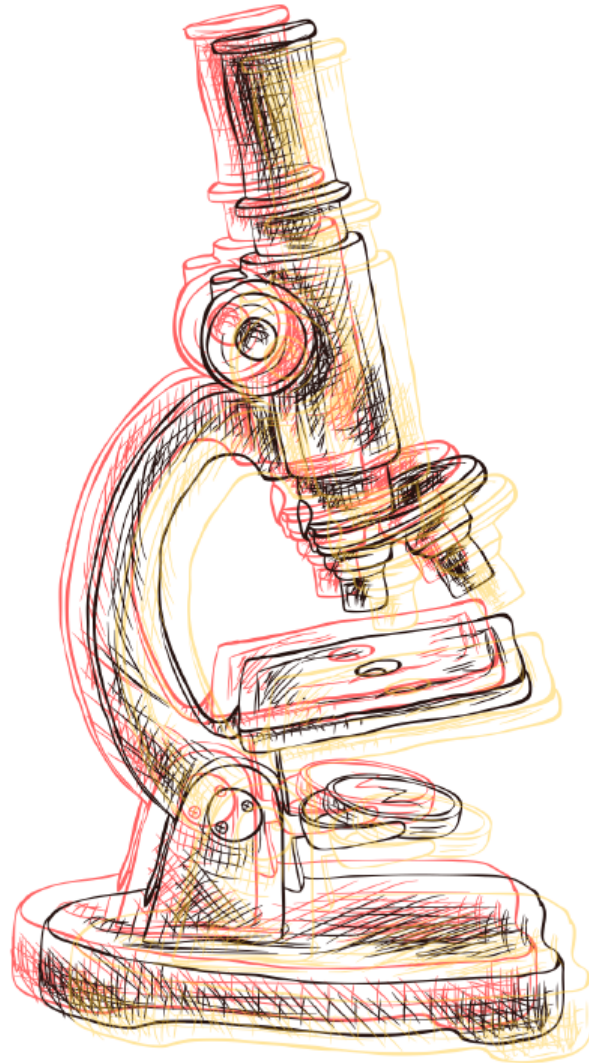




UNIVERSITY *of* MARYLAND  
SCHOOL OF MEDICINE



University of Maryland School of Medicine's 46th Annual

# *Medical Student Research Day*

Tuesday, November 28, 2023, 12:10 – 5:00 PM | Wednesday, November 29, 2023, 2:20 – 6:00 PM  
SMC Campus Center, 621 W. Lombard Street

## **Office of Student Research**

### **Miriam K. Laufer, M.D., M.P.H.**

Professor of Pediatrics  
Associate Dean for Student Research and Education  
Director of the Office of Student Research

### **Gregory B. Carey, Ph.D.**

Associate Professor of Microbiology and Immunology  
Assistant Dean for Student Research and Education  
Executive Director of Student Research and Community Outreach

### **Donald R. Matteson, Ph.D.**

Associate Professor of Physiology  
Assistant Dean for Student Research Education and Dual Degree Programs

### **Qi Cao, J.D.**

Research Coordinator

### **Fiana Romero, M.S.**

Senior Program Specialist

### **Gabrielle Dickerson, MSI**

Student Coordinator

## **Alpha Omega Alpha Honor Society Student Members and Additional Event Staff**

Zachariah Lee

AOA MSRD Chair & Event Coordinator

Asha Kodan

Katherine Raja

AOA MSRD Chair & Event Coordinator

Alexander Laurenson

Ayamba Ayuk-Brown

Abel Odolil

Lauren Bernard

Hannah Palmer

Minahil Cheema

Natalie Summerville

Juan Dalo

Yazmeen Tembunde

Mary Hackbarth

Gabrielle Voithofer

Emily Jusuf

Anum Zehra

Raushanah Kareem

Will Zhu

## Acknowledgements

We would like to express our gratitude to the Dean's Office for providing the financial support for Medical Student Research Day.

We would also like to express our appreciation for all the research programs, faculty mentors and other mentors who supported and guided the students in their research.

Our special thanks go to the faculty, research associate, resident, fellow, post-doctoral fellow and AOA student member judges who so willingly provided their time and knowledge:

Rachel Abbotts MD, PhD	Daniel Gingold, MD, MPH	Elizabeth Parker, PhD, RD
James Ahodantin, PhD	Shana Gregory, PhD	Adam Puche, PhD
Bakri Alzarka, MS, MD	Md Mamunul Haque, PhD	Mohammed Rahman, PhD
Mohammed Amin MSc, PhD	Bashar Hassan, MD	Sarada Rao, MD
Sterling Arjona, PhD	Bret Hassel, PhD	Krishanu Ray, PhD
James Assif, MD	Mahsa Hojabri, MD	Boyang Ren, PhD
Djordje Atanackovic, MD	Muddassar Iqbal, PhD	Katharina Richard, PhD
Ola Awad, PhD	Casey Jackson, MS, BS	Martha Rondon
Elizabeth Balcer-Kubiczek ,PhD	Stephanie Jones, MD	Erika Russell-Ofori, DO
Andrea Berry, MS, MD	Dhan Kalvakolanu, PhD	Alexis Salerno, MD, FPD-AEMUS
Chandra Bhati, MD	Deborah Kotz	Nirav Shah, MD
Dominique Bollino, PhD	Audra Kramer, PhD	Giovannino Silvestri, PhD
Nicole Brandt, PharmD, MBA	Stephanie Kulaga, MD	Zeba Singh, MBBS
Jonathan Bromberg, MD, PhD	O. Stella Latinovic, PhD, MSc, MBA, MSc	Sripriya Sundararajan, MD
Rianne Campbell, PhD	Matt Laurens, MD, MPH	Sarah Sunshine, MD
Laura Carreto-Binaghi, MD, PhD	Seung Lee, MD, MBA	Lydia Tang, MBChB
France Carrier, PhD	Huajun Liang, MBBS, MSc, PhD	Daiana C.O. Vieira, PhD
Svetlana Chapoval, MD, PhD	Ruya Liu, MD, PhD	Oliver Voss, PhD
Ryan Cherng, MD	Shunqun Luo, PhD	Melissa Vyfhuis, MD, PhD
William Chiu, MD	Sarah McAvoy, MD	Rezwanul Wahid, PhD
Joel Chua, MD	Prachi Mehndiratta, MD	Wei Wang, PhD
Luana Colloca, MD, PhD, MS	Istvan Merchenthaler, MD, PhD, DSc	Meagan Watkins, MD
Vincent Conroy, BS, DScPT	Siamak Moayed, MD	Gentry Wilkerson, MD
Ashlee Conway, PhD	Jason Molitoris, MD, PhD	Fuhua Xu, PhD
Paola Corti, PhD	Samhati Mondal, MBBS	Nagendra Yadava, PhD
Leah Couture, MD	Jessica Mong, PhD	Bouhaitha Yousef, MD
Nathan Cramer, PhD	Arshi Munawwar, PhD	Min Yu, PhD
Erika Davies, PhD	Srinivasan Muthukrishnan, MBBS, MS, MCh, FACS	Yifan Yuan, PhD
Natalie Davis, MD, MMSc	Warren Naselsky MD, MS	Haseeb Zubair PhDu, PhD
Vasken Dilsizian, MD, MSCHE	Faria Nasim, MD	
Amanda Driscoll, PhD	Nazary Nebeluk, MD, PhD	
Vishnuprabu Durairaj Pandian, PhD	Yuko Ota, PhD	
Ankit Dwivedi, PhD	Nikhil Pandey, PhD	
Motomi Enomoto-Iwamoto, PhD, DDS	Nehu Parimi, MD, MS, CCD	
Joseph Gillespie, PhD		

University of Maryland School of Medicine  
Office of Student Research and  
Alpha Omega Alpha Honor Medical Society

***46th Annual Medical Student Research Day***

Tuesday, November 28, 2023, 12:10 – 5:00 PM | Wednesday, November 29, 2023, 2:20 – 6:00 PM  
SMC Campus Center, 621 W. Lombard Street

**Day 1: Tuesday, November 28**

Registrations at 2nd Floor Lobby

**Lunch & Keynote Address**

12:10 - 1:20 PM Elm A (Room 208)

**Break**

1:20 - 1:30 PM

**Opening Remarks**

12:25 – 12:45 PM

**Presentations**

1:30 - 4:40 PM

**Gregory B. Carey, Ph.D. Associate**

*Professor of Microbiology and Immunology Assistant Dean for Student  
Research and Education Executive Director of Student Research and  
Community Outreach Director of PRISM and UM Scholars at SOM  
Programs Director of STAR-PREP Program*

**Miriam K. Laufer, M.D., M.P.H.**

*Professor of Pediatrics Associate Dean for Student Research and  
Education Director of Office of Student Research Associate Director for  
Malaria Research Center for Vaccine Development and Global Health  
Associate*

**Zachariah Lee, MS IV**

*Alpha Omega Alpha Honor Medical Society Maryland Beta Chapter  
MSRD Chair and Event Coordinator*

**Keynote Address**

12:45 – 1:15 PM

**Jonathan S. Bromberg, MD, PhD**

*Charles Reid Edwards, MD Professor of Surgery Professor of  
Microbiology and Immunology Vice Chair for Research Department of  
Surgery University of Maryland School of Medicine*

**Schedule and Procedures**

1:15 - 1:20 PM

**Qi Cao, J.D.**

*Research Coordinator*

**Session 1**

1:30 - 2:30 PM

Oral Presentation Session I – Elm A (Room 208)  
Oral Presentation Session II – Elm B (Room 210)  
Oral Presentation Session III – Room 351 Poster  
Presentation Session I – Room 349

**Break**

2:30 - 2:40 PM

**Session 2**

2:40 - 3:40 PM

Oral Presentation Session IV – Elm A (Room 208)  
Oral Presentation Session V – Elm B (Room 210)  
Poster Presentation Session II – Room 349

**Break**

3:40 - 3:50 PM

**Session 3**

3:50 - 4:50 PM

Oral Presentation Session VI – Elm A (Room 208)  
Oral Presentation Session VII – Elm B (Room 210)  
Oral Presentation Session VIIi – Room 351

## **Day 2: Wednesday, November 29**

Registrations at 3rd Floor Lobby

### **Presentations**

2:20 - 4:30 PM

#### **Session 4**

2:20 - 3:20 PM

Oral Presentation Session IX – Room 351

Oral Presentation Session X – Room 223

Poster Presentation Session III – Room 349

#### **Break**

3:20 - 3:30 PM

#### **Session 5**

3:30 - 4:30 PM

Oral Presentation Session XI – Elm A (Room 208)

Oral Presentation Session XII – Elm B (Room 210)

Poster Presentation Session IV – Room 349

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### **Awards Banquet**

4:40 – 6:00 PM. Elm A (Room 208)

#### **Dinner**

4:40 – 6:00 PM

### **Honoring Faculty Mentors: Mentor Recognition Awards**

5:00 – 5:30 PM

**Gregory B. Carey, Ph.D.**

**Zachariah Lee, MS IV**

**Katherine Raja, MS IV**

#### **Presentation of Student Awards**

**Zachariah Lee, MS IV**

**Katherine Raja, MS IV**

*Maryland Beta Chapter Alpha Omega Alpha Honor Medical Society*

5:30 - 5:50 PM

#### **Closing Remarks**

5:50 - 6:00 PM

**Gregory B. Carey, Ph.D**



**Keynote Speaker**

**Jonathan S. Bromberg, MD, PhD**

Charles Reid Edwards, MD Professor of Surgery  
Professor of Microbiology and Immunology  
Vice Chair for Research, Department of Surgery  
University of Maryland School of Medicine

Dr. Bromberg attended Harvard College, graduating Phi Beta Kappa and summa cum laude. He then received an MD and PhD in Immunology from Harvard Medical School, where he worked with Drs. Baruj Benacerraf and Mark Greene researching regulatory T cells. He completed his general surgery residency at the University of Washington before completing a fellowship in transplantation at the Hospital of the University of Pennsylvania. He has received numerous academic awards including the American Society of Transplant Surgeons' Sandoz Fellowship Award (1988-1990), the Mary Jane Kugel Award from the Juvenile Diabetes Foundation (2000), and the American Society of Transplantation's Basic Science Investigator Award (2013), in addition to recently being named the distinguished Charles Reid Edwards, MD Professorship in

Surgery at the University of Maryland School of Medicine (2022).

In addition to maintaining an active clinical practice in transplant surgery, Dr. Bromberg has been a world-renowned researcher in T cell immunology. His primary area of research involves understanding the underlying mechanisms of tolerance in solid organ transplantation, specifically the migration and trafficking of innate and adaptive immune cells, secondary lymphoid organ structure and function, the role of the gut microbiota on transplant outcomes, and the induction and activity of regulatory T cells. He is the principal investigator of multiple NIH and other national society grants for basic science, translational, and clinical research in transplantation. Throughout his career, Dr. Bromberg has been heavily involved in medical education, mentoring and precepting dozens of medical and PhD students, residents, and post-docs. His mentorship achievements in education as the Vice Chair for Research and the Director of Research in the Division of Transplantation at the University of Maryland have complemented his administrative services for the university and department of surgery. Dr. Bromberg has been invited to give lectures and grand rounds presentations around the world, and he has been recognized in *New York*, *Washington*, and *Baltimore* magazines' "Best Doctors".

## Oral Presentation Schedule

See [MSRD 2023 Event Webpage](#) for more information about the event

Oral presentations are 10 minutes each.  
Presenters are indicated with “\*” next to their names.

### Oral Presentation Session I

Day 1, Tuesday, 11/28, 1:30 – 2:30 p.m., Elm A (Room 208)

#### O.01 1:30 p.m.

SEX BIAS IN PEDIATRIC DEEP LEARNING CHEST RADIOGRAPH CLASSIFIER MODEL. Jake Kim\*, Pranav Kulkarni<sup>1</sup>, Alex Welsh<sup>1</sup>, Sean Garin<sup>1</sup>, Devina Chatterjee<sup>1</sup>, Adway Kanhere<sup>1</sup>, Vishwa Parekh<sup>1</sup>, and Paul Yi<sup>1</sup>, <sup>1</sup>Department of Diagnostic Radiology and Nuclear Medicine, University of Maryland School of Medicine, Baltimore, MD.

#### O.02 1:40 p.m.

EVALUATING THE TRUSTWORTHINESS OF EXPLAINABLE AI IN MEDICAL IMAGING. Alex Welsh\*, Paul Yi<sup>1</sup>, and Vishwa Parekh<sup>1</sup>, <sup>1</sup>Department of Diagnostic Radiology and Nuclear Medicine, University of Maryland School of Medicine, Baltimore, MD.

#### O.03 1:50 p.m.

CHILDREN ARE NOT SMALL ADULTS: ADDRESSING LIMITED GENERALIZABILITY OF AN ADULT DEEP LEARNING ORGAN SEGMENTATION MODEL TO THE PEDIATRIC POPULATION. Devina Chatterjee\*, Florence Doo<sup>1</sup>, Adway Kanhere<sup>1</sup>, Andrew Chan<sup>1</sup>, Alexander Welsh<sup>1</sup>, Annie Trang<sup>1</sup>, Vishwa Parekh<sup>1</sup>, and Paul Yi<sup>1</sup>, <sup>1</sup>Department of Diagnostic Radiology and Nuclear Medicine, University of Maryland School of Medicine, Baltimore, MD.

#### O.04 2:00 p.m.

IS YOUR AI FAIR? AN EVALUATION OF DEMOGRAPHIC BIASES IN AIDOC FOR INTRACRANIAL HEMORRHAGE TRIAGE. Annie Trang\*, Kristin Putman<sup>1</sup>, Dharmam Savani<sup>2</sup>, Devina Chatterjee<sup>3</sup>, Jerry Zhao<sup>4</sup>, Peter Kamel<sup>2</sup>, Vishwa Parekh<sup>2</sup>, and Paul Yi<sup>2</sup>, <sup>1</sup>University of Virginia, Charlottesville, VA, <sup>2</sup>Department of Diagnostic Radiology and Nuclear Medicine, <sup>3</sup>University of Maryland School of Medicine, Baltimore, MD, and <sup>4</sup>University of Maryland College Park, College Park, MD.

#### O.05 2:10 p.m.

AUTOMATED EXTRACTION OF PERI-CORONARY ADIPOSE TISSUE AND RADIOMIC FEATURE EXTRACTION ON CORE320. Devina Chatterjee\*, Adway Kanhere<sup>1</sup>, Benjamin Shou<sup>2</sup>, Sangmita Singh<sup>3</sup>, Vishwa Parekh<sup>1</sup>, Paul Yi<sup>1</sup>, and Armin Zadeh<sup>4</sup>, <sup>1</sup>Department of Diagnostic Radiology and Nuclear Medicine, University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>Department of Surgery, <sup>3</sup>Department of Diagnostic Radiology and Nuclear Medicine, and <sup>4</sup>Department of Cardiology, Johns Hopkins School of Medicine, Baltimore, MD.

#### O.06 2:20 p.m.

THE INSURANCE LANDSCAPE OF BOTULINUM TOXIN POLICIES FOR MIGRAINES IN THE UNITED STATES. Kevin Zhu\*, Michael Ha<sup>1</sup>, Emily Finkelstein<sup>2</sup>, Salman Choudhry<sup>3</sup>, and Yvonne Rasko<sup>1</sup>, <sup>1</sup>Division of Plastic Surgery, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD, <sup>2</sup>Division of Plastic Surgery, Department of Surgery, University of Miami School of Medicine, Miami, FL, and <sup>3</sup>Department of Surgery, Anne Arundel Medical Center School of Medicine, Annapolis, MD.

## Oral Presentation Session II

Day 1, Tuesday, 11/28, 1:30 – 2:30 p.m., Elm B (Room 210)

### O.07 1:30 p.m.

ASSESSMENT OF DIFFERENCES REGARDING MANAGEMENT OF PEDIATRIC SUPRACONDYLAR HUMERUS FRACTURES BETWEEN ORTHOPAEDIC PROVIDER LEVEL OF TRAINING. Cameron Amini\*, Joshua Abzug<sup>1</sup>, and Catherine May<sup>2</sup>, <sup>1</sup>Department of Orthopaedics, <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD.

### O.08 1:40 p.m.

MOTOR VEHICLE TRANSPORTATION IN SHOULDER SPICA CASTS: ARE OUR PATIENTS SAFELY RESTRAINED? Ahlam Ashkar\* and Joshua Abzug<sup>1</sup>, <sup>1</sup>Division of Pediatrics, Hand Surgery, Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

### O.09 1:50 p.m.

PERSISTENCE OF ANXIETY IN MULTILIGAMENT KNEE INJURY WITH DISLOCATED KNEE. Laura De Ravin\*, Douglas Cooper<sup>1</sup>, Dominic Ventimiglia<sup>2</sup>, and R. Frank Henn III<sup>3</sup>, <sup>2</sup>University of Maryland, Baltimore, and <sup>3</sup>Division of Sports Medicine, Department of Orthopaedics, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

### O.10 2:00 p.m.

ARE PATIENTS COMPLETELY BETTER AFTER KNEE REPLACEMENT?. Ovais Hasan\*, Laura Ravin<sup>1</sup>, Dominic Ventimiglia<sup>1</sup>, Brittany Oster<sup>2</sup>, Sean Meredith<sup>3</sup>, and Frank Henn<sup>3</sup>, <sup>3</sup>Division of Sports Medicine, <sup>2</sup>Department of Orthopaedics, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

### O.11 2:10 p.m.

DEVELOPMENT OF A PATIENT SPECIFIC CARTILAGE GRAFT USING MAGNETIC RESONANCE IMAGING AND 3D PRINTING. Antoan Koshar\*, Matthew Kolevar<sup>1</sup>, and Jonathan Packer<sup>1</sup>, <sup>1</sup>Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

### O.12 2:20 p.m.

RISK FACTORS AND OUTCOMES ASSOCIATED WITH SATISFACTION AND EXPECTATIONS AFTER HIP ARTHROSCOPY. Seyedeh Zahra Mousavi\*, Dominic Ventimiglia<sup>1</sup>, Evan Honig<sup>1</sup>, and Sean Meredith<sup>1</sup>, <sup>1</sup>Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

## Oral Presentation Session III

Day 1, Tuesday, 11/28, 1:30 – 2:30 p.m., Room 351

### O.14 1:30 p.m.

ASSESSING THE PREDICTIVE VALUE OF THE NEUTROPHIL-TO-LYMPHOCYTE RATIO FOR POST-THROMBOTIC SYNDROME FOLLOWING ILIOFEMORAL DEEP VEIN THROMBOSIS. Anthony DeMartino\*, Olivia Babick\*, Anahita Shiva\*, Nisarg Shah<sup>1</sup>, Laura De Ravin<sup>1</sup>, Devina Chatterjee<sup>1</sup>, and Khanjan Nagarsheth<sup>2</sup>, <sup>2</sup>Division of Vascular Surgery, <sup>1</sup>Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

### O.15 1:40 p.m.

HEALTH DAMAGES OF WILDFIRE SMOKE ON EAST COAST CITIES. Donald De Alwis\* and Zhekang Ying<sup>1</sup>, <sup>1</sup>Department of Medicine, University of Maryland School of Medicine, Baltimore, MD.



