group 2). Groups were balanced for risk factors by propensity score matching. Propensity score models included age, marital status, race and ethnicity, Elixhauser comorbidity score, payer, hospital number of beds, season of discharge, hospital region, obesity, hypertension, diabetes mellitus, chronic pulmonary disease, deficiency anemias, depression, hypothyroidism, and liver disease. 814,649 deliveries from 853 U.S. hospitals were included (Group 1: n=799,132, Group 2: n=14,744, Group 3: n=773). After propensity score matching, the risks of cesarean delivery and preeclampsia were similar in Group 2 compared to Group 1 (matched risk ratio [mRR] 0.97, 95% confidence interval [CI] 0.94-1.00, and mRR 1.02, 95% CI 0.96-1.07, respectively, Table 4). The risks of preterm delivery and stillbirth were greater in Group 2 compared to Group 1 (mRR 1.11, 95% CI 1.05-1.19, and mRR 1.30, 95% CI 1.01-1.66, respectively). After propensity score matching, the risks of cesarean delivery, preeclampsia, and preterm delivery were higher in Group 3 compared to Group 2 (mRR 1.76, 95% CI 1.53-2.03, mRR 1.37, 95% CI 1.08-1.74, and mRR 3.33, 95% CI 2.56-4.33, respectively, Table 4). The risk of stillbirth was similar in Group 3 and Group 2 (mRR 1.17, 95% CI 0.40-3.44). Within a large national cohort of hospitalized pregnant people, we found that the risk of adverse delivery outcomes was elevated in people with both asymptomatic SARS-CoV-2 and symptomatic COVID-19.

P.02

ASSESSING THE IMPACT OF TELEMEDICINE IMPLEMENTATION ON PATIENT SATISFACTION WITH AND ADHERENCE TO GYNECOLOGIC APPOINTMENTS. Sue Junn*, Julie Hurvitz[1], Andrea Desai[1], and Elizabeth Lahti[1], [1]Department of Obstetrics, Gynecology and Reproductive Sciences, University of Maryland School of Medicine, Baltimore, MD.

The COVID-19 pandemic led to a rapid increase in telemedicine visits to ensure delivery of essential health services while minimizing infection exposure. While there have been studies related to telemedicine in other specialties, there is a paucity of data assessing the impact of telemedicine visits in gynecology. The purpose of this study is to evaluate if and how implementation of telemedicine impacts patient adherence to and satisfaction with scheduled gynecologic appointments. A retrospective review of 1170 patients who participated in gynecologic telemedicine visits and 5303 patients who participated in in-person gynecologic visits between March 1, 2020 and December 1, 2021 was performed to evaluate demographic information, chief complaint, and visit attendance. A

cross-sectional survey of 1248 patients who participated in gynecologic telemedicine visits between these dates was also performed to evaluate perceptions of satisfaction, access, quality and safety, and convenience of telemedicine. IRB exempt protocol HP-00099093. The average no show rate for gynecologic telemedicine visits was 2% compared to 22% for in-person gynecologic visits ($p < 0.001$). 33/1249 patients responded to the survey. 69% (23/33) of survey respondents were satisfied with telemedicine visits. This study supports the continued incorporation of telemedicine into standard gynecologic practice to increase patient adherence with visits. Our gynecologic telemedicine no show rates are significantly lower than patients' overall no show rates for in person visits. These outcomes may be associated with patients' satisfaction with telemedicine visits due to them being convenient, time saving, and less disruptive to their day.

P.03

ASSESSING SKIN OF COLOR REPRESENTATION IN LITERATURE ABOUT MIMICKERS OF MYCOSIS FUNGOIDES. Yazmeen Tembunde*, Christy Nwankwo[1], and Jarad Levin[2], [1]Department of Medicine, University of Missouri - Kansas City School of Medicine School of Medicine, Kansas City, MO, and [2]Department of Dermatology, University of Oklahoma College of Medicine School of Medicine, Oklahoma City, OK.

Despite a low incidence in the general population, mycosis fungoides (MF) has a higher incidence in Black patients, and these patients present with earlier onset and more advanced disease compared to White patients in the United States. More research is needed to establish definite causes of these racial disparities in MF patients, but delays in diagnosis may contribute to this finding. MF can present with numerous variants that may mimic other dermatoses such as atopic dermatoses, psoriasis, and vitiligo which can cause delays in the initial diagnosis and thus treatment for this condition. A recent study provided an update on dermatoses that can present similar to MF. In this study, we reviewed primary articles previously identified in this systematic review to assess the inclusion of skin of color patients. We collected information about the article, condition initially diagnosed, if phenotypic diversity was referenced, and how this was accomplished. From the original article, 69 studies were reviewed. Of the 69 studies, 8 did not specify the race/ethnicity or skin type of patients and this information was incapable of being ascertained from included images. The inclusion of studies that had a skin of color patient was at a rate of 27.9% (n=17). When looking at the inclusion of studies with Black patients or those with Fitzpatrick Type greater than 4 this was at 14.8% (n=9). Lastly, the studies that included Black patients focused on misdiagnosis that was initially diagnosed as hypopigmentation (n=4), porokeratosis (n=2), dissecting cellulitis of the scalp (n=1), leprosy (n=1), or showing an atypical feature of necrobiosis (n=1). There is a paucity of inclusion of case reports reporting conditions that are initially diagnosed before the correct diagnosis of MF in Black patients. Given the difference in outcomes of Black patients with MF and reports of increased prevalence of the condition in Black patients, studies about MF should include images in SOC patients or reference skin tone differences in included patients. Limitations to this study include the number of articles in reference.

P.04

ACCESS TO PEDIATRIC VISION SCREENINGS IN NORTH AMERICA: A SYSTEMATIC REVIEW. Bhakti Panchal*, Mariama Jallow[1], Geoffrey Nguyen[2], Runze Zhang[3], Esther Xu[2], and Janet Alexander[1], [1]Department of Ophthalmology and Visual Sciences and [2]Department of Medicine, University of Maryland School of Medicine, Baltimore, MD, and [3]Department of Medicine, UIC School of Medicine, Chicago, IL.

Pediatric vision screenings prove essential in the timely identification of vision-threatening disorders that may otherwise go unnoticed. Unfortunately, disparities in access to these screenings are relatively understudied. This study aims to appraise and synthesize the evidence on how social determinants of health impact access to pediatric vision screenings to better understand disparities in

access to these services. A systematic search of PubMed, Embase, and Cochrane databases published between 1995 and 2022 was conducted to identify studies relating to vision services in North America on subjects ≤ 18 years of age with underrepresented populations included as a specific focus. Articles were reviewed by two independent screeners throughout the abstract, full-text review, and data extraction process. Discrepancies in extracted data were reconciled by a third reviewer. Ninety-five studies were selected for data extraction. Notable themes underlying disparities in screening included geography, race/ethnicity, socioeconomic status, and insurance. Over one-third of studies were conducted in the northeast United States. Approximately 10% of studies included Native American populations. Nearly 40% of studies reported variables measuring socioeconomic status such as household income, federal poverty level, and/or education level. Roughly, one-fifth of studies reported insurance type. Improved access to screening in underserved populations was associated with outreach level. In the current literature on pediatric vision screenings in the U.S., assessment of sociodemographic factors is inconsistent and regional bias exists, highlighting a need for ubiquitous reporting of factors relating to barriers to care and geographical expansion of pediatric vision screening projects.