**O.16 1:50 p.m.**

IS RESIDENCE ASSOCIATED WITH FOOD INSECURITY IN REPRODUCTIVE PATIENTS: WHICH DATABASE IS BETTER? Sanyukta Deshmukh\*, Rose Pagano<sup>1</sup>, and Jessica Lee<sup>1</sup>, <sup>1</sup>Department of Obstetrics, Gynecology and Reproductive Sciences, University of Maryland School of Medicine, Baltimore, MD.

**O.17 2:00 p.m.**

OLDER ADULTS' ATTITUDES ON SUCCESSFUL AGING: QUALITATIVE INTERVIEWS IN SAN VITO, COSTA RICA. Alexis Vetack\*, Christine Wan<sup>1</sup>, Hima Konduru<sup>1</sup>, Melissa Rallo<sup>1</sup>, Shania Bailey<sup>1</sup>, Lilli Pedersen<sup>1</sup>, Nick Leahy<sup>1</sup>, and Carlos Faerron Guzmán<sup>2</sup>, <sup>1</sup>University of Maryland School of Medicine and <sup>2</sup>University of Maryland, Baltimore, Baltimore, MD.

**O.18 2:10 p.m.**

DELIVERY OUTCOMES IN PREGNANCY COMPLICATED BY LATE-ONSET FETAL GROWTH RESTRICTION. Amy Huddleson\*, Clarice Hu\*, Molly Johnson<sup>1</sup>, and Andrea Desai<sup>2</sup>, <sup>2</sup>Division of Maternal and Fetal Medicine, <sup>1</sup>Department of Obstetrics, Gynecology and Reproductive Sciences, University of Maryland School of Medicine, Baltimore, MD.

**Oral Presentation Session IV**

Day 1, Tuesday, 11/28, 2:40-3:40 p.m, Elm Room A (Room 208)

**O.19 2:40 p.m.**

THE POTENTIAL ROLE OF RHO KINASE INHIBITORS IN OCULAR GRAFT-VERSUS-HOST DISEASE. Charlyn Gomez\*, Pooja Dharmendran<sup>1</sup>, Megan Utz<sup>2</sup>, and Sarah Sunshine<sup>2</sup>, <sup>1</sup>University of Maryland College Park, College Park, MD, and <sup>2</sup>Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

**O.20 2:50 p.m.**

COMPARISON OF CORNEAL DIAMETER AND ANGLE-TO-ANGLE DIAMETER IN PEDIATRIC EYES USING ULTRASOUND BIOMICROSCOPY. Taylor Kolosky\*, Anusha Saga<sup>1</sup>, Urjita Das<sup>2</sup>, Bhakti Panchal<sup>2</sup>, Jana Bregman<sup>3</sup>, Moran Levin<sup>3</sup>, and Janet Alexander<sup>3</sup>, <sup>1</sup>Temple University, Philadelphia, PA and <sup>3</sup>Division of Pediatrics, Department of Ophthalmology and Visual Sciences, <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD.

**O.21 3:00 p.m.**

CANDIDEMIA OCULAR INFECTIONS IN HIGH-RISK PATIENTS AND OUTCOMES. Bhakti Panchal\*, Bhakti Panchal<sup>1</sup>, Radhika Gholap<sup>1</sup>, Hyunjin Choi<sup>1</sup>, Ramya Swamy<sup>1</sup>, and Kenneth Taubenslag<sup>1</sup>, <sup>1</sup>Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

**O.22 3:10 p.m.**

ROP SEVERITY AND NEONATAL COMORBIDITIES. Nisarg Shah\* and Janet Alexander<sup>1</sup>, <sup>1</sup>Division of Pediatric Ophthalmology and Strabismus, Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

**O.23 3:20 p.m.**

OUTCOMES IN PATIENTS WITH TRAUMATIC OPTIC NEUROPATHY MANAGED WITH STEROIDS, SURGERY, OR OBSERVATION. Nawal Shams\*, Bashar Hassan<sup>1</sup>, Magdi Elghannam<sup>2</sup>, Shannath Merbs<sup>3</sup>, Paul Manson<sup>4</sup>, and Michael Grant<sup>5</sup>, <sup>1</sup>R. Adams Cowley Shock Trauma Center, Baltimore, MD and <sup>3</sup>Department of Ophthalmology and Visual Sciences and <sup>5</sup>Division of Plastic and Reconstructive Surgery, Department of Surgery, <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD and <sup>4</sup>Department of Plastic and Reconstructive Surgery, Johns Hopkins School of Medicine, Baltimore, MD.

**O.24 3:30 p.m.**

LEVERAGING YEAST GENETICS IN *SACCHAROMYCES CEREVISIAE* TO IDENTIFY SARS-COV-2 HOST-PATHOGEN PROTEIN INTERACTIONS. Simon Doss-Gollin\*, Pranav Majeti<sup>1</sup>, Antonia Papadimas<sup>2</sup>, Issac Chaudry<sup>3</sup>, Stuart Weston<sup>2</sup>, and Matthew Frieman<sup>2</sup>, <sup>1</sup>University of Maryland College Park, College Park, MD and <sup>2</sup>Department of Microbiology and Immunology and <sup>3</sup>Department of Biochemistry and Molecular Biology, University of Maryland School of Medicine, Baltimore, MD.

**Oral Presentation Session V**

Day 1, Tuesday, 11/28, 2:40-3:40 p.m, Elm Room B (Room 210)

**O.25 2:40 p.m.**

CIRCULATING INFLAMMATORY BIOMARKERS IN PRURIGO NODULARIS: EVIDENCE OF ENDOTYPES IN TYPE 2 INFLAMMATION. Hannah Cornman\*, Emily Ma<sup>1</sup>, Jaya Manjunath<sup>1</sup>, Sriya Reddy<sup>2</sup>, Jackson Adams<sup>2</sup>, Ahmad Rajeh<sup>1</sup>, Madan Kwatra<sup>2</sup>, and Shawn Kwatra<sup>1</sup>, <sup>1</sup>Department of Dermatology, Johns Hopkins University School of Medicine School of Medicine, Baltimore, MD and <sup>2</sup>Department of Anesthesiology, Duke University School of Medicine, Durham, NC.

**O.27 2:50 p.m.**

PATIENT-DERIVED PANCREATIC TUMOR ORGANOID AS A TOOL TO EVALUATE TREATMENT RESPONSE. Zachery Keepers\*, Sanjit Roy<sup>1</sup>, Tijana Dukic<sup>1</sup>, Binny Bhandary<sup>1</sup>, Narottam Lamichhane<sup>1</sup>, Young Ko<sup>2</sup>, Jason Molitoris<sup>1</sup>, and Hem Shukla<sup>1</sup>, <sup>1</sup>Department of Radiation Oncology, University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>KoDiscovery, Baltimore, MD.

**O.28 3:00 p.m.**

ASSOCIATION OF *CDKN2A* AND THE IMMUNE LANDSCAPE IN LARYNGEAL CANCER. Helen Nguyen\*, Amol Shetty<sup>1</sup>, Ashley Cellini<sup>2</sup>, John Papadimitriou<sup>2</sup>, Rancee Mehra<sup>3</sup>, Daria Gaykalova<sup>4</sup>, and Matthew Witek<sup>5</sup>, <sup>2</sup>Department of Pathology, <sup>3</sup>Department of Medical Oncology, <sup>4</sup>Department of Otorhinolaryngology - Head and Neck Surgery, and <sup>5</sup>Department of Department of Radiation Oncology, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

**O.29 3:10 p.m.**

BUILDING A NOVEL CANCER TRAINEE-SURVIVOR EDUCATIONAL WORKSHOP FOCUSED ON HEALTH EQUITY. Grace Padgett\* and Laundette Jones<sup>1</sup>, <sup>1</sup>Program in Health Equity and Population Health, Department of Epidemiology and Public Health, University of Maryland School of Medicine, Baltimore, MD.

**O.30 3:20 p.m.**

VALUE OF A MULTIDISCIPLINARY GERIATRIC ONCOLOGY COMMITTEE ON PATIENT CARE IN A COMMUNITY-BASED, ACADEMIC CANCER CENTER. Gurbani Singh\* and Cherif Boutros<sup>1</sup>, <sup>1</sup>Division of Surgical Oncology, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

## Oral Presentation Session VI

Day 1, Tuesday, 11/28, 3:50-4:50 p.m, Elm Room A (Room 208)

### O.31 3:50 p.m.

DOES REMDESIVIR IMPROVE PULMONARY FUNCTION RECOVERY IN PATIENTS WITH COVID 19 ARDS. Binta Yawreh Njie\*, Mackenzie Snyder<sup>1</sup>, Ilana Grabenstein<sup>2</sup>, Sara Viola<sup>2</sup>, Siu Yan Amy Yeung<sup>3</sup>, Noel Britton<sup>4</sup>, and Andrea Levine<sup>2</sup>, <sup>2</sup>Division of Pulmonology, Department of Critical Care, <sup>1</sup>University of Maryland School of Medicine and <sup>3</sup>Department of Pharmacology, University of Maryland School of Pharmacy, Baltimore, MD and <sup>4</sup>Division of Statistics, Department of Research, John Hopkins, Baltimore, MD.

### O.32 4:00 p.m.

APPLYING SHARK-DERIVED NANOBODIES TO DISCOVER SITES OF VULNERABILITY ON HUMAN PATHOGENIC VIRUSES. Ethan McCaslin\* and Helen Dooley<sup>1</sup>, <sup>1</sup>Department of Microbiology and Immunology, University of Maryland School of Medicine, Baltimore, MD.

### O.33 4:10 p.m.

ASSESSMENT OF HIV KNOWLEDGE IN ADOLESCENTS AND YOUNG ADULTS. Elsa Bjornlund\*, Matthew Grant<sup>1</sup>, and Vicki Tepper<sup>2</sup>, <sup>2</sup>Division of Immunology and Rheumatology, <sup>1</sup>Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD.

### O.34 4:20 p.m.

THE PRESENTATION OF CATASTROPHIC ANTIPHOSPHOLIPID SYNDROME IN THE EMERGENCY DEPARTMENT: A CASE REPORT. Dina Elsaesser\* and Leen Alblaihed<sup>1</sup>, <sup>1</sup>Department of Emergency Medicine, University of Maryland School of Medicine, Baltimore, MD.

### O.35 4:30 p.m.

PROGRESSION OF EPITOPE-SPECIFIC ANTIBODY RESPONSES TO P. FALCIPARUM CIRCUMSPOROZOITE PROTEIN FOLLOWING CONSECUTIVE MALARIA INFECTIONS IN NAÏVE ADULTS. Quynh-Thu Ta\*, DeAnna Friedman-Klabanoff<sup>1</sup>, Olukemi Ifeonu<sup>2</sup>, Kristen Lyke<sup>3</sup>, Kim Williamson<sup>4</sup>, and Andrea Berry<sup>1</sup>, <sup>1</sup>Division of Infectious Disease and Tropical Pediatrics, Department of Pediatrics, <sup>2</sup>Institute for Genome Sciences, and <sup>3</sup>Division of Geographic Medicine, Department of Medicine, University of Maryland School of Medicine, Baltimore, MD and <sup>4</sup>Department of Microbiology and Immunology, Uniformed Services University School of Medicine, Bethesda, MD.

## Oral Presentation Session VII

Day 1, Tuesday, 11/28, 3:50-4:50 p.m, Elm Room B (Room 210)

### O.37 3:50 p.m.

ELUCIDATING THE DIFFERENCES BETWEEN SYSTEMIC AND OCULAR GRAFT VERSUS HOST DISEASE. Jerry Bohlen\*, Sarah Sunshine<sup>1</sup>, Cat Wandvik<sup>1</sup>, Arman Charkhabi<sup>2</sup>, Pooja Dharmendran<sup>1</sup>, Cassidy Reandeau<sup>1</sup>, Xuefang Cao<sup>3</sup>, and Rakhee Kalari Kandy<sup>4</sup>, <sup>1</sup>Department of Ophthalmology and Visual Sciences and <sup>3</sup>Tumor Immunology and Immunotherapy Program, University of Maryland School of Medicine and <sup>4</sup>University of Maryland, Baltimore, Baltimore, MD and <sup>2</sup>Department of Ophthalmology and Visual Sciences, University of Maryland, College Park, College Park, MD.

### O.38 4:00 p.m.

LENS CAPSULE MICROSCOPY IN PATIENTS WITH CATARACTS. Gabrielle Brizzi\*, Nima Sharifai<sup>1</sup>, and Janet Alexander<sup>2</sup>, <sup>1</sup>Department of Pathology and <sup>2</sup>Division of Pediatrics, Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

**O.39 4:10 p.m.**

RETINAL BLOOD FLOW ASSOCIATION WITH AGE, WEIGHT, AND STAGE IN INFANTS AT RISK FOR RETINOPATHY OF PREMATURITY. Euna Cho\*, Urjita Das<sup>1</sup>, Danielle Sidelnikov<sup>1</sup>, Tara Balasubramanian<sup>1</sup>, Shaiza Mansoor<sup>1</sup>, Sripriya Sundararajan<sup>1</sup>, Moran Levin<sup>1</sup>, and Janet Alexander<sup>1</sup>, <sup>1</sup>Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

**O.40 4:20 p.m.**

USING ULTRASOUND BIOMICROSCOPY TO EXAMINE CHANGES IN IRIS THICKNESS IN PATIENTS WITH CHILDHOOD GLAUCOMA. Joshua Estrada\*, Radhika Gholap<sup>1</sup>, and Janet Alexander<sup>2</sup>, <sup>2</sup>Division of Pediatric Ophthalmology and Adult Strabismus, Department of Ophthalmology and Visual Sciences, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

**O.41 4:30 p.m.**

CHARACTERIZATION OF THE IRIS AND LENS IN SUBTYPES OF CONGENITAL GLAUCOMA USING ULTRASOUND BIOMICROSCOPY: A CASE-CONTROL STUDY. Radhika Gholap\*, Esther Xu<sup>1</sup>, Taylor Kolosky<sup>1</sup>, Moran Levin<sup>2</sup>, Jana Bregman<sup>2</sup>, Andrew Lee<sup>3</sup>, Mohamad Jaafar<sup>4</sup>, and Janet Alexander<sup>2</sup>, <sup>2</sup>Division of Pediatrics, <sup>1</sup>Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD and <sup>3</sup>Department of Ophthalmology and Visual Sciences, Washington University in St Louis School of Medicine, St Louis, MI, and <sup>4</sup>Children's National Hospital, Washington DC.

**O.42 4:40 p.m.**

SURGICAL MANAGEMENT OF IRIS BOMBE IN MUSCLE-EYE-BRAIN DISEASE. Radhika Gholap\*, Diana Bharucha-Goebel<sup>1</sup>, Daniel Shats<sup>2</sup>, Bhakti Panchal<sup>2</sup>, Jessica Chong<sup>3</sup>, Moran Levin<sup>4</sup>, and Janet Alexander<sup>4</sup>, <sup>1</sup>Division of Pediatric Neuromuscular, <sup>3</sup>Department of Neurology, Children's National Hospital, Washington DC and <sup>4</sup>Division of Pediatrics, Department of Ophthalmology and Visual Sciences, <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD.

### Oral Presentation Session VIII

Day 1, Tuesday, 11/28, 3:50-4:50 p.m, Room 351

**O.43 3:50 p.m.**

MUSCLE ECHOGENICITY AND PRESSURE-PAIN THRESHOLDS IN INDIVIDUALS WITH SEVERE MUSCLE STIFFNESS AFTER CEREBRAL INJURY. Kaitlin Ballenger\*, Nikhil Gopal<sup>1</sup>, Azin Etemadimanesh<sup>1</sup>, Robert Nickl<sup>1</sup>, Paria Arfa Fatollahkhani<sup>1</sup>, and Preeti Raghavan<sup>1</sup>, <sup>1</sup>Department of Physical Medicine and Rehabilitation, Johns Hopkins School of Medicine, Baltimore, MD.

**O.44 4:00 p.m.**

OPIOID USE DISORDER IN PATIENTS UNDERGOING MAJOR LOWER EXTREMITY AMPUTATION: PREVALENCE AND OUTCOMES. Luke Pitsenbarger\*, Natalie Chao<sup>1</sup>, Allison Karwoski<sup>1</sup>, Maria Som<sup>1</sup>, Eyrualem Workneh<sup>1</sup>, Nora Dunlap<sup>1</sup>, Suzanna Simmonds Fitzpatrick<sup>1</sup>, and Khanjan Nagarsheth<sup>1</sup>, <sup>1</sup>Division of Vascular, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

**O.45 4:10 p.m.**

NURSE PERSPECTIVES ON THEIR EXPERIENCES GIVING LOW-DOSE METHADONE TO NURSING HOME RESIDENTS: A QUALITATIVE STUDY USING SEMI-STRUCTURED INTERVIEWS. Jennifer O'Brien\*, Amber Kleckner<sup>1</sup>, and Takeshi Uemura<sup>2</sup>, <sup>1</sup>Department of Pain and Translational Symptom Science, University of Maryland School of Nursing, Baltimore, MD and <sup>2</sup>Department of Geriatrics and Palliative Medicine, Icahn School of Medicine at Mount Sinai School of Medicine, New York, NY.

**O.46 4:20 p.m.**

CHARACTERIZING THE IMPACT OF INCREASED TAKE-HOME METHADONE DOSES ON RETENTION IN ADDICTION TREATMENT. Kieran Tebben\* and Aaron Greenblatt<sup>1</sup>, <sup>1</sup>Department of Family and Community Medicine, University of Maryland School of Medicine, Baltimore, MD.

**O.47 4:30 p.m.**

EMERGENCY DEPARTMENT OPIOID PRESCRIPTION PATTERNS—EFFECTS OF THE COVID-19 PANDEMIC. Syrus Razavi\*, Jeffrey Rea<sup>1</sup>, and Quincy Tran<sup>1</sup>, <sup>1</sup>Program in Trauma, Critical Care and Emergency Medicine, Department of Emergency Medicine, University of Maryland School of Medicine, Baltimore, MD.

**O.48 4:40 p.m.**

COMPARISON OF GONIOMETER APPLICATIONS (APPS) UTILIZING AN IPAD IN THE CLINICAL SETTING. Dennis Morozov\*, Ave Keefer<sup>1</sup>, Catie May<sup>1</sup>, and Joshua Abzug<sup>2</sup>, <sup>2</sup>Division of Hand Surgery, Pediatric Orthopedic Surgery, Department of Orthopaedics, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

**Oral Presentation Session IX**

Day 2, Wednesday, 11/29, 2:20-3:20 p.m., Room 351

**O.49 2:20 p.m.**

TEMPORAL SPIKE SEQUENCES AS A NOVEL METRIC OF IN VITRO NETWORK CONNECTIVITY. Ujwal Boddeti\*, Sabrina Nusraty<sup>1</sup>, Jenna Langbein<sup>2</sup>, Muzna Bachani<sup>2</sup>, Kareem Zaghoul<sup>4</sup>, and Alexander Ksendzovsky<sup>2</sup>, <sup>1</sup>Division of Functional Neurosurgery Section, Department of Neurosurgery, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD and <sup>2</sup>Department of Neurosurgery, University of Maryland School of Medicine, Baltimore, MD.

**O.50 2:30 p.m.**

PREICTAL BURSTING ACTIVITY MAY PREDICT SEIZURE EVENTS. Ujwal Boddeti\*, Joshua Diamond<sup>1</sup>, Alexander Ksendzovsky<sup>2</sup>, and Kareem Zaghoul<sup>1</sup>, <sup>1</sup>Division of Functional Neurosurgery Section, Department of Neurosurgery, NIH NINDS, Bethesda, MD, and <sup>2</sup>Department of Neurosurgery, University of Maryland School of Medicine, Baltimore, MD.

**O.51 2:40 p.m.**

COMPARATIVE ANALYSIS OF BLUNT TRAUMA AND GUNSHOT WOUNDS TO THE HEAD ON THROMBOSIS IN PATIENTS WITH FRACTURES OVERLYING THE SUPERIOR SAGITTAL SINUS. Daisy Martinez\*, Kevin Kim<sup>1</sup>, Jeffrey Oliver<sup>1</sup>, Jesse Stokum<sup>1</sup>, and Gary Schwartzbauer<sup>1</sup>, <sup>1</sup>Department of Neurosurgery, University of Maryland School of Medicine, Baltimore, MD.

**O.52 2:50 p.m.**

UNDERSTANDING THE ROLE OF ADENOTONSILLECTOMY IN CHILDREN'S BRAIN OUTCOMES. Anahita Shiva\*, Amal Isaiah<sup>1</sup>, and Nidhi Matthew<sup>1</sup>, <sup>1</sup>Division of Pediatric Otolaryngology, Department of Otorhinolaryngology - Head and Neck Surgery, University of Maryland School of Medicine, Baltimore, MD.

**O.53 3:00 p.m.**

LOWER EXTREMITY SOMATOSENSORY EVOKED POTENTIALS PREDICT FUNCTIONAL OUTCOMES IN COMPLETE TRAUMATIC CERVICAL SPINAL CORD INJURY. Ovais Hasan\*, Anthony Chiu<sup>1</sup>, Sabrina Bustos<sup>2</sup>, Louis Bivona<sup>1</sup>, Daniel Cavanaugh<sup>1</sup>, Eugene Koh<sup>1</sup>, Alexander Vaccaro<sup>3</sup>, and Steven Ludwig<sup>1</sup>, <sup>1</sup>Division of Spine Surgery, Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>Liberty University College of Osteopathic Medicine School of Medicine, Lynchburg, VA and <sup>3</sup>Division of Spine Surgery, Department of Orthopaedic Surgery, Rothman Orthopaedics at Jefferson Health School of Medicine.

**O.54 3:10 p.m.**

TRAUMATIC BRAIN INJURY IN PATIENTS WITH FRONTAL SINUS FRACTURES. Pharibe Pope\*, Bashar Hassan<sup>1</sup>, Kimberly Oslin<sup>2</sup>, Andrea Hebert<sup>3</sup>, Deborah Stein<sup>4</sup>, Natalie Justicz<sup>3</sup>, and Michael Grant<sup>1</sup>, <sup>1</sup>Division of Plastic and Reconstructive Surgery and <sup>4</sup>Program in Trauma, R. Adams Cowley Shock Trauma Center and <sup>3</sup>Department of Otorhinolaryngology - Head and Neck Surgery, and <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD.

**Oral Presentation Session X**

Day 2, Wednesday, 11/29, 2:20-3:20 p.m., Room 223

**O.55 2:20 p.m.**

UNDERSTANDING ECMO USE IN THE PERIPARTUM PERIOD: ADVANCEMENTS, OUTCOMES, AND IMPLICATIONS FOR OBSTETRIC PATIENTS. Lena Abdulrahman\*, Samhati Mondal<sup>1</sup>, and Andrea Shipper<sup>2</sup>, <sup>1</sup>Division of Cardiothoracic Anesthesia, Department of Anesthesiology, University of Maryland School of Medicine and <sup>2</sup>University of Maryland, Baltimore, Baltimore, MD.

**O.56 2:30 p.m.**

SURGICAL MANAGEMENT OF CAROTID ARTERY WEBS. Thien Cao\*, Nikhil Prasad<sup>1</sup>, Maureen McClellan<sup>2</sup>, Swati Chaparala<sup>3</sup>, Rajabrata Sarkar<sup>3</sup>, Khanjan Nagarsheth<sup>3</sup>, Jeanwan Kang<sup>3</sup>, and Shahab Toursavadkoti<sup>3</sup>, <sup>2</sup>West Virginia School of Osteopathic Medicine School of Medicine, Lewisburg, WV, and <sup>3</sup>Division of Vascular Surgery, <sup>1</sup>Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

**O.57 2:40 p.m.**

RETROBULBAR HEMATOMA – PRESENTATION, MANAGEMENT, AND VISUAL OUTCOMES. Magdi Elghannam\*, Bashar Hassan<sup>1</sup>, Nawal Shams<sup>2</sup>, Michael Grant<sup>1</sup>, Paul Manson<sup>3</sup>, Shannath Merbs<sup>4</sup>, and Carolyn Drogt<sup>3</sup>, <sup>1</sup>Division of Plastic and Reconstructive Surgery, R Adams Cowley Shock Trauma Center, Department of Surgery and <sup>4</sup>Department of Ophthalmology and Visual Sciences, <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD, and <sup>3</sup>Department of Plastic and Reconstructive Surgery, Johns Hopkins School of Medicine, Baltimore, MD.

**O.58 2:50 p.m.**

PEDIATRIC DILATED CARDIOMYOPATHY: A REVIEW OF PROMISING NEW FINDINGS. Ian Malinow\*, Daniel Fong<sup>1</sup>, and Charles Hong<sup>2</sup>, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>Department of Medicine, Michigan State University College of Human Medicine, East Lansing, MI.

**O.59 3:00 p.m.**

ASSESSMENT OF IVC FILTER COMPLICATIONS AND RETRIEVAL RECOMMENDATIONS IN COMPUTED TOMOGRAPHY REPORTS. Shirin Parsa\* and Adam Fang<sup>1</sup>, <sup>1</sup>Division of Interventional Radiology, Department of Diagnostic Radiology and Nuclear Medicine, University of Maryland School of Medicine, Baltimore, MD.

**O.60 3:10 p.m.**

EVALUATING THE USE OF OCULAR THERMOGRAPHY TO DETECT CAROTID STENOSIS. Aidan Wiley\*, Frederick Durham<sup>1</sup>, Justin Marsella<sup>1</sup>, Georges Jreij<sup>1</sup>, Aman Kankaria<sup>1</sup>, Brajesh Lal<sup>1</sup>, and Sarasijhaa Desikan<sup>1</sup>, <sup>1</sup>Division of Vascular Surgery, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

**Oral Presentation Session XI**

Day 2, Wednesday, 11/29, 3:30-4:30 p.m., Elm A (Room 208)

**O.61 3:30 p.m.**

INFLUENCE OF GESTATIONAL AGE ON GLAUCOMA AND VISION OUTCOMES IN THE INFANT APHAKIA TREATMENT STUDY. Claudia Wong\*, Aashka Damani<sup>1</sup>, Urjita Das<sup>2</sup>, Euna Cho<sup>2</sup>, Shaiza Mansoor<sup>1</sup>, Ria Kapoor<sup>1</sup>, Moran Levin<sup>3</sup>, and Janet Alexander<sup>3</sup>, <sup>3</sup>Division of Pediatrics, <sup>1</sup>Department of Ophthalmology and Visual Sciences, <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD.

**O.62 3:40 p.m.**

IMPROVING FOLLOW-UP RATES BY OPTIMIZING PATIENT EDUCATIONAL MATERIALS IN RETINOPATHY OF PREMATURITY. Susanna Yau\*, Elizabeth Fernandez Paz<sup>1</sup>, Rachel Steger<sup>1</sup>, Euna Cho<sup>1</sup>, Janet Alexander<sup>1</sup>, and Moran Levin<sup>1</sup>, <sup>1</sup>Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

**O.63 3:50 p.m.**

USE OF EHR TO EXTRACT NORMATIVE EYELID MEASUREMENTS. Jason Zhou\*, Bharanidharan Radha-Saseendrakumar<sup>1</sup>, Sally Baxter<sup>2</sup>, and Don Kikkawa<sup>3</sup>, <sup>2</sup>Division of Ophthalmology Informatics and Data Science and <sup>3</sup>Division of Oculofacial Plastic and Reconstructive Surgery, <sup>1</sup>Department of Ophthalmology and Visual Sciences, University of California San Diego School of Medicine, San Diego, CA.

**O.64 4:00 p.m.**

THE USE OF OCULAR IMAGING TO DETERMINE THE RELATIONSHIP BETWEEN MICROVASCULATURE AND NEURODEGENERATION IN SCHIZOPHRENIA SPECTRUM DISORDERS. Fatima Nycole Hidalgo\*, Osamah Saedi<sup>1</sup>, and Elliot Hong<sup>2</sup>, <sup>1</sup> Glaucoma Division, Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>Department of Psychiatry, University of Texas Health Science Center at Houston McGovern Medical School, Houston, TX.

**O.65 4:10 p.m.**

EVALUATING MEDICAL STUDENTS' PERSPECTIVES ON AGING AND DEMENTIA THROUGH GERIATRIC SIMULATION. Euna Cho\*, Min Kyoung Park<sup>1</sup>, and Diane Martin<sup>1</sup>, <sup>1</sup>University of Maryland Graduate School, Baltimore, MD.

**O.66 4:20 p.m.**

ORBITAL FRACTURE CHARACTERISTICS AND OUTCOMES IN BALTIMORE: A MULTICENTER ANALYSIS. Seray Er\*, Bashar Hassan<sup>1</sup>, Joshua Yoon<sup>2</sup>, Eric Resnick<sup>3</sup>, Cynthia Yusuf<sup>3</sup>, and Michael Grant<sup>1</sup>, <sup>1</sup>Division of Trauma Plastic and Reconstructive Surgery, Department of Surgery, <sup>3</sup>University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>Department of Surgery, George Washington University Hospital, Washington, DC.

## Oral Presentation Session XII

Day 2, Wednesday, 11/29, 3:30-4:30 p.m., Elm B (Room 210)

### **O.67 3:30 p.m.**

EXPLORING THE ROLE OF FOXJ1 IN THE AUDITORY AND VESTIBULAR SYSTEM USING A FOXJ1 CONDITIONAL KNOCKOUT MOUSE MODEL. Han Dewan\*, Kathleen Gwilliam<sup>1</sup>, and Ronna Hertzano<sup>1</sup>, <sup>1</sup>Division of Neurotology Branch, National Institute on Deafness and Other Communication Disorders, National Institutes of Health, Bethesda, MD.

### **O.68 3:40 p.m.**

A NECK MASS OF THYMIC ORIGIN IN A PEDIATRIC PATIENT. Audrey Zauher\*, Jonathan Jacobs<sup>1</sup>, and Amal Isaiah<sup>2</sup>, <sup>1</sup>Department of Pathology and <sup>2</sup>Department of Otorhinolaryngology - Head and Neck Surgery, University of Maryland School of Medicine, Baltimore, MD.

### **O.69 3:50 p.m.**

POST-THYROIDECTOMY HYPOPARATHYROIDISM. Maria Som\*, Danielle Sidelnikov\*, Jane Tong<sup>1</sup>, and Kelly Moyer<sup>1</sup>, <sup>1</sup>Department of Otorhinolaryngology - Head and Neck Surgery, University of Maryland School of Medicine, Baltimore, MD.

### **O.70 4:00 p.m.**

ELUCIDATING RELATIONSHIPS BETWEEN SERUM AMH LEVELS AND PEDIATRIC FOLLICULAR DENSITY IN OVARIAN HISTOLOGICAL TISSUE FOLLOWING OTC. Sarina Hanfling\*, Jacqueline Maher<sup>1</sup>, Ninet Sinai<sup>2</sup>, Ramya Balasubramanian<sup>1</sup>, Hong Lou<sup>1</sup>, Lucy Sierra<sup>1</sup>, Taylor Badger<sup>1</sup>, and Veronica Gomez-Lobo<sup>1</sup>, <sup>1</sup>Division of Pediatric and Adolescent Gynecology, Department of Obstetrics, Gynecology and Reproductive Sciences <sup>2</sup>Department of Biostatistics and Clinical Epidemiology Service, NIH, Bethesda, MD.

### **O.71 4:10 p.m.**

EVALUATION OF HYPERPARATHYROIDISM IN SIMULTANEOUS PANCREAS-KIDNEY TRANSPLANT RECIPIENTS. Lane Cavey\*, Erin Foster<sup>1</sup>, Ruchin Patel<sup>2</sup>, Rapheal Meier<sup>2</sup>, Mohamed Ibrahim<sup>3</sup>, Hilary Whitlatch<sup>4</sup>, and Silke Niederhaus<sup>2</sup>, <sup>2</sup>Division of Transplant Surgery, Department of Surgery and <sup>3</sup>Division of Nephrology and <sup>4</sup>Division of Endocrinology, Diabetes, and Nutrition, Department of Medicine, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

### **O.72 4:20 p.m.**

PARATHYROIDECTOMY OUTCOMES AND PERFORMANCE MONITORING – INITIAL EXPERIENCE OF A JUNIOR SURGEON. Richa Beher\*, Yinin Hu<sup>1</sup>, Kendyl Carlisle<sup>2</sup>, and Aprill Park<sup>1</sup>, <sup>1</sup>Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.



## Poster Presentation Schedule

Presenters are indicated with “\*” next to their names.

### Poster Presentation Session I

Day 1, Tuesday, 11/28, 1:30-2:30 p.m., Room 349, [View Posters](#)

**P.01 1:30 p.m.**

A CYTOKINE PROFILE ASSOCIATED WITH CORTICAL AND DEEP GRAY MATTER LESIONS IN MULTIPLE SCLEROSIS. Matthew Wilhide\* and Daniel Harrison<sup>1</sup>, <sup>1</sup>Division of Multiple Sclerosis and Neuroimmunology, Department of Neurology, University of Maryland School of Medicine, Baltimore, MD.

**P.02 1:30 p.m.**

A SILENT MAN FROM A VOICELESS POPULATION. Michael Karanja\* and Charles Robinson<sup>1</sup>, <sup>1</sup>Division of Consultation-Liaison, Department of Psychiatry, University of Maryland School of Medicine, Baltimore, MD.

**P.03 1:30 p.m.**

NEONATAL OUTCOMES ASSOCIATED WITH FETAL POSTERIOR FOSSA ABNORMALITIES ON PRENATAL ULTRASOUND. Grace Lechmann\*, Nicol Tugarinov<sup>1</sup>, Alison DiSciullo<sup>2</sup>, and Jude Crino<sup>2</sup>, <sup>2</sup>Division of Maternal and Fetal Medicine, Department of Obstetrics, Gynecology and Reproductive Sciences, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

**P.04 1:30 p.m.**

VALUE OF ADDITIONAL TESTING IN PRENATAL DIAGNOSIS OF POSTERIOR FOSSA ABNORMALITIES ON ULTRASOUND. Nicol Tugarinov\*, Grace Lechmann<sup>1</sup>, Alison DiSciullo<sup>2</sup>, and Jude Crino<sup>2</sup>, <sup>2</sup>Division of Maternal and Fetal Medicine, Department of Obstetrics, Gynecology and Reproductive Sciences, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

**P.05 1:30 p.m.**

PLAY AND EXPLORATIVE BEHAVIORAL OUTCOMES IN FERRET MODEL OF COMBINED UNDER-VEHICLE BLAST AND CONTROLLED CORTICAL IMPACT-INDUCED TRAUMATIC BRAIN INJURY. Lorena Hong\*, Molly Goodfellow<sup>1</sup>, Boris Piskoun<sup>1</sup>, Amanda Hrdlick<sup>1</sup>, Julie Proctor<sup>1</sup>, Ulrich Leiste<sup>2</sup>, William Fourney<sup>2</sup>, and Gary Fiskum<sup>1</sup>, <sup>1</sup>Department of Anesthesiology and the Center for Shock, Trauma, and Anesthesiology Research, University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>Department of Aerospace Engineering, University of Maryland-College Park, College Park, MD.

**P.06 1:30 p.m.**

ADJUVANT INTENSITY MODULATED PROTON THERAPY FOR MANAGEMENT OF BREAST CANCER: A RETROSPECTIVE STUDY OF 5-YEAR ONCOLOGIC OUTCOMES. Desiree Lejano\*, Elizabeth Nichols<sup>1</sup>, Melissa Vyfhuis<sup>1</sup>, Gurbani Singh<sup>1</sup>, and Sarah McAvoy<sup>1</sup>, <sup>1</sup>Department of Radiation Oncology, University of Maryland School of Medicine, Baltimore, MD.

**P.07 1:30 p.m.**

THE ROLE OF PD-L1 AND LTBETAR SIGNALING ON B16F10 TRANSENDOTHELIAL MIGRATION. Greg Zapas\*, Wenji Piao<sup>1</sup>, and Jonathan Bromberg<sup>1</sup>, <sup>1</sup>Division of Transplant, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

**P.08 1:30 p.m.**

DIGITAL ASSESSMENT OF CMYC AND KI67 IN DIFFUSE LARGE B-CELL LYMPHOMA. Elise Ahn\*, Michael Kallen<sup>1</sup>, Madhurima Koka<sup>1</sup>, and Zeba Singh<sup>1</sup>, <sup>1</sup>Division of Hematopathology, Department of Pathology, University of Maryland School of Medicine, Baltimore, MD.

**P.09 1:30 p.m.**

INVESTIGATION OF THE ANTI-CANCER PROPERTIES OF GLYCOLYSIS INHIBITOR 3-BROMOPYRUVATE (3-BP) AND RADIATION (RT) ON PANCREATIC CANCER CELL LINE MODELS.. Bolutife Olagunju\*, Hem Shula<sup>1</sup>, Sanjit Roy<sup>1</sup>, Tijana Dukic<sup>2</sup>, Binny Bhandary<sup>1</sup>, Young Ko<sup>3</sup>, and Zachery Keepers<sup>2</sup>, <sup>1</sup>Department of Radiation Oncology, <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD and <sup>3</sup>Department of Radiation Oncology, KoDiscovery, LLC, Baltimore, MD.

**P.10 1:30 p.m.**

DECIPHER GENOMIC TESTING CAN STRATIFY RISK OF EXTRACAPSULAR EXTENSION IN PROSTATE CANCER PATIENTS WITH PI-RADS LESIONS SCORED 4 AND BELOW. Daniel Shats\*, Amir Khan<sup>1</sup>, Michael Naslund<sup>1</sup>, and Minhaj Siddiqui<sup>1</sup>, <sup>1</sup>Division of Urology, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

**P.11 1:30 p.m.**

INTERINSTITUTIONAL COMPARISON IN IMPLEMENTING OPHTHALMOLOGY SURGICAL WORKSHOP TO INCREASE INTEREST AND CONFIDENCE. Euna Cho\*, Dhruv Shah<sup>1</sup>, Geoffrey Nguyen<sup>2</sup>, Eric Lai<sup>2</sup>, Amrik Gill<sup>1</sup>, Erik Gunnarsson<sup>1</sup>, Janet Alexander<sup>1</sup>, and Moran Roni Levin<sup>1</sup>, <sup>1</sup>Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>Department of Ophthalmology and Visual Sciences, Yale School of Medicine, New Haven, CT.

**P.12 1:30 p.m.**

ALTERATIONS IN RETINAL BLOOD FLOW AUTOREGULATION IN HUMAN SUBJECTS WITH EARLY GLAUCOMA AS MEASURED WITH LASER SPECKLE IMAGING.. Mary Ventimiglia\*, Yash Porval<sup>1</sup>, Renad Alhabashi<sup>1</sup>, He Eun Forbes<sup>1</sup>, Lily Im<sup>1</sup>, Sarah Ullah<sup>1</sup>, Sara Francomacaro<sup>1</sup>, and Osamah Saeedi<sup>1</sup>, <sup>1</sup>Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

**P.13 1:30 p.m.**

THE IMPACT OF RETINOPATHY OF PREMATURITY SCREENING ON FEEDING READINESS AND VOLUME OF ORAL INTAKE IN PRETERM INFANTS. Urjita Das\*, Euna Cho<sup>1</sup>, Sera Chase<sup>1</sup>, He Eun Forbes<sup>2</sup>, Madi Kore<sup>1</sup>, Roni Levin<sup>1</sup>, Sripriya Sundararajan<sup>3</sup>, and Janet L Alexander<sup>1</sup>, <sup>1</sup>Department of Ophthalmology and Visual Sciences, and <sup>3</sup>Division of Neonatology, Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>Department of Ophthalmology and Visual Sciences, New York Institute of Technology College of Osteopathic Medicine, Old Westbury, NY.