P.05

TIME TO DEFINITIVE SURGERY IN MOHS MICROGRAPHIC SURGERY. Davies Gage*, Katherine Thompson[1], Emanuelle Rizk[1], and Jeffrey Scott[1], [1]Division of Dermatologic Surgery, Department of Dermatology, Johns Hopkins School of Medicine, Baltimore, MD.

As time from diagnosis to definitive surgical treatment (TTDS) for non-melanoma skin cancer (NMSC) increases, so do the risks of various complications. Delays in TTDS are common and may lead to increased tumor size and greater local organ destruction. Previous studies on TTDS have focused mainly on melanoma and literature on delayed TTDS for NMSC is sparse. Our study aims to identify key time periods over the past three years and how they relate to TTDS for NMSC. We are also collecting additional variables that may be associated with increased TTDS. A retrospective cohort study was preformed analyzing all patients that underwent Mohs micrographic surgery (MMS) for biopsy-proven NMSC over three time periods: July 2019-June 2020 (Group 1), July 2020-June 2021 (Group 2), and July 2021-June 2022 (Group 3). The primary outcome was TTDS, defined as the time between the date of biopsy and date of surgery. Additional variables include patient age, gender, race, zip code, lesion type, histological subtype, location, pre-operative size, post-operative size, reconstruction type, number of MMS stages, reconstruction size, post-operative complications, immunosuppression, blood thinner use, prior history of skin cancer and prior history of MMS. Preliminary data were collected and analyzed for a total of 1,568 patient s (454 in group 1, 851 in group 2, 263 thus far in group 3). The mean TTDS (SD) for Groups 1, 2 and 3 respectively was 54 (34), 49 (34) and 36 (25) days. The longest average TTDS (SD) per month in each group were 82 (83) days in April 2020, 85 (44) days in June 2020 and 79 (54) days in July 2020. The average TTDS for the remaining months ranged from 29-64 days. Overall, TTDS has decreased within the past three years. An increase in TTDS was seen within a 4-month period between April-July 2020. This study highlights key time periods for patients more at risk of complications following MMS and emphasizes the value in implementing interventions to decrease wait times for patients diagnosed with NMSC. We plan on further analyzing the data to determine factors associates with longer time to surgery.

P.06

EVALUATION OF TUMOR VOLUME AS A PREDICTOR OF OUTCOMES FOR PATIENTS WITH LOCALLY ADVANCED ESOPHAGEAL CANCER. Alanna Stefano* Jason and Molitoris[1], [1]Department of Radiation Oncology, University of Maryland School of Medicine, Baltimore, MD.

Esophageal malignancies are rare in the United States, making up only 1% of all diagnosed cancers. Despite being rare, esophageal cancer has a high mortality rate; only about 20% of patients

survive for at least 5 years after diagnosis, regardless of stage. Primary tumor stage, a known prognostic factor in esophageal cancer, is based on depth of invasion into the esophagus, surrounding adventitia, and adjacent organs. Tumor size, however, could lead to decreased local control, increased risk of metastatic spread, or increased complications. In other disease sites, high volume of primary tumor volume is a predictor of worse outcomes. Tumor volume is known to predict outcomes in esophageal squamous cell carcinomas; however, adenocarcinoma is the most common esophageal cancer histology in the US. This study investigates outcomes of esophageal carcinoma in patients seen at UMMC from 1993-2021. We conducted a retrospective review of patient charts to investigate the role of tumor volume in predicting local control and overall survival. Of 60 patients, 44 (73%) were male and 53 (88%) had Stage III esophageal cancer. 52 (87%) were adenocarcinoma and 50 (83%) were distal esophageal or gastroesophageal junction masses. Kaplan-Meier analysis showed median overall survival was 28.3 months. Median gross tumor volume (GTV) and clinical treatment volume (CTV) volumes were 49 cc and 414 cc, respectively. There was no difference in overall survival for GTV volume above the median volume (21.4 month survival, 95% CI, 16.0 to 26.7 months) versus below the median volume (28.3 month survival, 95% CI, 10.9 to 45.7 months). However, there was worse overall survival for the larger CTVs: 19.5 (95% CI, 14.1 to 24.7 months) above the median, versus 28.3 (95% CI, 16.9 to 39.6 months) below the median volume. We will be further comparing OS to other patient outcomes – such as PEG tube placement, weight loss, and qualifying for surgery – for patients with esophageal adenocarcinoma receiving tri-modality treatment. This is an ongoing project with preliminary data showing that increasing treatment volume negatively impacts local control and OS for patients with esophageal adenocarcinoma.

This research was supported in part by the Program for Research Initiated by Students and Mentors (PRISM), University of Maryland School of Medicine Office of Student Research, and the Summer Fellowship in Radiation Oncology.

P.08

VALIDATING THE USE OF 3D BIPLANAR RADIOGRAPHY VS CT WHEN MEASURING FEMORAL ANTEVERSION AFTER TOTAL HIP ARTHROPLASTY-A COMPARATIVE STUDY. Zachary Brilliant*, Christopher Anderson[1], Seong Jang[2], David Mayman[1], Jonathan Vigdorchik[1], and Peter Sculco[1], [1]Department of Orthopaedics, Hospital for Special Surgery and [2]Department of Orthopaedics, Weill Cornell Medical College, New York, NY.

Although computed tomography (CT) is considered the gold standard to measure femoral version, three dimensional (3D) biplanar radiography (hipEOS) has recently emerged as a possible alternative with lower ionizing radiation and shorter examination time. The aim of our study was to evaluate postoperative total hip arthroplasty (THA) patients and compare the accuracy of hipEOS to CT for femoral stem version. We hypothesize that there will be no significant difference in calculated femoral stem version measurements between the two imaging modalities. In this study, 45 patients who underwent THA between 2016-2020 and had both a post operative CT and EOS scan were included for evaluation. A fellowship-trained musculoskeletal radiologist and radiographic technician measured femoral version for CT and 3D EOS, respectively. Comparison of values for each imaging modality were assessed for statistical significance. Comparison of postoperative femoral stem version measurements between CT and hipEOS 3D showed no significant difference ($p = 0.86$). In addition, the two version measurements were strongly correlated ($r = 0.95$, $p < 0.01$), and the mean paired difference in postoperative femoral version for CT scan and 3D biplanar radiography was -0.09° (95% CI -1.09-0.91). Only 3 stem measurements (6.7%) were considered outliers with a >5° difference. Our study supports the use of low dose biplanar radiography for the postoperative assessment of femoral stem version after THA with high correlation with CT. We found no significant difference for postoperative femoral version when comparing CT to 3D EOS with 93.3% of cases within 5 degrees. We believe 3D EOS is a reliable option to measure postoperative femoral version given its advantages of lower radiation dosage, shorter examination time, weight bearing study, and an additional benefit as part of a standard postoperative imaging assessment.