**P.14 1:30 p.m.**

IDENTIFYING INFLUENTIAL FACTORS ON PERCEIVED SOCIAL SUPPORT IN AGING IN RURAL COSTA RICA. Christine Wan\*, Lillianna Pedersen<sup>1</sup>, Shania Bailey<sup>1</sup>, Hima Konduru<sup>1</sup>, Nicholas Leahy<sup>1</sup>, Melissa Rallo<sup>1</sup>, Alexis Vetack<sup>1</sup>, and Carlos Faerron Guzmán<sup>1</sup>, <sup>1</sup>Department of Medicine, University of Maryland School of Medicine, Baltimore, MD.

**P.15 1:30 p.m.**

EXAMINING PHYSICAL ACTIVITY AND LIFE EXPECTANCY IN AN AGING POPULATION IN COSTA RICA. Lillianna Pedersen\*, Shania Bailey<sup>1</sup>, Hima Konduru<sup>1</sup>, Nicholas Leahy<sup>1</sup>, Melissa Rallo<sup>1</sup>, Alexis Vetack<sup>1</sup>, Christine Wan<sup>1</sup>, and Carlos Faerron Guzmán<sup>1</sup>, <sup>1</sup>Department of Medicine, University of Maryland School of Medicine, Baltimore, MD.

**P.16 1:30 p.m.**

EXPERIENCE OF AGING IN INDIGENOUS COMMUNITIES IN COSTA RICA: A QUALITATIVE STUDY OF THE NGÄBE-BUGLÉ COMMUNITY IN COTO BRUS. Melissa Rallo\*, Hima Konduru<sup>1</sup>, Nicholas Leahy<sup>1</sup>, Shania Bailey<sup>1</sup>, Lillianna Pedersen<sup>1</sup>, Alexis Vetack<sup>1</sup>, Christine Wan<sup>1</sup>, and Carlos Faerron Guzmán<sup>2</sup>, <sup>1</sup>University of Maryland School of Medicine and <sup>2</sup>University of Maryland, Baltimore, Baltimore, MD.

**Poster Presentation Session II**

Day 1, Tuesday, 11/28, 2:40-3:40 p.m., Room 349, [View Posters](#)

**P.18 2:40 p.m.**

CARDIOVASCULAR AND MUSCULAR CHANGES DURING LONG-DISTANCE HIKING. Alexander Noonan-Shueh\*, Hannah Frederick<sup>1</sup>, Alexis Salerno<sup>2</sup>, Daniel Craighead<sup>3</sup>, Daniel Gingold<sup>2</sup>, and Douglas Sward<sup>2</sup>, and <sup>2</sup>Department of Emergency Medicine, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD and <sup>3</sup>University of Colorado Boulder, Boulder, CO.

**P.19 2:40 p.m.**

WORSENERD CARDIAC OUTCOMES FROM IMPELLA 5.5 PRIOR TO LVAD PLACEMENT. Hannah Frederick\* and Aakash Shah<sup>1</sup>, <sup>1</sup>Division of Cardiothoracic Surgery, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

**P.20 2:40 p.m.**

AN ENDOVASCULAR APPROACH TO THE TREATMENT OF TYPE A AORTIC DISSECTION. Maxwell Emmanuel\* and Samhati Mondal<sup>1</sup>, <sup>1</sup>Division of Cardiothoracic Anesthesia, Department of Anesthesiology, University of Maryland School of Medicine, Baltimore, MD.

**P.21 2:40 p.m.**

MAPPING BLACK CARBON EXPOSURE MEASURED THROUGH MOBILE MONITORING IN BALTIMORE CITY NEIGHBORHOODS IN 2022. Leena Khoury\*, Snehal Patel<sup>1</sup>, and Timothy Canty<sup>2</sup>, <sup>1</sup>Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>University of Maryland College Park, College Park, MD.

**P.22 2:40 p.m.**

EPIDEMIOLOGY AND PREDICTORS OF CAR SEAT TOLERANCE SCREEN FAILURE IN PATIENTS WITH TRISOMY 21. Emily Gerard\* and Natalie Davis<sup>1</sup>, <sup>1</sup>Division of Neonatology, Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD.

**P.23 2:40 p.m.**

IMPACT OF HYPERBARIC OXYGEN THERAPY IN SKIN AND SOFT TISSUE INFECTIONS ON PATIENT OUTCOMES. Samantha Asuncion\*, Sharon Henry<sup>1</sup>, William Teeter<sup>2</sup>, Kinjal Sethuraman<sup>2</sup>, Quincy Tran<sup>2</sup>, Brook Andersen<sup>3</sup>, and Anna Brown<sup>3</sup>, <sup>1</sup>Division of Wound Healing and Metabolism, Department of Surgery and <sup>2</sup>Department of Emergency Medicine, University of Maryland School of Medicine, Baltimore, MD and <sup>3</sup>Department of Shock Trauma, University of Maryland Medical Center, Baltimore, MD.

**P.24 2:40 p.m.**

PREVALENCE AND BURDEN OF RHINOCONJUNCTIVITIS IN ATOPIC DERMATITIS PATIENTS: A CROSS-SECTIONAL STUDY. Isaac Betaharon\* and Jonathan Silverberg<sup>1</sup>, <sup>1</sup>Department of Dermatology, George Washington University School of Medicine and Health Sciences, Washington DC.

**P.25 2:40 p.m.**

UNDERSTANDING THE RISK OF HOSPITAL READMISSION AMONG PEOPLE WITH SKIN ULCERS RELATED TO INJECTION DRUG USE: SUB-ANALYSIS OF THE CHOICE INVESTIGATION. Ishan Vaish\*, Sarah Kattakuzhy<sup>1</sup>, Meghan Derenoncourt<sup>2</sup>, Elana Rosenthal<sup>1</sup>, Omari Habib<sup>3</sup>, and Edward Traver<sup>4</sup>, <sup>4</sup>Division of Clinical Care and Research,<sup>1</sup>Department of Medicine, University of Maryland School of Medicine and <sup>3</sup>University of Maryland, Baltimore, Baltimore, MD and <sup>2</sup>National Institute of Health-Clinical Center, Bethesda, MD.

**P.26 2:40 p.m.**

CUTANEOUS COCCIDIOMYCOSIS: A CASE REPORT. Madeline Brown\*, Albert Zhou<sup>1</sup>, David Jaffe<sup>2</sup>, and Richard Pfau<sup>2</sup>, <sup>1</sup>Department of Dermatology, University of Connecticut Health, Farmington, CT, and <sup>2</sup>Department of Dermatology, University of Maryland School of Medicine, Baltimore, MD.

**P.27 2:40 p.m.**

STRAIN-SPECIFIC AND CROSS-REACTIVE ANTIBODY RESPONSES TO *PLASMODIUM FALCIPARUM* CIRCUMSPOROZOITE PROTEIN. Andrew Kim\*, DeAnna Friedman-Klabanoff<sup>1</sup>, Olukemi Ifeonu<sup>2</sup>, Emily Stucke<sup>3</sup>, Kirsten Lyke<sup>4</sup>, Matthew Laurens<sup>1</sup>, Joana Silva<sup>5</sup>, and Andrea Berry<sup>1</sup>, <sup>1</sup>Division of Infectious Diseases and Tropical Pediatrics, Department of Pediatrics, <sup>2</sup>Institute for Genome Sciences, <sup>3</sup>Center for Vaccine Development and Global Health, <sup>4</sup>Department of Medicine, and <sup>5</sup>Department of Microbiology and Immunology, University of Maryland School of Medicine, Baltimore, MD.

**P.28 2:40 p.m.**

IDENTIFYING FACTORS TO INCREASE TREATMENT-SEEKING FOR MALARIA AMONG ALL AGE GROUPS IN RURAL MALAWI. Christine Wan\*, Hillary Katasabola<sup>1</sup>, Alick Sixpence<sup>1</sup>, Don Mathanga<sup>1</sup>, Miriam Laufer<sup>2</sup>, Andrea Buchwald<sup>2</sup>, and Lauren Cohee<sup>2</sup>, <sup>1</sup>Kamuzu University of Health Sciences, Malaria Alert Centre, Blantyre, Malawi, and <sup>2</sup>Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD, USA.

**P.29 2:40 p.m.**

RISK FACTORS ASSOCIATED WITH TRANSMISSION OF CANDIDA AURIS IN THE ACUTE CARE SETTING. Sarah Bejo\* and Anthony Harris<sup>1</sup>, <sup>1</sup>Division of Genomic Epidemiology and Clinical Outcomes, Department of Epidemiology and Public Health, University of Maryland School of Medicine, Baltimore, MD.

**P.31A 2:40 p.m.**

ARE PATIENTS COMPLETELY BETTER AFTER A MENISCUS REPAIR? Bruce Chen\*, Ryan Lashgari\*, Dominic Ventimiglia<sup>1</sup>, Michael Rocca<sup>2</sup>, and Frank Henn III<sup>1</sup>, <sup>1</sup>Division of Sports Medicine, <sup>2</sup>Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

**P.31B 2:40 p.m.**

LIVER TRANSPLANTATION WITH DONOR MACROSTEATOSIS  $\geq 50\%$ . Shani Kamberi\*, Massimo Arcerito<sup>1</sup>, Saad Malik<sup>1</sup>, Josue Alvarez-Casas<sup>1</sup>, Kirti Shetty<sup>2</sup>, Daniel Maluf<sup>1</sup>, Chandra Bhati<sup>1</sup>, and Raphael Meier<sup>1</sup>, <sup>1</sup>Division of Transplant, Department of Surgery and <sup>2</sup>Division of Hepatology, Department of Medicine, University of Maryland Medical Center, Baltimore, MD.

### Poster Presentation Session III

Day 2, Wednesday, 11/29, 2:20-3:20 p.m., Room 349, [View Posters](#)

**P.32 2:20 p.m.**

A GENOME-FIRST INVESTIGATION OF DIGENIC FANCONI ANEMIA INHERITANCE. Joseph Deng\*, Burak Altintas<sup>1</sup>, and Lisa McReynolds<sup>2</sup>, <sup>1</sup>Department of Pediatrics, Washington University, St. Louis Children's Hospital, St. Louis, MO, and <sup>2</sup>Division of Cancer Epidemiology and Genetics, Department of Epidemiology and Public Health, National Cancer Institute, Rockville, MD.

**P.33 2:20 p.m.**

IMPACT OF NEONATAL DRUG SCREEN ON MONITORING AND MANAGEMENT OF NEONATAL OPIATE WITHDRAWAL SYNDROME. Amy Huddleson\*, Ayda Soltanian Tiranchi\*, Kristina Witcher<sup>1</sup>, and Katrina Mark<sup>1</sup>, <sup>1</sup>Department of Obstetrics, Gynecology and Reproductive Sciences, University of Maryland School of Medicine, Baltimore, MD.

**P.34 2:20 p.m.**

PRIMARY MPFL RECONSTRUCTION/REPAIR FOR RECURRENT PATELLAR INSTABILITY: PATIENT REPORTED OUTCOMES AT TWO YEARS FOLLOW-UP. Douglas Cooper\*, Frank Henn<sup>1</sup>, Ovais Hasan<sup>2</sup>, Dominic Ventimiglia<sup>2</sup>, Matt Kolevar<sup>1</sup>, and Sean Meredith<sup>1</sup>, <sup>1</sup>Division of Sports Medicine, Department of Orthopaedics, <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD.

**P.35 2:20 p.m.**

SOCIOECONOMIC DEPRIVATION PREDICTS WORSE FUNCTIONAL STATUS TWO YEARS AFTER ORTHOPAEDIC SURGERY. Isaiah Harris\*, Evan Honig<sup>1</sup>, Samir Kaveeshwar<sup>1</sup>, Nathan O'Hara<sup>1</sup>, Samuel Li<sup>1</sup>, Natalie Danna<sup>1</sup>, Craig Shul<sup>1</sup>, and Frank Henn<sup>1</sup>, <sup>1</sup>Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

**P.36 2:20 p.m.**

PATIENT-REPORTED OUTCOMES AFTER SURGERY FOR PIGMENTED VILLONODULAR SYNOVITIS IN THE KNEE: A COHORT STUDY. Ryan Lashgari\*, Bruce Chen\*, Dominic Ventimiglia<sup>1</sup>, Leah Henry<sup>2</sup>, Matthew Kovelar<sup>2</sup>, Jonathan Packer<sup>1</sup>, and Frank Henn, III<sup>1</sup>, <sup>1</sup>Division of Sports Medicine, <sup>2</sup>Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

**P.37 2:20 p.m.**

A CROSS-SECTIONAL ANALYSIS OF INSURANCE COVERAGE OF SPINAL INFECTION AND SPINAL TUMOR SURGERIES. Madeline Brown\*, Garyn Metoyer<sup>1</sup>, Tito Porras<sup>2</sup>, Omar Zalatimo<sup>3</sup>, Michael Ha<sup>4</sup>, and Yvonne Rasko<sup>4</sup>, <sup>3</sup>Division of Neurosurgery, <sup>1</sup>Department of Surgery, Sinai Hospital, New York City, MD, <sup>2</sup>Division of Neurosurgery, Department of Surgery, Johns Hopkins Hospital, Baltimore, MD, and <sup>4</sup>Division of Plastic and Reconstructive Surgery, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

**P.38 2:20 p.m.**

RISK FACTORS FOR COMPLICATION REQUIRING REOPERATION AFTER OPEN FRACTURES OF THE SUPRACONDYLAR DISTAL HUMERUS. Zachary Wilhelm\*, Raymond Pency<sup>1</sup>, and Peter Mittvede<sup>1</sup>, <sup>1</sup>Division of Trauma, Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

**P.39 2:20 p.m.**

HOW CAN THE OTA-OFC AND GA BE USED TO PREDICT FRACTURE RELATED INFECTIONS (FRI)? Philip Houry\*, Nina Hazra\*, Nina Hazra<sup>1</sup>, Anthony DeMartino<sup>1</sup>, Kevina Birungi<sup>1</sup>, Robert O'Toole<sup>2</sup>, Gerard Slobogean<sup>2</sup>, and Nathan O'Hara<sup>2</sup>, <sup>2</sup>Division of Trauma, Department of Orthopaedics, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

**P.40 2:20 p.m.**

VIRTUAL REALITY IS EQUIVALENT TO IN PERSON CADAVER BASED TRAINING. Heather Groves\*, Kristina Fuller<sup>1</sup>, Vondel Mahon<sup>1</sup>, Steven Butkus<sup>2</sup>, Amitabh Varshney<sup>3</sup>, Barabara Brawn<sup>3</sup>, Jonathan Heagerty<sup>3</sup>, and Sida Li<sup>3</sup>, <sup>1</sup>Department of Anatomy and Neurobiology, University of Maryland School of Medicine, Baltimore, MD, <sup>2</sup>Department of Anatomy and Neurobiology, Johns Hopkins University School of Pharmacy, Baltimore, MD, and <sup>3</sup>University of Maryland College Park, College Park, MD.

**P.41 2:20 p.m.**

THE ORTHOPAEDIC TRAUMA ASSOCIATION OPEN FRACTURE CLASSIFICATION AS A PREDICTOR OF OPEN TIBIA FRACTURE-RELATED INFECTIONS. Anthony DeMartino\*, Kevina Birungi-Huff\*, Philip Khoury<sup>1</sup>, Nina Hazra<sup>1</sup>, Nathan O'Hara<sup>2</sup>, Gerard Slobogean<sup>2</sup>, and Robert O'Toole<sup>2</sup>, <sup>2</sup>Division of Trauma, <sup>1</sup>Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

**P.42 2:20 p.m.**

LIVER TRANSPLANT WITH A COLD ISCHEMIC TIME <3H WITH OR WITHOUT NORMOTHERMIC MACHINE PERFUSION: A COMPARISON. Erin Foster\*, Shani Kamberi\*, Raphael Meier<sup>1</sup>, and Daniel Juan<sup>2</sup>, <sup>1</sup>Division of Transplant Surgery, Department of Surgery, UMB School of, and <sup>2</sup>University of Maryland College Park, College Park, MD.

**P.43 2:20 p.m.**

EVALUATION OF CANNABIDIOL AS A THERAPEUTIC FOR NOISE-INDUCED HEARING LOSS. Erika Lipford\*, Benjamin Shuster<sup>1</sup>, Beatrice Milon<sup>1</sup>, and Ronna Hertzano<sup>2</sup>, <sup>1</sup>Department of Otorhinolaryngology - Head and Neck Surgery, National Institute on Deafness and Other Communication Disorder, Bethesda, MD and <sup>2</sup>Department of Otorhinolaryngology - Head and Neck Surgery, University of Maryland School of Medicine, Baltimore, MD.

**P.44 2:20 p.m.**

FUNCTIONAL RECOVERY IN A COHORT OF ECMO AND NON-ECMO ACUTE RESPIRATORY DISTRESS SYNDROME SURVIVORS. Mackenzie Snyder\*, Binta Njie<sup>1</sup>, Noel Britton<sup>2</sup>, and Andrea Levine<sup>3</sup>, and <sup>2</sup>Division of Pulmonary and Critical Care, Department of Medicine, Johns Hopkins, Baltimore, MD, and <sup>3</sup>Division of Pulmonary and Critical Care, Department of Medicine, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

**P.45 2:20 p.m.**

IMPACT OF INTRAOPERATIVE DDAVP ON POSTOPERATIVE URINE IN ADULT CADAVERIC RENAL TRANSPLANT – A SINGLE CENTER RETROSPECTIVE STUDY. Catherine Wasylshyn\*, Samhati Mondal<sup>1</sup>, Roumen Vesselinov<sup>2</sup>, Miranda Gibbons<sup>1</sup>, Bhati Chandrasekhar<sup>3</sup>, Stephanie Jones<sup>1</sup>, Peter Rock<sup>1</sup>, and Megan Anders<sup>1</sup>, <sup>1</sup>Department of Anesthesiology, <sup>2</sup>Department of Epidemiology and Public Health, and <sup>3</sup>Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

**P.46 2:20 p.m.**

MULTIMODAL PRENATAL AND POSTNATAL IMAGING OF MICROPHTHALMIA WITH ORBITAL CYST. Taylor Kolosky\*, Olivia Uddin<sup>1</sup>, Bhakti Panchal<sup>2</sup>, Alexander Engelmann<sup>3</sup>, Moran Levin<sup>4</sup>, Sifa Turan<sup>5</sup>, Ozhan Turan<sup>5</sup>, and Janet Alexander<sup>4</sup>, <sup>1</sup>Johns Hopkins University School of Medicine, Baltimore, MD, <sup>3</sup>Doheny Eye Center University of California, Los Angeles Pasadena, Pasadena, CA, and <sup>4</sup>Division of Pediatrics, Department of Ophthalmology and Visual Sciences and <sup>5</sup>Department of Obstetrics, Gynecology and Reproductive Sciences, <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD.

**P.47 2:20 p.m.**

ACE QUESTIONNAIRES: LET'S TALK ABOUT IT. Michael Karanja\* and Deborah Badawi<sup>1</sup>, <sup>1</sup>Division of Developmental Pediatrics, Department of Pediatrics, UMB School of Medicine, University of Maryland School of Medicine, Baltimore, MD.