P.09

FREQUENCY AND CHARACTERISTICS OF LABRAL INJURIES IN OPERATIVE ACETABULAR FRACTURES. Joseph Blommer*, Peter Kim*, Joseph Blommer[1], Peter Kim[1], Nathan O'Hara[1], Gerard Slobogean[2], and Robert O'Toole[2], [2]Division of Trauma, [1]Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

Acetabular fractures are challenging injuries with a significant portion of patients having unsatisfactory outcomes requiring conversion to total hip arthroplasty. This study was performed to identify the frequency and characteristics of labral injuries and other soft tissue pathology in operatively treated acetabular fractures. This was a prospective observational cohort completed at a Level I trauma center. Study subjects included patients with an acetabular fracture treated with open reduction internal fixation (ORIF) through a posterior approach. Injury features were prospectively collected, including the frequency of femoral head cartilage lesions, marginal impaction, osteochondral fragments, gluteus minimus injury, posterior wall comminution, contusion of the sciatic nerve, posterior labral injury and characteristics, and joint capsule detachment. The main outcome measurement was frequency of associated labral injuries and other soft tissue pathology. Of the sample, 53 of 71 acetabular fractures (75%) demonstrated a labral injury. Labral injuries most commonly represented a detachment of the posterior inferior labrum (n = 38, 78%). Fractures with a labral injury had a higher frequency of gluteus minimus damage (92% vs. 61%) and fracture patterns involving the posterior wall (89% vs. 50%). Fracture dislocations and detachment of the joint capsule were also associated at a trend level (62% vs. 33%, 60% vs. 33%). In conclusion, labral injuries may have clinical implications and warrant further investigation to assess the relationship with patient outcomes.

P.10

SHEAR WAVE ELASTOGRAPHY AS A MEASURE OF TENSION IN REVERSE TOTAL SHOULDER ARTHROPLASTY PATIENTS: A PILOT STUDY. Ryan Curto*, Scott Koenig[1], Raziyeh Baghi[2], Jacqueline Addona[3], and Mohit Gilotra[1], [1]Department of Orthopaedics and [2]Department of Physical Therapy and Rehabilitation Science, [3]University of Maryland School of Medicine, Baltimore, MD.

Outcomes of reverse total shoulder arthroplasty (RTSA) may be partly attributed to proper deltoid tension which is contingent upon several implant, surgical, and patient factors. Despite its importance, no validated tools exist for the objective measurement of deltoid tension intraoperatively or perioperatively for RTSA. Shear Wave Elastography (SWE), a relatively new ultrasound modality, measures shear wave propagation generated from acoustic waves in soft tissue to indirectly measure the tension of a target tissue. This study aims to thoroughly examine the relationship between deltoid tension measured by SWE and functional and radiographic outcomes in RTSA. 19 RTSA patients and 8 anatomic shoulder arthroplasty patients were included in this prospective cohort study at a single institution. SWE measurements including thickness, length, and tension of anterior, middle, and posterior deltoid bellies were collected during rest and isometric holds. Functional outcomes were measured by range of motion (ROM), American Shoulder and Elbow Surgeons (ASES) score, and Visual Analog Scale (VAS) pain scores. Implant and radiographic measurements were also collected in RTSA patients to assess relationship between these parameters and deltoid tension. There was a significant positive correlation between middle deltoid SWE tension during abduction held for 1 and 5 seconds and improved range of motion in forward flexion and abduction ($p < 0.05$). SWE deltoid tension was not significantly correlated with ASES Scores or VAS pain scores. Distalization and lateralization measured with Acromiohumeral Interval (AHI) and Lateral Humeral Offset (LHO) were significantly correlated with increased SWE deltoid tension during isometric holds ($p < 0.05$). This pilot study provides another example of how SWE could be utilized to optimize deltoid tension in RTSA patients. However, the target SWE value for deltoid stiffness that results in less pain, better

ROM, improved function remains evasive and likely varies on an individual basis. SWE opens the door to objective quantification of deltoid tension in RTSA and warrants further investigation.

P.11

FROM ANONYMITY TO IDENTIFICATION IN THE ANATOMICAL DISSECTION ROOM. Marquis Berrey* and Adam Puche[1], [1]Department of Anatomy and Neurobiology, University of Maryland School of Medicine, Baltimore, MD.

The twentieth-century emergence of the importance of informed consent eclipsed the prior legal tradition of using unclaimed bodies for medical dissection. Despite the changing sources for the anatomic donors in modern medical schools, the historical culture of anonymity over bodies in the dissecting room has remained. Recently, anatomists have begun to question why an earlier tradition of anonymity should continue to draw a curtain over the names, medical information, and lives of subjects who willfully consent to the use of their bodies in postmortem medical education and research. What the donor is called in the anatomical dissection room is an important ethical consideration, but limited data has informed the discussion of anonymity or identification. This project investigates the attitudes of medical students toward anonymous or identified donors in the dissection room. The University of Maryland School of Medicine (UMSOM) began providing medical students with the names of anatomical donors in 2021-2022 academic year. The curriculum change allowed the design of a cohort study investigating exposure to a donor's name. A social science survey sent to all registered UMSOM students measured to what degree the use of named donor information changed students' attitudes toward core principles of respect and dignity to the donors undergoing dissection. The survey result was that use of names did not advantage students' ability to learn anatomy. However, students working with anonymized donors who created a name viewed their dissection experience more positively. The difference between anonymous and named positivity implies that having a donor's name is an advantage. In combination with technical practices such as draping and handling, the use of the donor's name reinforced the dissection room's humanistic pedagogical goal of a professionalizing culture of respect and dignity toward donors.

P.12

ACUTE HEALTH EFFECTS OF SUMMER WILDFIRE SMOKE IN MARYLAND. Donald De Alwis* and Zhekang Ying[1], [1]Department of Medicine, University of Maryland School of Medicine, Baltimore, MD.

Air pollution is known to be a leading cause of mortality worldwide, and particulate matter smaller than 2.5 microns (PM2.5) is attributable to a majority of the health effects from air pollution in the United States. One important source of PM2.5 in the United States is wildfires, which have increased in geographic extent, frequency, and intensity over the past several decades, largely due to climate change. Classically, wildfire research in the United States has occurred in Western states, as this region typically experiences a higher wildfire burden. However, the atmospheric transport of wildfire smoke plumes may pose a potent health threat to populations far removed from the original source of smoke. Our study examines a historic atmospheric transport event in July 2021, in which smoke plumes from Western North American wildfires were transported to several Northeastern states with sufficient intensity to be visualized via satellite imagery. We hypothesized that on days of severe smoke pollution and the days following, emergency department visits for certain cardiopulmonary health conditions would increase compared to days without smoke pollution. We performed a temporospatial analysis of several EPA criteria air pollutants in Maryland during July 2021 and performed a multimodal statistical analysis of PM2.5 and statewide emergency department admissions data for several cardiovascular and pulmonary diagnostic categories. Statistical analysis is ongoing and the results from this pilot study will be used to inform future multi-state analyses of the health effects of long-range atmospheric smoke transport.

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P.14

EFFECTS OF IMPLEMENTING A MANDATORY MENTORED SCHOLARLY PROJECT (FRCT) AT UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE. Sarah Flaherty*, Greg Carey[1], and Donald R. Matteson[1], Office of Student Research, University of Maryland School of Medicine, Baltimore, MD.

There has been significant and increased emphasis on the value of biomedical research in Graduate Medical Education (GME) over the past decade. This has resulted in the expansion of required scholarly research and protected time for research in the curricula of medical schools, including the University of Maryland School of Medicine (UMSOM). In 2013, UMSOM implemented the Foundations of Research and Critical Thinking (FRCT) pre-clerkship course requirement towards the goals of increasing student skills in critical thinking and to provide deep and immersive learning experiences in specific fields and topics in biomedicine and healthcare. FRCT provides foundational education in biomedical research and requires all students to complete a mentored Scholarly Project. Students were encouraged to engage in high quality projects whose dissemination could add to understanding of disease or, have impacts on patient care. Here, we present the preliminary results of longitudinal study examining trends in UMSOM medical student research productivity before and after the implementation of FRCT. These results show that the implementation of FRCT has been associated with a significant increase in research productivity. Causality was validated by additional results that show no significant change in student research experience or productivity prior to matriculation. The results also show improved residency match outcomes, even when controlling for changes in USMLE scores. These findings support the conclusion that protected time for required research in the pre-clerkship phase of GME is beneficial for students in terms of making scholarly contributions (publications, conference abstracts etc.) and with the additional benefit of increasing student competitiveness for residencies of their choices.

P.15

EDUCATIONAL INTERVENTION FOR MANAGEMENT OF ACUTE TRAUMA PAIN. Ariana Taj*, Luana Colloca[1], Rachel Massalee[1], Nathaniel Haycock[1], Robert Scott Murray[1], and Yang Wang[1], [1]Department of Anesthesiology, University of Maryland School of Nursing, Baltimore, MD.

Despite years of research and the development of countless awareness campaigns, the number of deaths related to prescription opioid overdose is steadily rising. Often, naive patients undergoing trauma-related surgery are dispensed opioids while in the hospital, resulting in an escalation to long-term opioid misuses. We explored the impact of an educational intervention to modify perceptions of opioid needs at the bedside of trauma inpatients in post-surgery pain management. Twenty-eight inpatients with acute post-surgical pain completed this proof-of-concept study adopting an educational intervention related to opioids and non-pharmacological strategies in the context of acute post-surgical pain. An education assessment survey was developed to measure pre- and post-education perceptions of opioid needs to manage pain. The survey statements encompassed the patient's perceived needs for opioids and other pharmacological and non-pharmacological therapeutics to manage acute pain. The primary outcome was the change in the patient's perceived need for opioids. The secondary (explorative) outcome was the change in Morphine Milligram Equivalents (MME) used on the day of the educational intervention while inpatients and prescribed at the time of the hospital discharge. After the educational intervention, patients reported less agreement with the statement, "I think a short course of opioids (less than 5 days) is safe." Moreover, less agreement on using opioids to manage trauma-related pain was positively associated with a significant reduction in opioids prescribed at discharge after the educational intervention. The educational intervention might have effectively

helped to cope with acute trauma-related pain while adjusting potential unrealistic expectancies about pain management and, more in general, opioid-related needs. These findings suggest that trauma patients' expectations and understanding of the risks associated with the long-term use of opioids can be modified by a short educational intervention delivered by health providers during the hospitalization. Establishing realistic expectations in managing acute traumatic pain may empower patients with the necessary knowledge to minimize the potential of continuous long-term opioid use, opioid misuse, and the development of post-trauma opioid abuse and/or addiction.

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P.16

DECLINING EXPERIENCE WITH NEOSTIGMINE ADMINISTRATION AMONG GRADUATING ANESTHESIOLOGY RESIDENTS IN THE SUGAMMADEX ERA. Kelly Poe*, Matthew Tulis[1], Kimberly Hollander[1], and Miranda Gibbons[1], Peter Rock[1], Megan Graybill Anders[1], [1]Department of Anesthesiology, University of Maryland School of Medicine, Baltimore, MD.

For many years, neostigmine (NEO) was the reversal agent of choice for neuromuscular blockade (NMB). Though the exact number of cases is not defined, safe NEO use requires ample experience and careful attention to the depth of NMB, dose adjustment to provide adequate reversal, and knowledge of side effects including bradycardia and bronchoconstriction. If not timed and dosed properly, NEO reversal can lead to residual NMB and postoperative respiratory insufficiency. Sugammadex (SUG) was developed as a NMB reversal agent (NMBRA) with fewer side effects and no potential for recurarization. We asked whether anesthesiology residents are prepared to use NEO upon graduation. This cross-sectional study evaluated NEO use in a major academic hospital by anesthesiology residents as a function of time. SUG was introduced to institutional formulary in May 2016 without significant restriction. This study employed the IRB-approved University of Maryland Anesthesiology Perioperative Data Warehouse to analyze NMBRA use by anesthesiology residents at our single center, where residents conduct most of their clinical rotations, over the three-year duration of their training. The mean number of cases with NEO use over 3 years per class of resident were compared before and after introduction of SUG using Welch's t-test. Residents graduating in 2020-2021 used NEO for significantly fewer cases than residents graduating in 2014-2015 (mean 20.7, SD 10.1 cases vs mean 290, SD 34.4 cases; $p < 0.001$). This study demonstrates a significant decline in experience with use of NEO as a reversal agent among graduating anesthesiology residents after the introduction of SUG at an academic medical center. As more residents graduate from programs with little restriction on SUG and enter practice settings with restricted availability of SUG, there are potentially serious implications in both patient safety and perioperative outcomes. Current residents are potentially unprepared to use neostigmine upon graduation due to limited cases involving its use. Clinical educators should consider incorporating planned NEO use in residency training to ensure residents are prepared for their future practice.

P.17

NEUTROPHILIC SIGNATURES ASSOCIATE WITH DISEASE SEVERITY IN SARS-COV-2 INFECTION IN A SEX SPECIFIC MANNER. Guido Massaccesi*, Ziqi Fu[1], Weiqiang Zhou[1], and Eileen Scully[2], [1]Department of Biostatistics and [2]Division of Infectious Diseases, Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, MD.