**Poster Presentation Session IV**

Day 2, Wednesday, 11/29, 3:30-4:30 p.m., Room 349, [View Posters](#)

**P.48 3:30 p.m.**

WHAT ABOUT RACE? A SYSTEMATIC REVIEW ON THE RACIAL DISPARITIES SEEN IN KIDNEY XENOTRANSPLANTATION LITERATURE. Ijeoma Obizoba\*, Sabrina Hidalgo-Ahmed\*, Madeline Brown<sup>1</sup>, Garyn Metoyer<sup>2</sup>, Yvonne Rasko<sup>3</sup>, and Chandra Bhati<sup>4</sup>, <sup>2</sup>Sinai Hopsital, Baltimore, MD, and <sup>3</sup>Division of Plastic Surgery and <sup>4</sup>Division of Transplantation Surgery, Department of Surgery, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

**P.49 3:30 p.m.**

IMPACT OF GOSLINGS II ON NICU PARENT-INFANT INTERACTIONS. Tiffany Cao\*, Lisa Shanty<sup>1</sup>, Barbara Henschel<sup>2</sup>, Betsy Diamant-Cohen<sup>3</sup>, and Brenda Hussey-Gardner<sup>4</sup>, <sup>1</sup>Johns Hopkins University, Baltimore, MD, <sup>2</sup>Port Discovery Children's Museum, Baltimore, MD, <sup>3</sup>Mother Goose on the Loose: Goslings, Baltimore, MD, and <sup>4</sup>Division of Neonatology, Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD.

**P.50 3:30 p.m.**

STUDENT EVALUATION OF REAL-TIME VIRTUAL IMMERSIVE CLINICAL EXPERIENCE. Nicol Tugarinov\*, Nima Karodeh<sup>1</sup>, Ann Bon<sup>1</sup>, and Regina Macatangay<sup>2</sup>, <sup>2</sup>Division of Pediatric Hematology/Oncology, <sup>1</sup>Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD.

**P.51 3:30 p.m.**

PUBLICATION OUTCOMES OF ABSTRACTS PRESENTED AT SKIN OF COLOR UPDATE ANNUAL MEETING FROM 2018 TO 2020. Madeline Brown\*, Chiemelum Amechi<sup>1</sup>, Ramona Khanna<sup>2</sup>, and Angel Byrd<sup>1</sup>, <sup>1</sup>Howard University College of Medicine, Washington DC and <sup>2</sup>Georgetown University School of Medicine, Washington DC.

**P.52 3:30 p.m.**

INITIATION OF SICKLE CELL EDUCATION IN PEDIATRIC HEMATOLOGY ANNUAL VISITS. Arley Wolfand\*, Leah Daniel<sup>1</sup>, Becky Halagarda<sup>2</sup>, Holly DeLuca<sup>2</sup>, Diane Keegan Wells<sup>2</sup>, Ricki Weisbrot<sup>2</sup>, Teddi Roseman<sup>2</sup>, and Regina Macatangay<sup>2</sup>, <sup>2</sup>Division of Pediatric Hematology/Oncology, <sup>1</sup>Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD.

**P.53 3:30 p.m.**

IMPLEMENTATION OF A "BIAS CHECK" INTERVENTION ON ACADEMIC ROUNDS AND ITS IMPACT ON IMPLICIT BIAS IN PATIENT CARE: EXPANSION TO INTERNAL MEDICINE. Julianna Solomon\*, Rebecca Carter<sup>1</sup>, and Sylvia Lane<sup>2</sup>, <sup>1</sup>Division of General Pediatrics, Department of Pediatrics and <sup>2</sup>Department of Medicine-Pediatrics, University of Maryland School of Medicine, Baltimore, MD.

**P.54 3:30 p.m.**

QUALITY OF LIFE THROUGH IMPLEMENTATION OF THE CASP-12 SCALE IN AGING POPULATIONS OF RURAL COTO BRUS, COSTA RICA. Shania Bailey\*, Alexis Vetack<sup>1</sup>, Hima Konduru<sup>1</sup>, Melissa Rallo<sup>1</sup>, Nicholas Leahy<sup>1</sup>, Christine Wan<sup>1</sup>, Lillianna Pedersen<sup>1</sup>, and Carlos Faerron Guzmán<sup>2</sup>, <sup>1</sup> University of Maryland School of Medicine, <sup>2</sup>Unveristy of Maryland, Baltimore, Baltimore, MD.

**P.55 3:30 p.m.**

UTILIZING AN ADVANCED TELEMEDICINE CLINIC FOR THE MANAGEMENT OF DIABETES. Reynier Hernandez\*, Fiorella Sotomayor<sup>1</sup>, Chikara Gothong<sup>1</sup>, Garrett Ash<sup>2</sup>, Lillian Pinault<sup>3</sup>, Lakshmi Singh<sup>1</sup>, John Sorkin<sup>4</sup>, and Ilias Spanakis<sup>1</sup>, <sup>1</sup>Division of Endocrinology, Diabetes and Nutrition, <sup>3</sup>Department of Medicine and <sup>4</sup>Department of Biostatistics and Informatics, University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>Division of Biomedical Informatics and Data Science, Department of Medicine, Yale School of Medicine, New Haven, CT.

**P.57 3:30 p.m.**

THE EFFECT OF THE COVID-19 PANDEMIC ON PARENTING CHILDREN WITH A DEVELOPMENTAL DISABILITY. Jernelle John\*, Deborah Badowi<sup>1</sup>, and Charina Reyes<sup>1</sup>, <sup>1</sup>Division of Behavioral and Developmental Pediatrics, Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD.

**P.58 3:30 p.m.**

USING THE SOCIAL DETERMINANTS OF HEALTH TO ASSESS EMPLOYMENT BARRIERS IN PATIENTS WITH OPIOID USE DISORDER IN BALTIMORE CITY. Donald De Alwis\*, Marianne Cloeren<sup>1</sup>, and Marissa Tan<sup>2</sup>, <sup>1</sup>Division of Occupational and Environmental Medicine and <sup>2</sup>Division of Addiction Research and Treatment, Department of Medicine, University of Maryland School of Medicine, Baltimore, MD.

**P.59 3:30 p.m.**

SOCIOECONOMIC STATUS IS ASSOCIATED WITH ACCESS TO SIMULTANEOUS PANCREAS AND KIDNEY TRANSPLANT. Shani Kamberi\*, Josue Alvarez-Casas, Silke Niederhaus<sup>1</sup>, Cynthia Drachenberg<sup>1</sup>, Chandra Bhati<sup>1</sup>, Daniel Maluf<sup>1</sup>, Saad Malik<sup>1</sup>, and Raphael Meier<sup>1</sup>, <sup>1</sup>Division of Transplant, Department of Surgery, University of Maryland Medical Center, Baltimore, MD.

**P.60 3:30 p.m.**

CHARACTERISTICS OF SPANISH-LANGUAGE PELVIC ORGAN PROLAPSE CONTENT ON TIKTOK. Amy Huddleson\*, Julianna Lebron Echandy\*, Maria Vera Alvarez<sup>1</sup>, Jonathan Konel<sup>2</sup>, and Madeline Dick-Biascochea<sup>3</sup>, <sup>3</sup>Division of Urogynecology and Pelvic Reconstructive Surgery, <sup>2</sup>Department of Obstetrics, Gynecology and Reproductive Sciences, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

**P.61 3:30 p.m.**

AN ANALYSIS OF SOCIAL AND EMOTIONAL LONELINESS IN AN ELDERLY POPULATION OF SAN VITO DE COTO BRUS, COSTA RICA. Nicholas Leahy\*, Melissa Rallo<sup>1</sup>, Hima Konduru<sup>1</sup>, Christine Wan<sup>1</sup>, Lillianna Pedersen<sup>1</sup>, Shania Bailey<sup>1</sup>, Alexis Vetack<sup>1</sup>, and Carlos Faerron Guzmán<sup>1</sup>, <sup>1</sup>Department of Medicine, University of Maryland School of Medicine, Baltimore, MD.

**P.62 3:30 p.m.**

NUTRITIONAL PROFILE OF OLDER ADULTS IN SAN VITO DE COTO BRUS, COSTA RICA. Hima Konduru\*, Nicholas Leahy<sup>1</sup>, Melissa Rallo<sup>2</sup>, Shania Bailey<sup>3</sup>, Lillianna Pedersen<sup>4</sup>, Alexis Vetack<sup>5</sup>, Christine Wan<sup>6</sup>, and Carlos Faerron Guzmán<sup>7</sup>, <sup>1</sup>Department of Medicine, University of Maryland School of Medicine and <sup>2</sup>University of Maryland, Baltimore, Baltimore, MD.

**P.63 3:30 p.m.**

IMPACT OF GENDER AFFIRMING THERAPY ON MENTAL HEALTH RESOURCE UTILIZATION IN TRANSGENDER AND GENDER DIVERSE PATIENTS. Danielle Sim\*, Bashar Hassan<sup>1</sup>, Shep Heaton<sup>1</sup>, and Fan Liang<sup>1</sup>, <sup>1</sup>Division of Plastic and Reconstructive Surgery, Johns Hopkins University School of Medicine, Baltimore, MD.



# ABSTRACTS

See [MSRD 2023 Event Webpage](#) for more information about the event

## Oral Presentation Abstracts

Presenters are indicated with “\*” next to their names.

### O.01

SEX BIAS IN PEDIATRIC DEEP LEARNING CHEST RADIOGRAPH CLASSIFIER MODEL. [Jake Kim\\*](#), [Pranav Kulkarni](#)<sup>1</sup>, [Alex Welsh](#)<sup>1</sup>, [Sean Garin](#)<sup>1</sup>, [Devina Chatterjee](#)<sup>1</sup>, [Adway Kanhere](#)<sup>1</sup>, [Vishwa Parekh](#)<sup>1</sup>, and [Paul Yi](#)<sup>1</sup>, <sup>1</sup>Department of Diagnostic Radiology and Nuclear Medicine, University of Maryland School of Medicine, Baltimore, MD Artificial intelligence (AI) has remarkable utility for computer assisted diagnosis of diseases in the thorax. However, AI has risks of inheriting and amplifying clinical biases with the potential to impact historically underserved groups. While literature has shown that AI models can perform poorly on female adult patients, it is not evident if this bias is present in pediatrics due to absence of secondary sex characteristics. This study explores the potential sex bias in pediatrics chest radiograph models. We curated a dataset of pediatric chest radiographs (n=14,349) from patients aged 0-18, combining the VinDR-PCXR (n=9,108) and NIH ChestX-ray-14 (n=5,241) datasets. The curated dataset is 41.3% female and 58.3% male, with 58.9% aged 0-5, 11.1% aged 6-9, 11.4% aged 10-13, and 16.1% aged 14-18. The 51 findings from VinDR-PCXR were harmonized with the 14 findings from the NIH dataset by a board-certified radiologist. Labels with prevalence lower than 1% were excluded, resulting in a total of 9 labels. The dataset was split into train-validation-test sets using 70-10-20 split with no patient overlap. We fine-tuned an ImageNet pretrained DenseNet-121 architecture on the combined dataset with 25-fold cross-validation. The area under the receiver operating curve (AUROC), false positive rate (FPR), and false negative rate (FNR), were measured. Youden's J statistic was used to threshold model predictions. Paired t-tests were used to compare performance between male and female pediatrics with statistical significance defined as P

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.02

EVALUATING THE TRUSTWORTHINESS OF EXPLAINABLE AI IN MEDICAL IMAGING. [Alex Welsh\\*](#), [Paul Yi](#)<sup>1</sup>, and [Vishwa Parekh](#)<sup>1</sup>, <sup>1</sup>Department of Diagnostic Radiology and Nuclear Medicine, University of Maryland School of Medicine, Baltimore, MD.

Deep learning (DL) models can classify and diagnose disease from radiological images; however, one potential shortcoming is their trustworthiness and adoption in clinical settings. Traditional models are unable to show their reasoning, so saliency maps are a potential solution to “explain” the model's decisions. We evaluated the performance and trustworthiness of Vision transformers (ViT) models, specifically data-efficient image transformers (DeiT) and their attention rollout saliency maps with respect to pneumonia identification and localization on radiological images. We trained DeiT-Ti (Tiny) and convolutional neural networks (CNNs) using images with pneumonia (n=6012) and without pneumonia (n=8851). DeiT-Ti models generated saliency maps using an attention rollout method that were compared to saliency maps generated by CNNs using a Grad-CAM method. Models were evaluated using the criteria from Arun et al. such as localization utility. The DeiT-Ti model area under the receiver operating curve (AUROC) was 0.979 (CI 95 0.972-0.985) and was higher compared to previously reported CNN models test set AUCs of 0.89 (InceptionV3) and 0.91 (DenseNet121). A percent in/out ratio based on how much of the generated saliency map was inside or outside the ground truth bounding box was used to score the accuracy and precision of the heatmaps and was compared using a two-sample t-test with unequal variance. DeiT-Ti outperformed DenseNet121 (0.585 vs 0.225, p=2.06e-80). DeiT-Ti also outperformed DenseNet121 among different subgroups such as age (<65 and >65) and between sexes (male and female). These findings indicate that ViTs with an attention mechanism are a promising model

with the ability to explain their results and improve trustworthiness of DL models for disease classification and diagnosis.

### **O.03 1:50 p.m.**

CHILDREN ARE NOT SMALL ADULTS: ADDRESSING LIMITED GENERALIZABILITY OF AN ADULT DEEP LEARNING ORGAN SEGMENTATION MODEL TO THE PEDIATRIC POPULATION. Devina Chatterjee\*, Florence Doo<sup>1</sup>, Adway Kanhere<sup>1</sup>, Andrew Chan<sup>1</sup>, Alexander Welsh<sup>1</sup>, Annie Trang<sup>1</sup>, Vishwa Parekh<sup>1</sup>, and Paul Yi<sup>1</sup>, <sup>1</sup>Department of Diagnostic Radiology and Nuclear Medicine, University of Maryland School of Medicine, Baltimore, MD.

Deep learning (DL) tools are often developed on adult data sets, and their potential generalizability for use in pediatric populations has not yet been evaluated. The purpose was to evaluate 1) the generalizability of an adult-trained DL CT scan organ segmentation model to pediatric CT scans and 2) utility of DL optimization techniques to improve pediatric segmentation performance. A state-of-the-art (SOTA) adult-trained multiorgan DL segmentation model, TotalSegmentator was retrospectively evaluated on abdominal CT scans from an external adult dataset (n=250-300) and an external pediatric data set (n=359). Generalizability was quantified by comparing Dice scores between adult and pediatric external data sets using Mann-Whitney U tests (statistical significance defined as  $p < .05$ ). Two DL optimization approaches for improvement of segmentation were compared: 1) 3D nnU-Net model trained on only pediatric data, and 2) an adult nnU-Net model fine-tuned on the pediatric cases. Dice scores were compared on optimized DL models to TotalSegmentator using Mann-Whitney U tests. TotalSegmentator had limited generalizability when comparing performance on the external adult and pediatric datasets, with Dice scores  $>0.9$  for both datasets ( $p > .05$ ) for larger pediatric organs like liver, spleen, kidneys, but lower Dice scores in pediatric patients for smaller organs like pancreas (0.73 vs. 0.7989,  $p < .0001$ ) and adrenal glands (0.35 vs. 0.68,  $p < .0001$ ). Both customized pediatric models significantly improved multi-organ segmentation accuracy over TotalSegmentator, especially for smaller anatomical structures (e.g.  $>0.2$  higher Dice for adrenal glands;  $p < .0001$ ). An adult-trained DL CT segmentation model for abdominal organs had limited generalizability to pediatric CT scans compared to adult CT scans. Performance on pediatric CT scans was improved by developing pediatric-specific models and finetuning an adult-trained model on pediatric images.

This research was supported by AOA Medical Student Research Grant.

### **O.04**

IS YOUR AI FAIR? AN EVALUATION OF DEMOGRAPHIC BIASES IN AIDOC FOR INTRACRANIAL HEMORRHAGE TRIAGE. Annie Trang\*, Kristin Putman<sup>1</sup>, Dharmam Savani<sup>2</sup>, Devina Chatterjee<sup>3</sup>, Jerry Zhao<sup>4</sup>, Peter Kamel<sup>2</sup>, Vishwa Parekh<sup>2</sup>, and Paul Yi<sup>2</sup>, <sup>1</sup>University of Virginia, Charlottesville, VA, <sup>2</sup>Department of Diagnostic Radiology and Nuclear Medicine, <sup>3</sup>University of Maryland School of Medicine, Baltimore, MD, and <sup>4</sup>University of Maryland College Park, College Park, MD.

Although commercial artificial intelligence (AI) tools are increasingly used in clinical practice, potential demographic biases have not been evaluated. We evaluated whether a commercial AI tool for intracranial hemorrhage (ICH) detection on head CT exhibited demographic biases. We reviewed 9736 consecutive, adult non-contrast head CT scans performed between November 2021 and February 2022 in a single healthcare system (50% female, mean age  $60 \pm 19$  years). Each CT scan was evaluated by a commercial ICH AI tool (Aidoc) and a board-certified neuroradiologist; ground truth was defined as final radiologist determination of ICH presence/absence. Aidoc's aggregate diagnostic performance was evaluated with subsequent sub-analyses based on demographic groups (age, sex, race, ethnicity, insurance status, and Area of Deprivation Index [ADI] scores) to evaluate for demographic biases. Aidoc had aggregate accuracy of 93%, 85% sensitivity, 94% specificity, 71% positive predictive value (PPV) and 98% negative predictive value (NPV). Several demographic biases were identified, including higher PPV in males, non-Black patients and non-Hispanic/Latino patients ( $p = 0.005, 0.024, 0.009$ , respectively), and higher sensitivity for patients in the least disadvantaged ADI quartile at both national ( $p = 0.001$ ) and state ( $p = 0.001$ ) levels. In our healthcare system, Aidoc had lower performance for ICH detection than previously reported. Furthermore, it demonstrated demographic biases across sex, race, ethnicity, and socioeconomic status. Further study on potential biases in clinically-deployed AI tools in radiology is warranted to ensure equitable use of these promising technologies. 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.05**

**AUTOMATED EXTRACTION OF PERI-CORONARY ADIPOSE TISSUE AND RADIOMIC FEATURE EXTRACTION ON CORE320.** Devina Chatterjee\*, Adway Kanhere<sup>1</sup>, Benjamin Shou<sup>2</sup>, Sangmita Singh<sup>3</sup>, Vishwa Parekh<sup>1</sup>, Paul Yi<sup>1</sup>, and Armin Zadeh<sup>4</sup>, <sup>1</sup>Department of Diagnostic Radiology and Nuclear Medicine, University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>Department of Surgery, <sup>3</sup>Department of Diagnostic Radiology and Nuclear Medicine, and <sup>4</sup>Department of Cardiology, Johns Hopkins School of Medicine, Baltimore, MD.

Pericoronary adipose tissue attenuation (PCAT), obtained from cardiac CT angiography (CCTA), has been associated with coronary inflammation and manifestations of atherosclerotic disease. However, assessment of PCAT is time consuming and not readily available. Integration of artificial intelligence (AI) into the analysis workflow of PCAT, e.g., segmentation of arterial segments and quantification of data, may enhance the accuracy, efficiency, and reliability of PCAT assessment. Automated segmentation of perivascular fat and extraction of PCAT data on the proximal right coronary artery can be achieved using AI, which will allow differentiation between healthy patients and those with coronary artery disease. For the coronary artery segmentation, we used a novel weakly supervised 3D convolutional neural network called the Examinee-Examiner Network (EE-Net). The external validation dataset was the ASOCA challenge which included CTAs and segmentations of the coronary arteries for 20 healthy patients and 20 patients with confirmed coronary artery disease. Manual extraction of PCAT was performed on the external validation dataset was performed using the open software 3D-slicer (version 4.11, <https://www.slicer.org>). Automated segmentation of the proximal RCA yielded a DICE score of 0.896 and 0.822 for the internal and external validation cohorts, respectively. The mean attenuation values for PCAT at 5 mm in the healthy and diseased patients is  $-76.3 \pm 5.46$  HU and  $-72.1 \pm 4.82$  HU respectively. Compared to the manual measurements, for the healthy and diseased patients, the intraclass correlation coefficient is 0.916. In this study, we demonstrated the feasibility of automated segmentation of perivascular fat and extraction of PCAT using AI. Our results showed high accuracy and reliability of the AI model in segmenting the proximal RCA and quantifying PCAT. The findings support the hypothesis that AI-based analysis can differentiate between healthy individuals and those with coronary artery disease based on PCAT characteristics.