The heterogeneity in outcomes of SARS-CoV-2 infection remains incompletely understood. Male bias in COVID-19 mortality was observed early in the pandemic, with a ~1.59 higher risk of death associated with male sex. Our study aimed to analyze the immune transcriptional profile of severe versus mild-moderate COVID-19 among hospitalized patients to understand sex specific features of

severe disease. Cohort 1 consisted of 95 patients (46 males, 49 females) hospitalized at the Johns Hopkins Hospital in 2020, and cohort 2 included 52 hospitalized patients (28 males, 24 females) admitted with COVID-19 later in 2020 who received dexamethasone prior to sampling. All participants had total RNA extracted from PAXGene blood RNA tubes, followed by library preparation and sequencing (NovaSeq6000). Reads were aligned with STAR, ordered using samtools and counted with HTSeq. Differential expression analysis was done using DESeq2 and adjusted for age. Gene Pathway analysis was performed using EnrichR. In Cohort 1, males had 2039 differentially expressed genes (DEGs) between severe and mild-moderate. Females had only 98 DEGs between severe and mild-moderate. Analyzing the top 384 DEGs (all with padj<0.01) in males, the most enriched Gene Ontology (GO) pathways were neutrophil activation and degranulation pathways. Using female DEGs, enriched GO pathways included the unfolded response pathways (ATF6, IRE) which are activated during beta coronavirus infection. In Cohort 2 after dexamethasone, only one gene was differentially expressed between severe and mild-moderate males, while females still had 100 DEGs. Hospitalized males with severe COVID-19 had upregulated neutrophil activation/degranulation gene expression signatures compared to males with mild disease. Females did not show the same pattern, with many fewer DEGs and an enrichment of the unfolded protein response. Response to dexamethasone also varied by sex. Exploring the differences in immune profile and response to immunomodulatory therapy may enhance understanding the increased risk of mortality in males.

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P.18

USING BIOINFORMATIC ANALYSES TO IDENTIFY *PLASMODIUM FALCIPARUM* PFRIPR EPITOPES FOR HIGH IMMUNOGENIC POTENTIAL.

Alexander Laurenson*, Joana Carneiro da Silva[1], Sodiomon B. Sirima[2], Amed Ouattara[3], and Matthew B. Laurens[4], [1]Department of Microbiology and Immunology, [3]Division of Malaria Research, Department of Medicine, and [4]Division of Infectious Diseases, Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD, USA and [2]Groupe de Recherche Action en Santé, Ouagadougou, Burkina Faso.

Malaria infections remain an enormous contributor to deaths globally and are one of the leading causes of child mortality. Despite advances in antimalarial drugs and improved public health efforts, the global malarial death toll in 2020 was an estimated 627,000 with 77% of deaths being children aged under 5 years. Transmitted via mosquito, *Plasmodium falciparum* is the most lethal parasite of its genus but has evaded many treatment and vaccine efforts due to its complex life cycle and redundant invasion mechanisms. Epitope-based vaccines hold significant promise for malaria vaccine development due to their ease of development and production and ability to target dominant and/or conserved regions in highly antigenically variable pathogens such as malaria. The recently characterized protein *P. falciparum* merozoite Rh5 interacting protein (PfRipr) is nonredundant, highly conserved, and essential for erythrocyte invasion, making it an ideal target for a bloodstage malaria vaccine. Using *P. falciparum* sequences collected in a highly endemic area of Burkina Faso, we assessed the immunogenic potential of PfRipr epitopes with regard to T-cell receptor binding and B-cell recognition. T-cell receptor binding was predicted using NetMHCpan and NetMHCIIpan searching against HLA, DQA1-DQB1, and DRB1 alleles with high regional frequencies. B-cell linear epitope sequences were predicted using ABCPred. All putative epitopes were then filtered using their respective program's binding thresholds as well as allele coverage, conservancy degrees, antigenicity, and allergenicity. To further evaluate predicted B-cell recognition, BepiPred was used alongside NetSurfP to predict secondary structure and ensure epitope surface accessibility to human immune recognition. This study identified many candidate epitopes for further *in vitro* and *in vivo* investigation and serves as a preliminary proof-of-principle that can be further applied to a broader database of *P. falciparum* sequences collected in other malaria endemic regions. Next steps may include experimental

protein modeling to predict PfRipr tertiary structure and further filter candidate epitopes before wet bench investigation.

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ANALYSIS OF TREATMENT TOXICITY IN LIVER RE-IRRADIATION WITH PROTON BEAM THERAPY AFTER 90Y TRANSARTERIAL CHEMO-EMBOLIZATION. Manaahil Rao* and Jason Molitoris[1], [1]Department of Radiation Oncology, University of Maryland School of Medicine, Baltimore, MD.

With the increasing use of proton beam therapy (PBT) in treatment of hepatocellular carcinoma (HCC), cholangiocarcinoma (CCA), and other cancers involving the liver, there is a growing need to determine treatment-related toxicity, particularly when it is used in re-treatment. There is limited safety and efficacy data on re-treatment with PBT after Transarterial Radioembolization (TARE). This study evaluates safety of PBT use in patients who received PBT following previous TARE for liver-related cancer. A single center retrospective study identified 12 patients with liver-related cancers who received PBT after initial treatment with TARE between 2014 – 2020. Patient-related toxicity was assessed using Child-Turcott-Pugh (CTP) Scores and the Common Terminology Criteria for Adverse Events (CTCAE) version 5.0. Secondary endpoints were overall survival (OS), progression-free survival (PFS), and Local control (LC). All patients received microsphere-based 90Y TARE with a median dose of 150 Gy (range, 120 - 150 Gy) prescribed to the target lobe. Of the included patients, seven (58%) had hepatocellular carcinoma, three (25%) had metastatic disease, and two (17%) had intrahepatic cholangiocarcinoma. At initial treatment median CTP score was A6 (range A5-B7). Median time to initial failure was 5.6 months (range 2.4 - 47.7 months) with seven (58%) local failures at site of TARE. Median CTV volume for PBT was 493ccs (range 104 – 1395ccs). Ten patients (83%) received 5805CGE in 15 fractions and two patients (17%) received 5000CGE in 5 fractions. No patients had a decline in CTP score greater than 1 point with a median CTP A6 (range A5 – B8). There were no CTCAE grade 3+ acute or late toxicities. Median OS was 12.5 months (95% CI, 8.8 - 16.2 months) and PFS was 9.0 months (95% CI, 6.5 – 12.4 months). No patients had local failure, while two had liver failure, and eight had distant metastatic failure. Use of PBT as re-treatment following 90Y radioembolization appears to be well-tolerated and safe in an early evaluation for patients with definitive doses. Larger, multi-institutional studies are needed to verify this evaluation

P.20

EVALUATING CHANGES IN CANNABIS USE DURING PREGNANCY. Kajal Parikh*, Maggie Besse* and Katrina Mark[1], [1]Department of Obstetrics, Gynecology and Reproductive Sciences, University of Maryland School of Medicine, Baltimore, MD.