This research was supported by AOA Medical Student Research Grant.

#### **O.06**

**THE INSURANCE LANDSCAPE OF BOTULINUM TOXIN POLICIES FOR MIGRAINES IN THE UNITED STATES.** Kevin Zhu\*, Michael Ha<sup>1</sup>, Emily Finkelstein<sup>2</sup>, Salman Choudhry<sup>3</sup>, and Yvonne Rasko<sup>1</sup>, <sup>1</sup>Division of Plastic Surgery, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD, <sup>2</sup>Division of Plastic Surgery, Department of Surgery, University of Miami School of Medicine, Miami, FL, and <sup>3</sup>Department of Surgery, Anne Arundel Medical Center School of Medicine, Annapolis, MD.

The authors reviewed 101 US insurance companies on their policies for botulinum toxin use in migraines and headaches and associated medical necessity criteria. Migraines affect as much as 10% of the population worldwide and constitute significant clinical and economic burden to the US. Botulinum toxin injections have been proven to safely and effectively treat migraines. Access to this treatment in the US is largely dependent on coverage by insurance companies, but the coverage of botulinum toxin injections is currently unknown. Insurance companies were selected for inclusion in the study based on their state enrollment and market share. Policies were collected through web-based searches and telephone interviews. Policies were organized into three groups by coverage status: pre-authorized coverage, covered on a case-by-case basis, and never covered. Most insurers held a policy on botulinum toxin use in migraines ( $n = 65$ ), with the majority providing coverage for their use ( $n = 59$ , 91%). This was significantly more than for headaches alone (17% vs 91%,  $p < 0.001$ ). Four types of toxins were approved, with the most common being onabotulinumtoxinA ( $n = 56$ , 95%). Approved dosages ranged from 155 to 400 units per treatment cycle. To achieve approval, 26 potential criteria were identified, with the most common being headache occurring more than 15 days per month ( $n = 37$ , 63%). Many policies also required a prior failure of one to three drug classes of oral migraine medication ( $n = 38$ ,

64%). Though botulinum toxin is largely covered by most health insurers in America, there are significant discrepancies in criteria to access the treatment. Greater standardization between approval criteria and the method of provision, such as approved toxin type and dosing amount may be recommended to further streamline access to treatment.

#### **O.07**

ASSESSMENT OF DIFFERENCES REGARDING MANAGEMENT OF PEDIATRIC SUPRACONDYLAR HUMERUS FRACTURES BETWEEN ORTHOPAEDIC PROVIDER LEVEL OF TRAINING. Cameron Amini\*, Joshua Abzug<sup>1</sup>, and Catherine May<sup>2</sup>, <sup>1</sup>Department of Orthopaedics, <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD.

Supracondylar fractures of the humerus are a common injury in the pediatric population, occurring most often through a fall. Supracondylar fractures are managed by a variety of orthopaedic surgeons. As not all hospitals have pediatric-trained orthopaedics surgeons, adult hand surgeons also treat these fractures. The purpose of this study was to determine if any differences exist in the management and documentation of pediatric supracondylar humerus fractures between pediatric orthopaedic surgeons and hand surgeons. A retrospective review was performed to identify patients treated surgically for Gartland type II or III supracondylar humerus fractures over a 13-year period. Data collected includes patient demographics, Gartland classification, time from injury to evaluation, time from injury to surgery, recovery time, preoperative nerve deficit and/or vascular injury, closed versus open reduction surgical technique, pin configuration, operative time, complications (compartment syndrome, infection, loss of fixation), postoperative nerve injury, and physical therapy referral. Two groups of patients were established based on the treating physician: pediatric orthopaedic surgeons and hand surgeons. Data analysis of each group is currently ongoing. Statistical analysis between continuous data will be performed with student's t-test, and Fisher's exact test will be used to calculate differences between discrete data. For all analyses, statistical significance is set at  $p < 0.05$ . Based on crude observation, treatment by both adult hand surgeons and pediatric orthopaedic surgeons have low complication rates. Additionally based on observation, it appears that hand-trained surgeons utilize an open reduction technique more frequently and have longer operative times compared with pediatric-trained surgeons who utilize a closed reduction technique with shorter operative times. This may contribute to higher healthcare costs for patients treated by hand-trained physicians.

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.08**

MOTOR VEHICLE TRANSPORTATION IN SHOULDER SPICA CASTS: ARE OUR PATIENTS SAFELY RESTRAINED? Ahlam Ashkar\* and Joshua Abzug<sup>1</sup>, <sup>1</sup>Division of Pediatrics, Hand Surgery, Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

Pediatric patients with shoulder spica casts are faced with the challenge of being safely transported after discharge from the hospital post-operation. With motor vehicle crashes being the second leading cause of mortality amongst children in the United States, the lack of safe transportation methods for this vulnerable population contributes to the risk. It is essential to understand how advances in car seat design can be implemented to mitigate injury in these individuals with special needs. The purpose of this study was to determine the methods of motor vehicle restraint used for children in shoulder spica casts. Additional goals included (1) determining the mode of transportation used by parents of children in shoulder spica casts and (2) identifying any exposure to potential injury by comparing the occurrences of traffic violations or accidents based on the restraint method used. A retrospective review was conducted to identify all pediatric and adolescent patients placed in a shoulder spica cast over a 10-year period. Patient demographics, type of shoulder spica cast, purpose of spica cast placement, safest method of restraint as determined by the pediatric physical therapist or nurse, mode of transportation, adverse outcomes, and complications secondary to the cast were recorded. Simple statistical analyses were subsequently completed.

## O.09

PERSISTENCE OF ANXIETY IN MULTILIGAMENT KNEE INJURY WITH DISLOCATED KNEE. Laura De Ravin\*, Douglas Cooper<sup>1</sup>, Dominic Ventimiglia<sup>2</sup>, and R. Frank Henn III<sup>3</sup>, <sup>2</sup>University of Maryland, Baltimore, and <sup>3</sup>Division of Sports Medicine, Department of Orthopaedics, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

The relationship between psychosocial symptoms and functional outcomes in patients with Multiligament Knee Injury (MLKI) is not fully understood. The objective of our study was to investigate the differential influence of psychosocial symptoms in patients presenting for MLKI with knee dislocation compared to those without. We hypothesized that patients with MLKI with knee dislocation would have worse injury-related psychosocial symptoms and that these symptoms would be associated with worse post-operative functional outcomes. Patients undergoing surgical reconstruction for MLKI between September 2015 and August 2020 were identified in a prospective orthopedic registry and retrospectively analyzed. Psychosocial symptoms were assessed using Patient-Reported Outcome Measurement Information System (PROMIS) domains, and functional outcomes at two years were assessed using PROMIS Physical Function and IKDC. Wilcoxon rank sum and Fisher's exact test were used to analyze group differences for continuous and categorical variables, respectively, based on dislocation status. Spearman's rank correlation was used to determine the relationship between baseline psychosocial symptoms and functional outcomes by dislocation status. Of 40 patients undergoing surgery for MLKI, 21 (53%) presented with a knee dislocation. There were no significant differences in the mean psychosocial PROMIS scores at baseline between dislocators and non-dislocators ( $p>.05$ ). At two-year follow-up, dislocators reported worse PROMIS Anxiety (53.1 vs 42.1,  $p=.011$ ), PROMIS Fatigue (50.1 vs 42.9,  $p=.035$ ), and PROMIS Social Satisfaction (50.8 vs 60.2,  $p=.023$ ). Additionally, worse baseline PROMIS Anxiety was correlated with worse two-year PROMIS Physical Function and IKDC in dislocators, but not non-dislocators. While patients with MLKI have similar scores on psychosocial measures at baseline, regardless of dislocation status, anxiety persists at two-year follow-up in patients with knee dislocations and is associated with worse functional outcomes. The results suggest that psychiatric counseling may be beneficial for patients presenting with MLKI with dislocation.

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## O.10

ARE PATIENTS COMPLETELY BETTER AFTER KNEE REPLACEMENT?. Ovais Hasan\*, Laura Ravin<sup>1</sup>, Dominic Ventimiglia<sup>1</sup>, Brittany Oster<sup>2</sup>, Sean Meredith<sup>3</sup>, and Frank Henn<sup>3</sup>, <sup>3</sup>Division of Sports Medicine, <sup>2</sup>Department of Orthopaedics, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

Knee replacement surgery is one of the most common procedures performed in the United States, which is why it is important to be able to assess patient-reported outcomes (PROs) in the context of clinically significant improvement in knee function. Currently, there is high variability in assessing meaningful clinical improvement after knee replacement surgery. The assessment of patient's perception of being "completely better" (CB) may be associated with certain PROs. The purpose of this study was to determine the PROs associated with achieving CB status after knee arthroplasty, and to determine the PRO score thresholds that best predict achieving CB status. A retrospective study was conducted using registry data from a single institution. Adults undergoing primary unilateral unicompartmental or total knee arthroplasty completed a questionnaire consisting of the Patient-Reported Outcomes Measurement Information System (PROMIS) Physical function (PF) and Pain Interference (PI) domains, the International Knee Documentation Committee (IKDC) subjective knee evaluation form, and a Numeric Pain Scale (NPS). Patients also responded to an anchor question that asked, "Is the condition for which you underwent surgery completely better now?", with answer options "Yes" or "No". Questionnaires were completed at baseline, 6 months, 1 year, and 2 years postoperatively. Thresholds for 2-year and change in PRO scores for determining CB status were identified using a receiver operating curve. Overall, 73 of the 105 patients (70% of initial cohort) responded to the anchor question. Of the 73 patients with follow-up, 38 (52.1%) self-reported achieving CB status. Better 2-year scores and greater change in PROMIS PI, NPS, and IKDC scores were associated with achieving CB status ( $p<.001$ ). The PRO score threshold combination with maximum sensitivity and specificity for predicting CB status was  $IKDC \geq 64.4$  or  $NPS \leq 1.0$ , with specificity  $>90\%$  was  $IKDC \geq 54.0$  and  $NPS \leq 1.0$ , and with sensitivity  $>90\%$

was IKDC change +33.3 or NPS change -4.0. A majority of patients undergoing knee replacement were CB at 2 years post-operation, with IKDC and NPS scores being the strongest predictors of CB status.

This work was supported by a grant from The James Lawrence Kernan Hospital Endowment Fund, Incorporated.

### **O.11**

**DEVELOPMENT OF A PATIENT SPECIFIC CARTILAGE GRAFT USING MAGNETIC RESONANCE IMAGING AND 3D PRINTING.** Antoan Koshar\*, Matthew Kolevar<sup>1</sup>, and Jonathan Packer<sup>1</sup>, <sup>1</sup>Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

Cartilage injuries are debilitating conditions affecting millions of people; however, limited treatment strategies exist, especially for large cartilage defects in non-arthritic patients. Current treatments are expensive, have short implant shelf lives, and can require multiple surgeries. Flat osteochondral allograft transplants of generic shape have been used in patients, but often result in poor fit. To our knowledge, no anatomically correct scaffolds have been successfully designed, created, and implanted. The specific aim of this project was to develop a patient-specific, anatomically correct graft for cartilage restoration using MRI data and 3D printing technology. Our hypothesis was that a custom-made anatomic graft would demonstrate better fit compared to a generic flat graft. Four focal cartilage defects (FCDs) were created in paired (one left and one right, from the same donor) fresh frozen human cadaver knees age <40 without any prior surgery or cartilage injury. Anatomic grafts were designed based on MRI images for the left knee as an experimental group, and generic flat grafts were printed for the right knee as a control group. All cartilage grafts were 3D printed using an Ultimaker 2+ fused deposition modeling (FDM) 3D printer with polylactic acid (PLA). After grafts were implanted, repeat MRI was obtained for visualization of graft fit. The primary outcome measure was accuracy of fit based on 1) graft step-off distance, and 2) graft contour. A student's t-test was performed to compare mean measurements between groups. Graft step-off was significantly better for the anatomic grafts in the medial femoral condyle, lateral femoral condyle, patella, and trochlea. Graft contour was significantly better for the anatomic grafts in the lateral femoral condyle and the trochlea. Graft contour was significantly better for the generic graft in the patella. This study provided validation of a process designed to fabricate an anatomically correct cartilage graft using MRI and 3D printing technology. Further research is needed to implement anatomic, biofunctionalized grafts in a large animal model.

### **O.12**

**RISK FACTORS AND OUTCOMES ASSOCIATED WITH SATISFACTION AND EXPECTATIONS AFTER HIP ARTHROSCOPY.** Seyedeh Zahra Mousavi\*, Dominic Ventimiglia<sup>1</sup>, Evan Honig<sup>1</sup>, and Sean Meredith<sup>1</sup>, <sup>1</sup>Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

Patient satisfaction and postoperative met expectations are significant measures of success for orthopedic procedures. However, the relationship between patient-reported outcomes (PROs) and expectations and satisfaction needs great improvement. There is a significant gap between patient and surgeon expectations, potentially leading to dissatisfaction and inability to meet expectations. The purpose of this study was to identify factors that influence met expectations and satisfaction two years after hip arthroscopy. In a retrospective analysis, patients were asked to fill out surveys prior to their procedure to gather demographics, symptoms, social history, PROs, and preoperative expectations via the Musculoskeletal Outcomes Data Evaluation and Management System (MODEMS) questionnaire. Two years after their procedure, patients completed follow-up questionnaires including PROs, MODEMS postoperative met expectations, and satisfaction using the surgical satisfaction questionnaire-8 (SSQ-8). Bivariate and multivariate analysis was used to determine significant associations. This was a retrospective study of patients who underwent hip arthroscopy. Of the 99 eligible patients, 70 (71%) completed both preoperative and postoperative questionnaires. Aside from a correlation between back pain and SSQ-8 scores, there were no associations between patient demographic information and MODEMS met expectations and SSQ-8 scores. A strong correlation existed between MODEMS met expectations and SSQ-8 score ( $r=.81$ ,  $p<.001$ ). MODEMS preoperative expectations were positively correlated with MODEMS met expectations ( $r=.26$ ,  $p=.038$ ), but not with SSQ-8. Postoperative PRO scores including Patient-Report Outcomes Measurement Information System (PROMIS) Physical Function (PF), Pain Interference (PI), Social Satisfaction (SS), and Fatigue were strongly correlated with

MODEMS met expectations and SSQ-8 scores. In conclusion, postoperative functional improvements and social situation play a crucial role in meeting patients' expectations and higher satisfaction in hip arthroscopy procedures. Preoperative expectations correlated with MODEMS met expectations only. These results underscore the importance of preoperative communication and enhancing postoperative patient experiences and functionality to achieve greater satisfaction and meet expectations successfully.

#### **O.14**

ASSESSING THE PREDICTIVE VALUE OF THE NEUTROPHIL-TO-LYMPHOCYTE RATIO FOR POST-THROMBOTIC SYNDROME FOLLOWING ILIOFEMORAL DEEP VENOUS THROMBOSIS. Anthony DeMartino\*, Olivia Babick\*, Anahita Shiva\*, Nisarg Shah<sup>1</sup>, Laura De Ravin<sup>1</sup>, Devina Chatterjee<sup>1</sup>, and Khanjan Nagarsheth<sup>2</sup>, <sup>2</sup>Division of Vascular Surgery, <sup>1</sup>Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

Post-thrombotic syndrome (PTS) is a common complication of deep vein thrombosis (DVT) that occurs in 20-50% of patients and results in a decreased quality of life. Clinically useful predictors of PTS have been limited and not well characterized. The neutrophil-to-lymphocyte ratio (NLR) is an emerging prognostic biomarker used in a variety of diseases that reflects systemic inflammation. This study aimed to evaluate the utility of NLR at time of DVT diagnosis in predicting PTS incidence in patients with iliofemoral DVT. A retrospective chart review was performed on patients identified with iliofemoral DVT at the University of Maryland Medical Center between 2020 and 2022. Patients with at least one follow-up visit 3-6 months after DVT diagnosis were included. Diagnosis of PTS was determined based on Villalta Score. A Youden's J statistic test was performed to determine the NLR cutoff value that may be predictive of PTS. Simple and multivariable logistic regression models were used to assess the utility of this NLR cutoff value and other clinical markers in predicting the presence of PTS symptoms. 418 patients with positive iliofemoral DVT venous duplex ultrasounds were screened for eligibility. 126 patients were eligible with a mean age of 54 (SD, 15). An NLR cutoff of 7.71 was determined with an AUC of 0.62. When NLR was assessed with other clinical markers at time of DVT diagnosis, NLR was the only predictor variable with a significantly increased odds ratio (OR, 1.74; 95% CI, 1.17 – 2.60;  $p=0.044$ ). This study found that when stratified by a determined cutoff value, NLR was significantly associated with the presence of PTS symptoms in patients with iliofemoral DVT. This result is consistent with prior research findings, suggesting that NLR may prove to be a viable biomarker in the prediction of PTS. NLR should thus be investigated further as a potential clinical prognostic tool to aid in the improvement of treatment strategies for PTS.

#### **O.15**

HEALTH DAMAGES OF WILDFIRE SMOKE ON EAST COAST CITIES. Donald De Alwis\* and Zhekang Ying<sup>1</sup>, <sup>1</sup>Department of Medicine, University of Maryland School of Medicine, Baltimore, MD.

Air pollution is known to be a leading cause of mortality worldwide, and the majority of health effects are attributable to particulate matter smaller than 2.5 microns (PM<sub>2.5</sub>). One important source of PM<sub>2.5</sub> 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. The atmospheric transport of smoke plumes from these wildfires may pose a potent health threat to populations far removed from the 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 PM<sub>2.5</sub> and statewide emergency department admissions data for several cardiovascular and pulmonary diagnostic categories. Our analysis, while limited by a small sample size, showed increased chronic respiratory disease emergency department visits on days with high levels of air pollution compared to days without, with an interaction effect between air pollution and temperature. Analysis of the economic impact of these emergency department visits is ongoing and may help inform statewide health messaging on the dangers of air pollution exposure.

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#### **O.16**

**IS RESIDENCE ASSOCIATED WITH FOOD INSECURITY IN REPRODUCTIVE PATIENTS: WHICH DATABASE IS BETTER?** Sanyukta Deshmukh\*, Rose Pagano<sup>1</sup>, and Jessica Lee<sup>1</sup>, <sup>1</sup>Department of Obstetrics, Gynecology and Reproductive Sciences, University of Maryland School of Medicine, Baltimore, MD.

Identifying patients that are food insecure remains a top priority in reproductive clinics. There is also growing interest on the value of place-based indicators to identify which patients might be food insecure and guiding clinical interventions. The USDA Food Agriculture Research Atlas (FARA) identifies individuals who live in low income and low food access census tracts (LILAs). Childhood Opportunity Index evaluates neighborhood level opportunity using 29 indicators. The Social Vulnerability Index (SVI) uses 16 US Census variables to quantify vulnerability on the census tract level. There is limited research on the association between reproductive patient's self-reported food insecurity with these databases, as well as limited research comparing various databases. This is a cross-sectional survey study of patients (15-75 years) presenting for routine reproductive care at one urban academic center. Food insecurity was scored as  $\geq 1$  on the 6-Item USDA Food Security Module. We matched patient census tract information to the 2019 USDA FARA to identify participants living within a census tract in which at least 33% of the population lives  $\frac{1}{2}$  miles away from the nearest grocery store, and where the poverty rate of 20% or greater (LILA). We also categorized their social vulnerability as moderate/low/very low vulnerability or high/very high vulnerability using the SVI. We categorized childhood opportunity using the through the nationally normed COI as very low/low and moderate/high/very high. We performed logistic regressions to measure the association between patient's self-reported food security status and (1) living within a LILA, (2) living within a high/very high vulnerability census tract, (3) living within a low/very low child opportunity census tract. Of the 179 participants in the study, 84 (46.9%) reported food insecurity. Of these participants, 96 (53.6%) lived within a LILA, 138 (77.1%) lived within a high/very high vulnerability tract, and 144 (86.2%) lived within a low/very low COI tract. Living within a LILA was associated with an increased odds of experiencing food insecurity OR=1.8 95% CI [1.0, 3.4]. Living within a high/very high vulnerability census tract was not significantly associated with food insecurity OR=1.2 95% CI [0.6, 2.4], nor was living within a low/very low childhood opportunity census tract OR=1.6 95% CI [0.8, 3.5]. Living within a LILA may help identify patients at risk for food insecurity based on community factors. As 1 in 2 patients were food insecure, we recommend universal screening of all patients at reproductive appointments.