This study aimed to evaluate the patterns and reasons for cannabis use in pregnant people who screened positive for cannabis use at initiation of prenatal care with reasons being divided into categories of medical and nonmedical. Pregnant people at one clinic in Baltimore, MD who tested positive for cannabis at initiation of prenatal care or self-reported cannabis use on 4Ps Plus screener were given an anonymous survey which asked about continuation of cannabis use during pregnancy and reasons behind their use. Chi squared, Fisher's exact and ANOVA were used to conduct statistical analyses. Of the 105 respondents, 40 (38.1%) reported complete abstinence after recognition of pregnancy while 65 (61.9%) reported continued use. Of the patients who continued cannabis use 35 (53.8%) had decreased frequency of use or quit, 26 (40%) reported no change in frequency of use and 4 (6.2%) reported increase in frequency of use. Prior to recognition of pregnancy 15 (15.4%) identified use as purely medical, 15 (15.4%) identified use as purely non-medical and the remainder had mixed

reasons. Those who continued use after pregnancy recognition were more likely to identify their use as purely medical or mixed, though the trend did not meet statistical significance. Additionally, respondents who reported continued use after pregnancy recognition were significantly more likely to discuss their use with their obstetric provider (89.2% v 50%, $p < 0.001$). The results illustrate that use prior to pregnancy did not predict the likelihood of continuation of use. Compared to other studies, this study found higher rates of continuation, with many respondents shifting cannabis use to solely medical reasons or mixed reasons during pregnancy. Thus, there is a disconnect between the recommended abstinence from cannabis use and the rates of continuation. Based on these findings, it is imperative for providers to understand that many people who continue using cannabis during pregnancy do so for symptom management. Better training and education on cannabis use in pregnancy is necessary for providers to deliver more patient centered care.

P.22

KCNMA1-LINKED CHANNELOPATHY: HUMAN PATIENT CASE STUDY AND ANIMAL MODEL OF DYSKINESIA. Indira Jetton*, Andrea Meredith[1], and Philip Iffland[2], [1]Department of Physiology and [2]Department of Anatomy and Neurobiology, University of Maryland School of Medicine, Baltimore, MD.

Mutations in KCNMA1, the gene encoding the 'BK' voltage- and calcium-activated potassium channel, are associated with KCNMA1-linked channelopathy. The neurological phenotype is characterized by heterogenous and overlapping combinations of epilepsy, movement disorder, neurodevelopmental delay and disability, and structural abnormalities. Phenotypic features of epilepsy disorder include absence, atonic, myoclonic, generalized tonic-clonic and one report of epileptic encephalopathy. Previously, twelve patients have been described to display immobility and loss of postural capability characteristic of paroxysmal non-kinesigenic dyskinesia 3 (PNKD3). Here, we present a case presentation of a previously described patient carrying a gain of function (GOF) KCNMA1 variant (N536H) diagnosed with PNKD3, alongside a novel GOF KCNMA1 translational mouse model ($KCNMA1^{N999S/WT}$) displaying immobilizing PNKD3 episodes. The case study was performed to document the adult phenotypic characteristics for epilepsy and PNKD3. Next, we investigated the PNKD3 correlate in the $KCNMA1^{N999S/WT}$ mouse model. Whether the $KCNMA1^{N999S/WT}$ mouse model displays PNKD3 outside of the setting of epilepsy, as seen in human patients, has not yet been documented. Mouse immobility due to PNKD3 was measured alongside EEG to assess the presence or absence of seizure activity during an immobility event. Our findings illustrate that during an immobility episode, the mice show no seizure events. We conclude that the animal model demonstrates similar immobility presentation to patients harboring GOF variants, therefore is a consistent and accurate representation of PNKD3 in KCNMA1-channalopathy patients. These results supplement previous studies of the $KCNMA1^{N999S/WT}$ mouse model, further validating its utility in neurobehavioral and pharmacological investigation for KCNMA1-linked channelopathy.

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P.23

QUALITY AND OUTCOMES FOLLOWING IMPLEMENTATION OF ANESTHESIOLOGY FOR ALL MECHANICAL THROMBECTOMY CASES. Madison McGann*, Jose Marino[1], Chad Schrier[2], Gaurav Jindal[3], and Michael Phipps[2], [2]Division of Stroke, [1]Department of Neurology and [3]Department of Diagnostic Radiology and Nuclear Medicine, University of Maryland School of Medicine, Baltimore, MD.

The use of conscious sedation (CS) versus general anesthesia (GA) for mechanical thrombectomy (MT) remains controversial, as prior studies have not shown superiority of one over the other. At our institution there was a change from anesthesia service involvement for some to all MT cases, which increased the percent of cases performed with GA (from 47% to 90%). We evaluated the changes in

practices, safety, and outcomes after implementing this change, within a quality improvement project. We analyzed all large vessel occlusions treated with MT at our single institution over a period of three years, including two years prior to and one year following the implementation of anesthesiology for all MT cases. Cases with no passes, inpatient cases, and basilar strokes were excluded. Three sets of patients were compared: those treated before versus after full-time anesthesia, all patients treated with CS vs all patients treated with GA over the entire period, and all right-sided strokes treated before and after full-time anesthesia (as R MCA infarcts were more likely to have CS prior to full-time anesthesia). A total of 378 (N= 253 pre-anesthesia, 125 post-anesthesia, 147 CS, 231 GA, 119 right-sided pre-anesthesia, 65 right-sided post-anesthesia) cases met inclusion criteria. There were significantly more patients with left-sided and severe strokes among patients who received GA (59% and 69% respectively) compared to CS (39% and 48%). There were no differences in patients requiring > 1 pass or who achieved TICI score of 2b to 3, and no differences in hospital length of stay, mortality at 90 days, or median mRS at 90 days. Time to groin puncture was longer in the post-anesthesia, GA, and right-sided post-anesthesia groups, but arrival to recanalization did not differ between any groups. Any ICH was significantly more common in the post-anesthesia group (30% vs 18%), GA group (26% vs 16%), and right sided post-anesthesia group (34% vs 15%). In conclusion, involvement and the increase in GA use was not associated with increased time to recanalization, mortality, adverse events, or longer hospital stays.

P.24

CELLULAR MECHANISM INVOLVED IN HEMORRHAGIC PROGRESSION OF CONTUSION FOLLOWING TRAUMATIC BRAIN INJURY. Madison Evans*, Anandita Gaur[1], Volodymyr Gerzanich[2], Kaspar Keledjian[2], Orest Tsymbalyuk[2], and J. Marc Simard[2], [1]University of Maryland, College Park, College Park, MD, and [2]Department of Neurosurgery, University of Maryland School of Medicine, Baltimore, MD.