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.17**

**OLDER ADULTS' ATTITUDES ON SUCCESSFUL AGING: QUALITATIVE INTERVIEWS IN SAN VITO, COSTA RICA.** Alexis Vetack\*, Christine Wan<sup>1</sup>, Hima Konduru<sup>1</sup>, Melissa Rallo<sup>1</sup>, Shania Bailey<sup>1</sup>, Lilli Pedersen<sup>1</sup>, Nick Leahy<sup>1</sup>, and Carlos Faerron Guzmán<sup>2</sup>, <sup>1</sup>University of Maryland School of Medicine and <sup>2</sup>University of Maryland, Baltimore, Baltimore, MD.

Aging research in Costa Rica holds significance given the region's notably higher life expectancy. However, most existing literature focuses on the phenomenon of "blue zones" in the northern Nicoya area and lacks an understanding of southern rural communities like San Vito. With a global demographic shift towards an aging population, it is increasingly crucial to grasp successful aging across diverse communities. The study's primary aim was to enhance our understanding of older adults' attitudes and perspectives on the aging process, as well as their insights into potential interventions that can foster a more positive outlook on growing older. This qualitative project involved fourteen in-depth interviews with elderly individuals aged 61 to 94 in the San Vito community. Participants were recruited from nursing homes, dance groups, and referrals from community health workers. Guided by structured questionnaires, these interviews explored various facets of aging, including the influence of media, evolving gender dynamics, and subtle age-related discrimination. From the interview transcripts, key themes emerged. The study revealed two pivotal findings: the profound influence of



an established sense of community and the essential role of support for local elderly programs in nurturing positive attitudes towards aging. Complementary subthemes encompassing healthy aging included socialization, a sense of purpose, and staying physically active, as well as the importance of affirmative media portrayals, and the equitable distribution of familial responsibilities. Conversely, challenges were identified, including limitations related to pensions, instances of familial abandonment, and age-related discrimination. Our research offers valuable insights into how elderly individuals perceive their role within the broader community context, and the consequential impact on their mental well-being, shaping the overall experience of successful aging. Anticipated future research in regions characterized by extended life expectancies, such as Costa Rica, therefore have the potential for further improving our comprehension of the complexities of the aging process.

This research was supported by the Alicia and YaYa Fellowship.

### **O.18**

**DELIVERY OUTCOMES IN PREGNANCY COMPLICATED BY LATE-ONSET FETAL GROWTH RESTRICTION.** Amy Huddleson\*, Clarice Hu\*, Molly Johnson<sup>1</sup>, and Andrea Desai<sup>2</sup>, <sup>2</sup>Division of Maternal and Fetal Medicine, <sup>1</sup>Department of Obstetrics, Gynecology and Reproductive Sciences, University of Maryland School of Medicine, Baltimore, MD.

Fetal growth restriction is the second most common cause of infant morbidity and mortality, and is noted in up to 10% of pregnancies (SMFM). Diagnosed in utero by ultrasound criteria, it is defined as an estimated fetal weight less than the 10th percentile, or abdominal circumference less than the 10th percentile. While studies have identified an increased risk of cesarean section in pregnancies complicated by FGR as compared to normally grown fetuses, there is limited data regarding delivery outcomes within pregnancies complicated by FGR. This study sought to examine delivery outcomes within pregnancies complicated by late onset FGR, as defined by AC and/or EFW criteria. This was a retrospective cohort study of patients who presented to labor and delivery from 2019-2021 at two institutions. Patients with singleton pregnancies complicated by late onset fetal growth restriction, no prior uterine surgery and presenting for a trial of labor were identified. They were categorized based on EFW < 10%, AC < 10% or both EFW and AC < 10%. The primary outcome was the rate of cesarean section between the three respective groups. The secondary outcome was a composite analysis of neonatal outcomes including small for gestational age, APGARs at 1 and 5 minutes, arterial and venous cord gasses, need for respiratory support and NICU admission. Of the 132 patients who presented to labor and delivery, 4 had an EFW <10% with a normal AC (3%), 46 had an AC <10% and normal EFW (35%) and 83 had both an EFW and AC < 10% (63%). After eliminating those patients with a history of prior cesarean section, a total of 116 patients were evaluated, and the average rate of primary cesarean in all three cohorts was 28%, with an individual range of 25-67% between the three - EFW alone (67%), EFW/AC (29%) and AC alone (25%). With regard to the secondary outcomes, the most notable difference between the cohorts was small for gestational age (SGA) neonates, ranging from 67% (EFW/AC group), 81% (AC alone) and 100% (EFW alone). AGPARs, venous/arterial pH, respiratory support and NICU admissions were all comparable between groups. Clinically, there was no significant difference between rate of cesarean between EFW/AC vs. AC alone (29 vs 25%). While EFW alone had a higher rate of cesarean, this data is skewed by a small sample size. Clinically, the neonatal outcomes were also insignificant between the different classifications of fetal growth restriction. As compared to the national rate of primary cesarean, of 22%, this study demonstrated a rate of 28% in pregnancies complicated by late onset FGR. The most common indication for pCS was a non-reassuring fetal heart tracing. As has been previously demonstrated, a cesarean section was more likely to occur in FGR with abnormal fetal dopplers. This data is useful for counseling patients on expectations as they embark on a trial of labor. This is an ongoing study, and as the database continues to expand, this will hopefully alleviate confounding data due to the small sample size.

### **O.19**

**THE POTENTIAL ROLE OF RHO KINASE INHIBITORS IN OCULAR GRAFT-VERSUS-HOST DISEASE.** Charlyn Gomez\*, Pooja Dharmendran<sup>1</sup>, Megan Utz<sup>2</sup>, and Sarah Sunshine<sup>2</sup>, <sup>1</sup>University of Maryland College Park, College Park, MD, and <sup>2</sup>Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

Cancer patients who undergo allogeneic hematopoietic stem cell transplantation are at significant risk for developing Graft versus Host Disease (GVHD), which involves donor T-cell attacks on the host's immune system. When GVHD affects the eye, it is known as ocular GVHD (oGVHD). This manifests as severe dry eye disease and may cause vision loss. Treatments for oGVHD are limited and tend to be inadequate in achieving remission. Belumosudil (Rezurock), a selective Rho-kinase 2 (ROCK2) inhibitor, is a new drug approved by the FDA for patients with chronic GVHD who have failed two systemic GVHD medications. Belumosudil reduces inflammation by decreasing ROCK2-induced STAT3 activity, which upregulates pro-inflammatory T helper 17 (Th17) and follicular helper (Tfh) cells. It also decreases fibrosis by preventing actin polymerization and profibrotic gene transcription. ROCK2 is expressed by corneal epithelial cells, suggesting Belumosudil's potential use for targeted oGVHD treatment. There is precedence for using ROCK2 inhibitors in ophthalmology as there is a commercially available medication used to treat glaucoma. We hypothesize that patients on Belumosudil will have a clinically meaningful improvement in their oGVHD and will have a correlative improvement in their tear cytokine profile. Methods: The objective of this study is to analyze the impact of Belumosudil on oGVHD patients (n=3) seen at the University of Maryland Medical Center. Through a chart review, we evaluated the Ocular Surface Disease Index, tear production via the Schirmer's Test and Ocular Discomfort Scale. We performed cytokine tear analysis with the Luminex assay and correlated changes with clinical findings. Results: Our clinical findings demonstrate individual symptomatic improvement once on Belumosudil. Our results for cytokine tear profiling demonstrated an inverse relationship between length of treatment and levels of macrophage inflammatory protein-1alpha (MIP-1alpha) and MIP-1beta, which increase with inflammation. Conclusion: Our results suggest that Belumosudil may benefit the eyes of patients with oGVHD, allowing for future studies on its therapeutic use for this population.

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## O.20

COMPARISON OF CORNEAL DIAMETER AND ANGLE-TO-ANGLE DIAMETER IN PEDIATRIC EYES USING ULTRASOUND BIOMICROSCOPY. Taylor Kolosky\*, Anusha Saga<sup>1</sup>, Urjita Das<sup>2</sup>, Bhakti Panchal<sup>2</sup>, Jana Bregman<sup>3</sup>, Moran Levin<sup>3</sup>, and Janet Alexander<sup>3</sup>, <sup>1</sup>Temple University, Philadelphia, PA and <sup>3</sup>Division of Pediatrics, Department of Ophthalmology and Visual Sciences, <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD.

Quantitative corneal diameter evaluation is pertinent to the diagnosis and monitoring of several ophthalmic diseases presenting in pediatric patients, such as primary congenital glaucoma (PCG), microphthalmos, and megalocornea. Corneal diameter is typically measured during examination under anesthesia using calipers or a ruler. Although widely accepted as the current standard, this method of measurement is subject to error and variability. The correlation between corneal diameter and internal corneal span, or angle-to-angle diameter, has not been thoroughly examined. Using a prospective cohort of 41 infants and children with and without PCG, we tested the hypothesis that corneal diameter (CD) correlates with angle-to-angle (AA) diameter measured from ultrasound biomicroscopy (UBM). We obtained 60 external photographs and 150 UBM images from 75 eyes of 41 subjects aged 0.1 to 11.3 years and demonstrated a strong positive correlation (Pearson  $r=0.90$ , horizontal, and  $r=0.89$ , vertical) between the two ocular parameters that was robust to age and PCG status. Regression analysis demonstrated strong positive linear relationships between horizontal CD and AA ( $CD = 0.99*AA + 0.28$ ,  $R^2=0.81$ ), and vertical CD and AA ( $CD = 0.91*AA + 1.29$ ,  $R^2=0.85$ ), in all 75 eyes. These relationships remained consistent after separating subjects by age group and presence of PCG. UBM image analysis can be used to accurately quantify corneal diameter in infants and children with healthy corneas and PCG, as shown by the strong correlation between CD and AA in this cohort. Given its high resolution and non-invasive nature, UBM may be a useful alternative for estimating corneal diameter from longitudinal angle-to-angle diameter. Future studies should aim to examine the relationship between angle-to-angle diameter and progression of PCG, a disease known to impact corneal diameter in infants and children.

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## O.21

CANDIDEMIA OCULAR INFECTIONS IN HIGH-RISK PATIENTS AND OUTCOMES. Bhakti Panchal\*, Bhakti Panchal<sup>1</sup>, Radhika Gholap<sup>1</sup>, Hyunjin Choi<sup>1</sup>, Ramya Swamy<sup>1</sup>, and Kenneth Taubenslag<sup>1</sup>, <sup>1</sup>Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

Invasive candidiasis is a major cause of morbidity and mortality. Currently, there is no consensus between the Infectious Disease Society of America (IDSA) and American Academy of Ophthalmology (AAO) for performing dilated retinal exams in the inpatient setting for fungal endophthalmitis. IDSA recommends routine dilated retinal exam for patients diagnosed with candidemia while AAO recommended a dilated retinal exam for patients exhibiting visual symptoms from an ocular infection. Our study's goal is to reach a consensus on guidelines for ophthalmic screening for patients with candidiasis. Our single-center, retrospective cohort study exams 139 individuals in an inpatient setting during the 2016-2021 period. Inclusion criteria includes endovascular source of infection, persistent candidemia over 3 days, metastatic foci of candida infection while our exclusion criteria include patients that are unable to be dilated and diagnosis of candidemia less than 3 days. Data collection was performed by three authors (HC, RG, BP). Discrepancies in data collection were resolved by consensus after discussion. In our study, no patients with a diagnosis of candidemia presented with findings of fungal endophthalmitis and no ophthalmic interventions were indicated. An average of 3 days was to consult ophthalmology was found from first diagnosis of candidemia. Candida albicans was the most prevalent diagnosis of candidemia followed by Candida glabrata. Almost 50% of patients included in the study were identified as poor historians and 8% presented with visual symptoms. Approximately 30% of patients passed away within four week of vision screening. Invasive candidiasis is a major cause of morbidity and mortality. In our study, invasive candidiasis did not lead to fungal endophthalmitis. Our study highlights the importance for the need of ophthalmic dilated exams in the setting a candidemia.

## O.22

ROP SEVERITY AND NEONATAL COMORBIDITIES. Nisarg Shah\* and Janet Alexander<sup>1</sup>, <sup>1</sup>Division of Pediatric Ophthalmology and Strabismus, Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

Retinopathy of prematurity (ROP) is a significant cause of preventable blindness in children. The pathology involves the issues in the retinal vascular network which travels from the papilla to the periphery of the retina. Poorly controlled oxygen therapy has historically been a risk factor identified in the development and progression of ROP, specifically hyperoxygenation of the retina. The obvious solution would be to decrease the amount of oxygen received in the first weeks or months of care. However, there is a target oxygen saturation rate that falls somewhere between 85-95%, with ongoing research being done to establish the appropriate range. Furthermore, in 2017, the University of Maryland Medical Center (UMMC) NICU started the use of RAM Cannula oxygen delivery for continuous positive airway pressure. When looking at statistics on premature babies, one source is the Vermont Oxford Network's (VON) very low birth weight database. The NICU at UMMC has reported varying rates of ROP severity over the years. In conjunction with the neonatology department, we will explore different variables and how they affect ROP severity. The first step will be internal quality control to ensure our NICU data is aligned with ophthalmology treatment data. Then, we plan on comparing rates of ROP and oxygen delivery before and after the introduction of the RAM Cannula. Lastly, we will look at other correlations by doing thorough chart review on several factors, within our own NICU but other public databases as well. Some of our objectives include (1) Does amount of ROP stage 3 treated between the UMMC ophthalmology match with the UMMC NICU data submitted to VON? (2) Did the introduction of the RAM Cannula affect ROP rates at UMMC? (3) How accurate is our oxygen delivery system during the duration of stay for a newborn? (4) Is our ROP rate higher because of other factors such as increased survival rate? If any association is found, this could have significance in the standard of care of premature babies as well as monitoring of oxygen saturation levels and oxygen delivery systems given within the first months after birth.

### O.23

OUTCOMES IN PATIENTS WITH TRAUMATIC OPTIC NEUROPATHY MANAGED WITH STEROIDS, SURGERY, OR OBSERVATION. Nawal Shams\*, Bashar Hassan<sup>1</sup>, Magdi Elghannam<sup>2</sup>, Shannath Merbs<sup>3</sup>, Paul Manson<sup>4</sup>, and Michael Grant<sup>5</sup>, <sup>1</sup>R. Adams Cowley Shock Trauma Center, Baltimore, MD and <sup>3</sup>Department of Ophthalmology and Visual Sciences and <sup>5</sup>Division of Plastic and Reconstructive Surgery, Department of Surgery, <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD and <sup>4</sup>Department of Plastic and Reconstructive Surgery, Johns Hopkins School of Medicine, Baltimore, MD.

Up to half of patients with traumatic optic neuropathy (TON) develop permanent vision loss. The optimal management of TON remains controversial. Here, we aim to identify craniofacial fractures associated with TON and investigate the efficacy of steroid therapy in the treatment of TON. We reviewed CT scans of patients after acute facial trauma at the R Adams Cowley Shock Trauma Center from 2018 to 2022 to determine craniofacial fractures associated with TON. TON patient outcomes between 2013 and 2022 were analyzed to compare steroid treatment vs observation. Primary outcomes were improvement in visual acuity and time to improvement. Multivariate logistic and linear regressions were performed. Of 2374 patients with acute facial fractures, 21 (0.9%) had TON. Sphenoid sinus fractures were associated with the greatest odds of TON (aOR [95% CI] 25 [9-68]) followed by LeFort III and naso-orbitoethmoid (NOE) fractures (aOR [95% CI] 13 [4-42] and 7 [2-24], respectively), compared with patients without these fractures. A total of 86 TON patients (96 eyes) were analyzed for treatment outcomes. Their median (IQR) follow-up was 9 (4-31) months. Patients treated with steroids were more likely to have improvement in visual acuity compared to those managed with observation (8/13 [61.5%], 27/83 [32.5%],  $P < 0.05$ ). Steroids were also associated with a 57-day quicker improvement in visual acuity compared to observation ( $B = -57.1$ ,  $P = 0.007$ ). TON should be considered in patients with sphenoid sinus fractures. Steroid therapy was associated with a more rapid improvement and a better visual acuity than observation for patients with TON.

### O.24

LEVERAGING YEAST GENETICS IN *SACCHAROMYCES CEREVISIAE* TO IDENTIFY SARS-COV-2 HOST-PATHOGEN PROTEIN INTERACTIONS. Simon Doss-Gollin\*, Pranav Majeti<sup>1</sup>, Antonia Papadimas<sup>2</sup>, Issac Chaudry<sup>3</sup>, Stuart Weston<sup>2</sup>, and Matthew Frieman<sup>2</sup>, <sup>1</sup>University of Maryland College Park, College Park, MD and <sup>2</sup>Department of Microbiology and Immunology and <sup>3</sup>Department of Biochemistry and Molecular Biology, University of Maryland School of Medicine, Baltimore, MD.

The severe acute respiratory syndrome coronavirus (SARS-CoV-2) has had a dramatic impact on the world since its emergence in 2019. Although the development of both vaccines and direct acting antiviral drugs like Molnupiravir and Paxlovid has proved beneficial, drug resistance and access remain important limitations. The SARS-CoV-2 genome is composed of open reading frames (ORFs) which code for 4 structural proteins, 16 nonstructural proteins involved in the regulation of the viral genome, and 11 accessory proteins which act primarily as virulence factors. Although a variety of *in vitro* model systems have been used to study SARS-CoV-2, the yeast *Saccharomyces cerevisiae* offers a well-studied model of eukaryotic cell biology which can be readily manipulated and used to perform large-scale selection-based screens. Furthermore, *S. cerevisiae* demonstrates a clear slow-growth phenotypic in response to overexpression of certain viral proteins which facilitates its use as a means of identifying interactions between viral proteins and host factors. We hypothesized that performing a slow-growth suppressor screen of SARS-CoV-2 nonstructural or accessory proteins using a yeast knockout library would identify key host-pathogen functional interactions that may be targeted in future therapeutic development. We observed that transformation of yeast with SARS-CoV-2 nonstructural proteins 4 (NSP4) and 5 (NSP5) induced a strong slow-growth phenotype which could be used for further suppressor screening. Using a yeast knockout library, we then performed a rescue screen to identify host proteins whose absence in NSP4- and NSP5-transformed cells reversed the slow-growth phenotype, indicating a functional interaction with the viral proteins. From these screens, we selected 80 colonies of phenotypically rescued yeast and have sequenced 16 to identify the host gene knockout they contain. Further work is ongoing to sequence and validate the remaining 144 colonies and to evaluate their homologues in mammalian cell lines. These findings will inform our understanding of host:SARS-CoV-2 interactions and may assist in the downstream development of novel antiviral drugs.

## O.25

CIRCULATING INFLAMMATORY BIOMARKERS IN PRURIGO NODULARIS: EVIDENCE OF ENDOTYPES IN TYPE 2 INFLAMMATION. Hannah Cornman\*, Emily Ma<sup>1</sup>, Jaya Manjunath<sup>1</sup>, Sriya Reddy<sup>2</sup>, Jackson Adams<sup>2</sup>, Ahmad Rajeh<sup>1</sup>, Madan Kwatra<sup>2</sup>, and Shawn Kwatra<sup>1</sup>, <sup>1</sup>Department of Dermatology, Johns Hopkins University School of Medicine School of Medicine, Baltimore, MD and <sup>2</sup>Department of Anesthesiology, Duke University School of Medicine, Durham, NC.