A severe sequelae of head trauma is a cerebral contusion, which bruises and irreversibly defunctionalizes tissues. The resulting lesion often expands into non-contiguous hemorrhages shortly after impact, a process called hemorrhagic progression of a contusion (HPC). Glibenclamide is a sulfonylurea drug that reduces HPC after a traumatic brain injury (TBI) by acting as a SUR1 antagonist. It was previously discovered that after a TBI, brain microvessels upregulate SUR1-TRPM4 channels prior to undergoing catastrophic failure and forming petechial hemorrhages. However, the cellular and molecular mechanism of HPC has not been fully elucidated. In this study, we used a mouse TBI model to assess HPC lesion volume and neurofunctional status of cognition, memory, motor coordination, and balance. Preliminary results validated the model, suggesting that glibenclamide has a therapeutic effect in a TBI model. Two treatment methods were employed to demonstrate the effect of glibenclamide treatment on HPC formation: the first group received 10 μg of glibenclamide at t=0 hours, immediately after contusion, where these mice improved in cognition and memory but not in sensorimotor coordination. The second group received 10 μg of glibenclamide at t=0 hours and t=10 hours. The additional dosage of glibenclamide improved cognition and memory as well as gait function; however, it had no significant effect on neuromuscular coordination. Image analysis of coronal brain sections post-contusion aligned with neurofunctional outcomes. Authenticating the mouse TBI model with HPC allows for future histological and neurobehavioral evaluation of cell-specific deletion of *Abcc8*/SUR1 in transgenic mouse strains. We are currently studying *Abcc8*/SUR1 gene suppression in endothelial and astrocytic cells, essentially mimicking the individual effect of glibenclamide on each microvessel layer. Identifying the cell-specific targets of glibenclamide may aid in future drug discovery and provide a therapeutic benefit for TBI patients.

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P.25

THE IMPACT OF SLEEP DURATION ON FUNCTIONAL BRAIN NETWORKS AND PUBERTAL HORMONE LEVELS IN YOUNG ADOLESCENTS. Ozerk Turan*, Linda Chang[1], Amal Isaiah[2], Thomas Ernst[1], and Jonathan Garner[1], [1]Department of Diagnostic Radiology and Nuclear Medicine and [2]Department of Otorhinolaryngology - Head and Neck Surgery, University of Maryland School of Medicine, Baltimore, MD.

The role of adequate sleep duration in the physiological and metabolic health of preadolescents is critical. However, sleep disorders, including sleep deprivation, have become more prevalent throughout the last decade. The neural correlates regarding the development of physiological outcomes could provide important evidence for further understanding of neuroplasticity in the adolescent brain, along with implications for future therapeutic or preventive interventions. This study assessed the developing adolescent brain by exploring large-scale brain network functional connectivity and levels of pubertal hormones, and their relationship to sleep duration in adolescents. Utilizing the 4.0 data Release from the landmark Adolescent Brain Cognitive Development (ABCD) study, we evaluated cross-sectional Fitbit data that included sleep duration collected in 5,968 adolescents aged 10-13 years. A linear regression analysis was implemented to assess the sex-specific relationship between 1) sleep duration and resting state functional connectivity and 2) sleep duration and salivary pubertal hormone levels. After stepwise covariate regression analyses, sleep duration in the adolescent boys was found to be inversely correlated with the resting-state functional connectivity of 8 distinct within- or between-brain networks pairs; 7 of these connectivity values involved the sensorimotor network. When the same analysis was replicated in the subset of girls, 31 distinct brain connectivity relationships were found to be significantly correlated with sleep duration, including many of the same relationships shown in the boys. Further investigation into the sex-specific relationship between sleep duration and pubertal hormone levels revealed that sleep duration was inversely correlated with the levels of testosterone in young adolescent boys, yet no significant relationship was observed in the girls. The findings from this large dataset provide evidence that shorter sleep duration is associated with sex-specific patterns of both disrupted large-scale brain network connectivity and elevated testosterone levels, further highlighting the critical role of sleep for young adolescents.

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RGC-32 CONTRIBUTES TO REACTIVE ASTROCYTOSIS IN EXPERIMENTAL AUTOIMMUNE ENCEPHALOMYELITIS BY MAINTAINING A MATURE PHENOTYPE. Jacob Cuevas*, Alexandru Tatomir[1], Vinh Vinh[2], and Horea Rus[1], [1]Department of Neurology and Department of Medicine, University of Maryland School of Medicine, Baltimore, MD.

Reactive astrocytes play a crucial role in the pathogenesis of multiple sclerosis (MS) and its murine model, experimental autoimmune encephalomyelitis (EAE). Pathogenicity of reactive astrocytes results from their ability to express complex molecular machinery capable of mounting and perpetuating cellular processes that lead to neuroinflammation and tissue remodeling. We have previously shown that Response Gene to Complement (RGC)-32 modulates transforming growth factor (TGF)-β-induced extracellular matrix secretion and the ability of astrocytes to undergo reactive changes in vivo during acute EAE. However, the molecular programs underlying these effects are still not well understood. We aim to better characterize the transcriptomic programs and mechanistic pathways activated by RGC-32 in reactive astrocytes. To do so, we performed next-generation RNA sequencing on neonatal brain astrocytes isolated from wild type (WT) and RGC-32 knock-out (KO) mice, either unstimulated or stimulated with TGF-β. Functional enrichment analysis was then used for the generation of Gene Ontology categories. Results were then validated by using Real-Time PCR. Spinal cords from WT and RGC-32 KO mice with EAE (at days 0 and 14) were stained by immunohistochemistry for the astrocyte marker GFAP and axonal guidance molecules (AGM). Lack of RGC-32 significantly impacted the transcriptomic programs normally associated with brain

development and neurogenesis but whose re-expression is usually seen in reactive astrocytes. Connectivity analysis revealed that genes coding for AGM were particularly affected. We found lower transcript levels of ephrin receptor A type 7 (Epha7), Nuclear Factor IA (NFIA), and Slit guidance ligand 2 (Slit2) in RGC-32 KO astrocytes. Moreover, our results showed that NFIA and EPHA7 are expressed in reactive astrocytes at the peak of EAE. We found a lower number of EPHA7 and NFIA positive astrocytes in RGC-32 KO mice. These findings suggest that RGC-32 regulates TGF-β's ability to trigger complex molecular programs and is relevant to astrocyte differentiation. We also speculate that AGM regulation is involved in RGC-32-facilitated reactive astrocytosis during EAE.

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ASSESSING UNMET EYE CARE NEEDS AMONG PATIENTS WITH CHRONIC KIDNEY DISEASE UNDERGOING HEMODIALYSIS. Priya Agrawal*, Ramya Swamy[1], and Ami Patel[2], [1]Department of Ophthalmology and Visual Sciences and [2]Division of Nephrology, Department of Medicine, University of Maryland School of Medicine, Baltimore, MD.

There is evidence that the prevalence of vision impairment and eye disease is higher among patients with chronic kidney disease (CKD) than in those without. Once the patient is dependent on dialysis, there are multiple proposed risk factors which may explain this impact on eye health. Both the kidney and eye are subject to microvascular damage caused by chronic conditions such as hypertension and diabetes. Additionally, alterations in blood composition and volume caused by both impaired kidney function and dialysis can affect intraocular pressure and optic nerve perfusion. However, there is little information on whether these patients are receiving appropriate eye care because there are currently no clinical guidelines with referral recommendations specific to this vulnerable patient population. Our aim was to determine the proportion of patients receiving regular eye care, identify barriers to care, and assess patient knowledge. To assess the unmet ophthalmic care needs among the CKD patient population receiving hemodialysis in Baltimore City, a survey was administered while patients received dialysis. 82 patients with chronic kidney disease on dialysis were recruited in-person at two Independent Dialysis Foundation sites in Baltimore City from June 2022 to July 2022. The results suggest that there are significant unmet eye care needs in this patient population. Results also suggest a gap in knowledge regarding the relationship between CKD and eye health. A large proportion of patients have not received an eye exam in the past one year potentially due to this lack of knowledge or due to a lack of time secondary to the burden of hemodialysis. These findings support the need for clinical guidelines for referral recommendations and the development of educational resources to increase patient understanding and facilitate scheduling appointments.

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LASER-DELIVERED BIO-IDENTICAL GROWTH FACTORS AS A TREATMENT FOR CENTRAL CENTRIFUGAL CICATRICIAL ALOPECIA. Yazmeen Tembunde* and Chesahna Kindred[1], [1]Department of Dermatology, Howard University College of Medicine School of Medicine, Washington, DC.

Central centrifugal cicatricial alopecia (CCCA) is a progressive form of scarring alopecia that primarily affects women of African descent.[1] Standard therapies primarily reduce inflammation with few options to regrow hair. This case series reports the therapeutic effect of a laser-delivered bio-identical growth factor treatment (KeraFactor Peptide Complex) in four patients with histologically-confirmed diagnoses of CCCA and one patient diagnosed with CCCA-forme fruste.[2] The laser-delivered bio-identical growth factor treatment used in this case series contains bio-identical EGF,

VEGF, bFGF, and Thymosin Beta 4 and 3 proprietary growth factors. We treated five patients with the laser-delivered bio-identical growth factor treatment. Diagnoses included CCCA and CCCA-forme fruste. The scalp was treated with a non-ablative fractional thulium laser (LaseMD Ultra) to create micro-channels in the scalp for increased absorption of the product. The bio-identical growth factor serum was then manually massaged into the scalp. Before and after treatment photos were blindly evaluated by an expert panel of two external dermatologists. Evaluators assessed each patient's hair using a 7-point scale that compared hair count change to baseline. Evaluators used the following scale: greatly decreased (-3), moderately decreased (-2), slightly decreased (-1), no change (0), slightly increased (1), moderately increased (2), greatly increased (3). On average, patients were rated to have between a moderate and great increase in hair counts (an average rating of 2.5). Ultimately, 100% of these patients had improvements in their hair, with an average of moderately/greatly increased hair counts compared to baseline. CCCA is a chronic inflammatory alopecia that unpredictably waxes and wanes. Moreover, this condition can be poorly responsive to current treatments, such as immunosuppressants and immunomodulatory pharmaceutical agents. As such, there is a great need for safe and effective treatments for CCCA. Significant hair regrowth was observed in all 5 patients after treatment with laser-delivered bio-identical growth factor. Two external dermatologists with years of experience treating CCCA assessed each patient's before and after treatment photos to rate their change in the appearance of hair loss using a 7-point scale. On average, our patients were rated to have between a moderate and great increase in hair count compared to baseline. This case series demonstrates that laser-delivered bio-identical growth factors are efficient, can promote hair regrowth, and result in noticeable improvements. This treatment modality should be considered for CCCA. Further evaluation in a controlled trial with more patients is warranted to fully understand the potential benefit of this treatment.

P.29

LONG-TERM COMPLICATIONS OF COVID-19 IN TRANSPLANT RECIPIENTS. Kaitlyn Freels*, Kapil Saharia[1], John Baddley[1], Nadiesda Costa[2], and Silke Niederhaus[3], [1]Division of Infectious Disease, Department of Medicine and [3]Division of Transplant, Department of Surgery University of Maryland School of Medicine, Baltimore, MD, and [2]Division of Nephrology, Department of Medicine, Georgetown University School of Medicine, Washington D.C.

The purpose of this study was to evaluate outcomes of readmission, rejection, graft dysfunction, graft failure, and death in SOT recipients (SOTR) after COVID-19. We conducted a retrospective cohort study of SOTR diagnosed with COVID-19 before 5/1/2021. COVID-19 disease severity was assigned retrospectively by NIH criteria. Data collected included demographics, clinical features, treatment, and outcomes. Bivariate comparisons to evaluate characteristics associated with outcomes were performed with independent group t-tests for continuous variables and Fisher's exact tests for categorical variables. One-hundred thirty-eight SOTR were diagnosed with COVID-19 at a median of 5 (IQR 3-8) years post-transplant with a mean age of 57±12 years at diagnosis. Most were kidney or liver recipients; 49 (36%) had asymptomatic or mild infection, 29 (21%) of SOTR had moderate, 26 (19%) severe, and 31 (22%) critical infection. Disease severity, treatment with steroids or remdesivir did not correlate with rejection. Most graft failures occurred in SOTR with critical (n=26) disease. There were 102 (74%) SOTR admitted to the hospital for COVID-19 infection, of which 27 (26%) were readmitted more than 2 months after their index hospitalization. Of the readmissions, 5 were for renal complications, 5 infectious, and 7 pulmonary. Among those hospitalized, 13 (13%) SOTR died during the index admission. Among the 28 SOTR who were readmitted, 5 (18%) SOTR died during readmission. The mean time from initial infection to death was 121±176 days. In this cohort, disease severity was associated with graft failure. Readmissions were frequent more than 2 months after the index admission. Mortality in those who were readmitted remained high. Rejection was relatively infrequent.

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P.30

FARTHER GEOGRAPHIC DISTANCE AND LOWER SOCIOECONOMIC STATUS SHOULD NOT PRECLUDE TRANSFER OF ACUTE LIMB ISCHEMIA TO TERTIARY CARE CENTERS.

Gillian Murray* and Khanjan Nagarsheth[1], [1]Division of Vascular Surgery, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

Current clinical practice guidelines support the decision to escalate the care of a patient presenting with acute limb ischemia (ALI) to a tertiary center when needed given the emergent nature of the condition. However, the relationship between patient geographical distance to site of care and associated socioeconomic factors have not yet been described in the ALI population. Here, we aimed to determine the association of geographic distance to site of care and geographic socioeconomic status (SES) with rates of adverse outcomes in the ALI population. Patients presenting with ALI to a tertiary center requiring vascular intervention were separated into two groups according to geographical distance between their residence and admission hospital. SES factors based on geography were determined (household income). Primary outcomes were rates of death, major adverse cardiac event (MACE), and major adverse limb events (MALE), using Pearson's X2 tests. A total of 44 patients were evaluated (50.0% male, 54.6% white), with a range of geographical distances between 3.7 miles and 140 miles (Group 1: 3.7-10.2 miles, Group 2: 12-140 miles). There was no statistically significant difference amongst rates of death, MACEs, MALEs, or total adverse outcomes between the groups (p-value 0.213, 0.888, 0.361, 0.425 respectively). Both median and average household income were different between the groups (p-value <0.05). Patient follow-up status within 30 days of vascular intervention was not associated with geographic distance (p-value 1.000). Farther geographical distance from site of intervention is not associated with increased rates of MACEs, MALEs, or death in patients with ALI. Additionally, patient outcomes are not associated with differences in geographic SES. These findings suggest that escalating care when needed to centers with vascular expertise that may be of farther than average geographical distance for patients does not predispose to worse patient outcomes.