Prurigo nodularis (PN) is a chronic inflammatory skin disease that is associated with type 2 inflammation and disproportionately affects skin of color patients. Black patients with PN in particular have a novel disease presentation, often with more fibrotic nodules and greater disease severity. Prior studies have suggested broader immune axis involvement in African American patients and subsets of patients with variable degrees of type 2 inflammation. We thus hypothesized that circulating immune profiles with respect to type 2 inflammation may differ by race and eosinophil count and be correlated to treatment response. Plasma from 56 PN patients and 13 matched controls (HCs) was assayed for 54 inflammatory biomarkers (MesoScale Diagnostics). We compared biomarker levels between PN and HCs, among PN patients based on absolute eosinophil count (AEC > versus < 0.3K cells/ $\mu$ L), and across racial groups in PN. Eleven biomarkers were elevated in PN vs HCs including interleukin (IL)-12/IL-23p40, tumor necrosis factor-alpha (TNF- $\alpha$ ), Thymic stromal lymphopoietin (TSLP), and macrophage-derived chemokine (MDC/CCL22). Additionally, PN patients with AEC>0.3K cells/ $\mu$ L had higher type 2 inflammation markers (eotaxin, eotaxin-3, TSLP, monocyte chemoattractant protein-4 [MCP-4/CCL13]), and African American PN patients had lower eosinophils, eotaxin, and eotaxin-3 versus Caucasian and Asian PN patients ( $p$ <0.05 for all). Real-world evidence revealed dupilumab responders had higher AEC ( $p$ <0.01), were more likely to be of Caucasian ( $p$ =0.02) or Asian ( $p$ =0.05) compared to African American race, and more often had a history of atopy ( $p$ =0.08). This study finds higher levels of circulating type 2 inflammatory markers in PN patients with elevated blood eosinophils and lower levels in those of African American race. This suggests that PN patients may have subgroups relating to type 2 inflammation, which may correlate to therapeutic response.

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Conflicts of interest: Shawn G. Kwatra is an advisory board member/consultant for Abbvie, Aslan Pharmaceuticals, Arcutis Biotherapeutics, Castle Biosciences, Celldex Therapeutics, Galderma, Genzada Pharmaceuticals, Incyte Corporation, Johnson & Johnson, Leo Pharma, Novartis Pharmaceuticals Corporation, Pfizer, Regeneron Pharmaceuticals, and Sanofi and has served as an investigator for Galderma, Incyte, Pfizer, and Sanofi. All other authors report no conflicts of interest.

## O.27

PATIENT-DERIVED PANCREATIC TUMOR ORGANOID AS A TOOL TO EVALUATE TREATMENT RESPONSE. Zachery Keepers\*, Sanjit Roy<sup>1</sup>, Tijana Dukic<sup>1</sup>, Binny Bhandary<sup>1</sup>, Narottam Lamichhane<sup>1</sup>, Young Ko<sup>2</sup>, Jason Molitoris<sup>1</sup>, and Hem Shukla<sup>1</sup>, <sup>1</sup>Department of Radiation Oncology, University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>KoDiscovery, Baltimore, MD.

Pancreatic cancer (PC) is the fourth leading cause of cancer death in both males and females. The standard of care for patients with locally advanced PC is chemotherapy or combined chemo-radiation therapy (chemo-RT). Three-dimensional (3D) pancreatic tumor organoids (PTOs) have shown promise for evaluation of tumor response to drugs and emerging treatments under *in vitro* conditions. Preclinical organoid models derived from mouse pancreatic tumors have demonstrated treatment responses similar to *in vivo* tumors. In the present study, we have cultured pancreatic tumor organoids from two pancreatic cancer patients (patient ID 7800 and 8510). Untreated tumor organoids exhibited proliferative growth of 6-fold their original size after 5 days. Tumor organoids (ID 7800) treated with 5  $\mu$ M of gemcitabine showed 90% growth inhibition compared to untreated control. Furthermore, the same tumor organoids treated with 200  $\mu$ M of 3-Bromopyruvate and 10  $\mu$ M of 5FU exhibited 4% and 20% growth inhibition respectively as compared to untreated control. Patients' tumor organoids (ID 8510) exhibited 91% growth inhibition when treated with 5  $\mu$ M of gemcitabine, and 35% growth inhibition when treated with 10  $\mu$ M of 5FU. We also observed 30% growth inhibition following treatment with

200  $\mu$ M 3-Bromopyruvate. The immunofluorescence staining exhibited activation of cleaved caspase-3, suggesting apoptotic cell death in tumor organoids treated with gemcitabine, 5FU, and 3BP drugs. Thus, our preliminary studies exhibited variable treatment responses of pancreatic tumor organoids treated with gemcitabine, 5FU, and 3-Bromopyruvate.

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## O.28

ASSOCIATION OF *CDKN2A* AND THE IMMUNE LANDSCAPE IN LARYNGEAL CANCER. Helen Nguyen\*, Amol Shetty<sup>1</sup>, Ashley Cellini<sup>2</sup>, John Papadimitriou<sup>2</sup>, Raneeh Mehra<sup>3</sup>, Daria Gaykalova<sup>4</sup>, and Matthew Witek<sup>5</sup>, <sup>2</sup>Department of Pathology, <sup>3</sup>Department of Medical Oncology, <sup>4</sup>Department of Otorhinolaryngology - Head and Neck Surgery, and <sup>5</sup>Department of Department of Radiation Oncology, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

Laryngeal cancer is one of the most common head and neck cancers worldwide, with an estimated 5-year relative survival of 61%, with a decrease to 30% 5-year relative survival if cancer has metastasized. Management, treatment-related toxicities, and clinical outcomes have remained unchanged in the last four decades. Identification of predictive biomarkers that would guide the use of less toxic therapies while maintaining or improving outcomes is needed. We hypothesize that high expression p16INK4A, a tumor suppressor protein expressed from the *CDKN2A* gene, results in improved clinical outcomes in laryngeal cancer patients by alternating the immune landscape. This retrospective study included 310 patients with laryngeal cancer. Of these patients, 117 patients were from The Cancer Genome Atlas Program (TCGA) and 193 patients were treated between 2000-2017 at UMMC. Patients' demographic characteristics, cancer stage, p16 protein expression from immunohistochemistry staining and reverse-phase protein array, and mRNA expression from RNA sequencing were evaluated. The primary outcomes were the overall survival (OS) and the disease-free survival (DFS) outcomes calculated using Kaplan–Meier plots with p-value calculated using the Log-rank (Mantel-Cox) test. In the TCGA cohort, the probabilities of 5-year DFS in high and low p16 protein groups were 89% and 51%, respectively ( $p = 0.0266$ ). The mean relative p16 protein expression on TNM stage II, stage III, and stage IV were 1.116, 1.075, and 0.6204, respectively ( $p = 0.028$ ). In addition, tumor infiltration analysis using estimation of stromal and immune cells in malignant tumor tissues using expression data analysis of TCGA revealed an association between expression of *CDKN2A* and enrichment in cytotoxic cells ( $p = 0.13$ ). Despite not reaching statistical significance, this hypothesis generating finding was strengthened by differential gene expression analyses that identified 14 genes participating in immune pathways which were associated with changes in *CDKN2A* expression levels. Future studies will investigate whether these 14 immune-related genes play important roles in influencing outcomes in larynx cancer patients.

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

## O.29

BUILDING A NOVEL CANCER TRAINEE-SURVIVOR EDUCATIONAL WORKSHOP FOCUSED ON HEALTH EQUITY. Grace Padgett\* and Laundette Jones<sup>1</sup>, <sup>1</sup>Program in Health Equity and Population Health, Department of Epidemiology and Public Health, University of Maryland School of Medicine, Baltimore, MD.

Although there have been significant advancements in cancer prevention, treatment, screening, and survivorship care in the United States, not all communities benefit from these cancer control efforts. Generating equitable cancer health outcomes will require transdisciplinary approaches that engage diverse stakeholders and partner directly with impacted communities. There is a growing appreciation for integrating the perspective of cancer survivors into research activities. These partnerships are thought to lead to more relevant, quality, and efficient research. Considering this knowledge, many have contemplated how academic institutions prepare trainees to effectively engage with cancer survivors. To fill this gap, a participatory approach was used to generate a co-teaching/co-learning opportunity between trainees and cancer survivors, entitled “From Cells to

Communities (C2C): Building bridges between scientists and cancer survivors”. Evaluation of this pilot workshop showed attendees had an improved understanding of the survivor experience in the complex cancer condition. Further exploration of the C2C pilot revealed a gap in addressing cancer health equity. Recognizing the importance of cancer health equity in education and communities, we formulated a plan to adapt C2C to include a health equity lens. To generate a preliminary curriculum, we employed a strategic retrospective qualitative analysis of workshop recordings from C2C as well as a discussion of co-teaching experiences held at the International Cancer Education Conference. Following this analysis, we plan to conduct informant interviews with individuals with cancer lived experience. Preliminary data from the qualitative analysis revealed specific gaps in addressing upstream factors such as historical inequity and living environment. Additionally, a larger theme of connection (subthemes: personal connection, communication, and institutional efforts) to improve health equity was determined. Through combining these approaches, a programming that is comprehensive and context-specific and holds benefit to both survivors and trainees will be generated.

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.30**

VALUE OF A MULTIDISCIPLINARY GERIATRIC ONCOLOGY COMMITTEE ON PATIENT CARE IN A COMMUNITY-BASED, ACADEMIC CANCER CENTER. Gurbani Singh\* and Cherif Boutros<sup>1</sup>, <sup>1</sup>Division of Surgical Oncology, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

Introduction: The geriatric population in the United States is growing at an unprecedented rate and the heterogeneity in health and functional ability among this group makes the management of cancer a unique and nuanced challenge. The Geriatric Oncology Program at the University of Maryland Baltimore Washington Medical Center (BWMC) was created to optimize cancer care for geriatric patients through the use of a multidisciplinary team of specialists and a stratification system. This study aimed to assess the benefits of the implementation of such a program at a community-based academic cancer center. Methods: A retrospective analysis of 233 patients presenting to the Geriatric Oncology Program between 2017 and 2022 was conducted. The patients were stratified into three groups- those deemed fit to receive standard oncologic care (SOC) (32.6%), those receiving optimization services prior to reassessment for SOC (18.5%), and those who were provided supportive services/ hospice care (49.0%). Results: The average Clinical Frailty Scale (CSHA-CFS) score for patients deemed best fit to receive supportive/ hospice care was 5.8, while the averages for those in the optimization and SOC groups were 4.6 and 4.1, respectively ( $p < .001$ ). Patients who received SOC had the longest average survival of 2.71 years compared to the optimization (2.30 years) and supportive care groups (0.93 years) ( $p = < 0.001$ ). For all patients that underwent surgical interventions, 23 patients (85%) were discharged home and 4 (15%) were discharged to a rehab facility. The average survival after surgery for all patients was 3.16 years, while patients who were optimized prior to surgery had an average survival after surgery of 3.21 years. Discussion: The present study clearly demonstrates the need for specialized consideration of the complexities that cancer diagnoses present in older individuals, as well as the benefit of implementing a geriatric-centric program to do so. The Geriatric Oncology Program at BWMC is able to maximize treatment outcomes for geriatric patients through SOC therapies and optimization services, while also improving quality of life at a patient-centric level.

### **O.31**

DOES REMDESIVIR IMPROVE PULMONARY FUNCTION RECOVERY IN PATIENTS WITH COVID 19 ARDS. Binta Yawreh Njie\*, Mackenzie Snyder<sup>1</sup>, Ilana Grabenstein<sup>2</sup>, Sara Viola<sup>2</sup>, Siu Yan Amy Yeung<sup>3</sup>, Noel Britton<sup>4</sup>, and Andrea Levine<sup>2</sup>, <sup>2</sup>Division of Pulmonology, Department of Critical Care, <sup>1</sup>University of Maryland School of Medicine and <sup>3</sup>Department of Pharmacology, University of Maryland School of Pharmacy, Baltimore, MD and <sup>4</sup>Division of Statistics, Department of Research, John Hopkins, Baltimore, MD.

Many of the severe health implications of the SARS-CoV-2 virus are as a result of the disease progressing to COVID 19 acute respiratory distress syndrome (ARDS)<sup>1</sup>. Several studies have demonstrated the effectiveness of remdesivir (a viral RNA-dependent RNA polymerase inhibitor that halts the viral gene replication)<sup>2</sup> in improving mortality and recovery time in ARDS patients <sup>3</sup>. However, functional outcomes

beyond mortality are important and often overlooked in critical illness. The effect of remdesivir on pulmonary functional recovery in CARDS patients has not been studied, thus, we aimed to evaluate the impact of remdesivir on FVC% predicted in patients with COVID-19 ARDS. This was a multicenter retrospective cohort study of adult survivors of CARDS that were hospitalized at University of Maryland Medical center, R Adams Cowley Shock Trauma, or Baltimore Washington Medical Center and who survived to present to follow up at a post-ICU clinic for PFTs. The primary outcome of interest was FVC% predicted. Univariate and multivariate regression models were used to assess the relationship between remdesivir and FVC% predicted. Out of 92 patients that had CARDS, 52 were managed with remdesivir. There was no significant difference in demographics, SOFA score, antibiotic use, intubation status, use of prone positioning, neuromuscular blockade, inhaled vasodilators, vasoactive drugs, days of hospitalization or ICU stay when comparing patients who did and did not receive remdesivir. There was no significant difference in the primary outcome of FVC% predicted when comparing patients managed with and without remdesivir. There was no difference in the secondary outcomes including spirometry, lung capacity, diffusion capacity, and 6MWT. In regression models adjusting for SOFA score, remdesivir does not predict any changes in FVC% predicted. Remdesivir administration does predict a significant increase in our secondary outcome 6MWT, when adjusting for SOFA. In a cohort of survivors of CARDS, the use of remdesivir does not predict any improvement in functional pulmonary recovery when compared to patients who did not receive remdesivir.

### **O.32**

APPLYING SHARK-DERIVED NANOBODIES TO DISCOVER SITES OF VULNERABILITY ON HUMAN PATHOGENIC VIRUSES. Ethan McCaslin\* and Helen Dooley<sup>1</sup>, <sup>1</sup>Department of Microbiology and Immunology, University of Maryland School of Medicine, Baltimore, MD.

Monoclonal antibodies (mAbs) are a leading therapeutic option that can aid the immune system in defending against conditions that range from viral illnesses to cancer. However, these mAbs are limited by factors like cumbersome size and complex structural designs. Thus, alternatives with similar benefits are actively being explored. One potential option is the shark-derived binding domain known as VNAR (variable domain of new antigen receptor). With their smaller size and ability to resist denaturation, VNARs could compensate for many of the shortcomings of mAbs. However, before VNARs can be fully adopted they must be tested in applicable disease models to verify their functionality. With this in mind, the Dooley Lab has developed VNARs that bind to the proteins of viruses like SARS-CoV2 and MERS-CoV. Given their small size and unique structure, we hypothesize that the VNARs should bind novel viral sites inaccessible to human antibodies that are both vital to viral structure and under less selective pressure from the human immune system. While in the lab I utilized a phage-display technique to verify the binding profiles of VNARs developed from a shark immunized with SARS-CoV 2 and boosted with MERS SpFN (spike protein ferritin nanoparticle) against five different strains of MERS-CoV. My goal was to identify and isolate VNARs with the ability to bind to conserved sequences shared by all five MERS-CoV strains. After several rounds of phage selection, I performed poly- and monoclonal ELISAs to establish whether enrichment of binding phage had occurred. Results ultimately demonstrated a lack of broadly MERS-binding VNARs. By testing the plasma of three additional immunized sharks I established that all four sharks would likely need to be boosted again with alternate MERS strains to generate more VNARs from which candidates with broad MERS-CoV binding could be identified. These VNARs should be able to target unique epitopes essential to the survival of the virus, preventing the virus from mutating in response. If successful, the advancement of this technology will provide more biologically effective and cost-efficient ways to treat viral illnesses like MERS-CoV.

### **O.33**

ASSESSMENT OF HIV KNOWLEDGE IN ADOLESCENTS AND YOUNG ADULTS. Elsa Bjornlund\*, Matthew Grant<sup>1</sup>, and Vicki Tepper<sup>2</sup>, <sup>2</sup>Division of Immunology and Rheumatology, <sup>1</sup>Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD.

In 2021 more than 32,000 people were newly diagnosed with HIV, contributing to 38 million living with HIV globally. Adolescents living with chronic illness, such as HIV, are often assumed by health care teams to possess adequate knowledge to manage their health and navigate challenging healthcare decisions and may not receive developmentally appropriate updates to patient education over long-term treatment. Without full



understanding of their illness, adolescents may maintain poor adherence to treatment regimens, placing them at greater risk of HIV-associated sequelae. In an effort to identify such gaps in sexual health education and health literacy amongst adolescents and young adults living with HIV, a survey was administered to HIV-positive youth and age-matched peers seeking services at an adolescent clinic over a 15-week period. Participants responded to demographic questions and were asked knowledge-based questions related to HIV and STIs. A total of 76 respondents participated in this study. More than 60% of participants (46/77) were living with HIV, with acquisition being either early in life (perinatal transmission, 25/46), or during adolescence, with sexual behaviors being the predominant risk factors (MSM, 13/46; or heterosexual sex, 8/46). Of those living with HIV, 30/46 showed consistent viral suppression in the 18-months prior to survey collection. Those living with HIV were more likely to correctly identify activities associated with transmission risk, ways to prevent transmission, and to correctly determine which laboratory testing is used in the care of those living with HIV. When accounting for mode of transmission, those who acquired HIV via risk behavior demonstrated greater knowledge on 4/6 questions. While often perceived to be an expert in their chronic illness, only 44% (11/25) of patients who were perinatally infected were able to correctly identify labs associated with their medical care, and fewer were able to correctly identify risk factors associated with HIV or STI transmission. This study suggests a need for more comprehensive education for patients living with HIV, particularly those who acquired HIV perinatally.

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#### **O.34**

THE PRESENTATION OF CATASTROPHIC ANTIPHOSPHOLIPID SYNDROME IN THE EMERGENCY DEPARTMENT: A CASE REPORT. Dina Elsaesser\* and Leen Alblaihed<sup>1</sup>, <sup>1</sup>Department of Emergency Medicine, University of Maryland School of Medicine, Baltimore, MD.

Antiphospholipid syndrome presents with microvascular, arterial, or venous thromboembolism due to acquired procoagulatory antiphospholipid antibodies. Approximately 1% of these patients develop catastrophic antiphospholipid syndrome (CAPS), a life-threatening, rapid progression of thrombosis in multiple organ systems. This case describes a patient who presented to the emergency department with a complaint of lower extremity pain, found to have thromboses in bilateral pulmonary arteries, right renal vein, inferior vena cava, and bilateral iliac veins leading to a diagnosis of probable CAPS. Due to the high degree of morbidity and mortality associated with CAPS, once recognized in the emergency department it is imperative to test the patient for antiphospholipid antibodies and rapidly start heparin and corticosteroids.

#### **O.35**

PROGRESSION OF EPITOPE-SPECIFIC ANTIBODY RESPONSES TO P. FALCIPARUM CIRCUMSPOROZOITE PROTEIN FOLLOWING CONSECUTIVE MALARIA INFECTIONS IN NAÏVE ADULTS. Quynh-Thu Ta\*, DeAnna Friedman-Klabanoff<sup>1</sup>, Olukemi Ifeonu<sup>2</sup>, Kristen Lyke<sup>3</sup>, Kim Williamson<sup>4</sup>, and Andrea Berry<sup>1</sup>, <sup>1</sup>Division of Infectious Disease and Tropical Pediatrics, Department of Pediatrics, <sup>2</sup>Institute for Genome Sciences, and <sup>3</sup>Division of Geographic Medicine, Department of Medicine, University of Maryland School of Medicine, Baltimore, MD and <sup>4</sup>Department of Microbiology and Immunology, Uniformed Services University School of Medicine, Bethesda, MD.

With an estimated 247 million cases and 619,000 deaths in 2021, malaria continues to cause substantial morbidity and mortality worldwide. Circumsporozoite protein (CSP) coats the surface of the Plasmodium falciparum sporozoite and is a major vaccine target. CSP has three major regions: the N-terminal region, the central (NANP) repeat region, and the C-terminal region, which contains highly variable T cell epitopes. The only two vaccines approved by the World Health Organization, RTS,S and R21, include a fragment of the CSP protein, inclusive of the immunodominant NANP repeat region and the C-terminal region. Other regions of CSP include the junction between the N-terminal region and the NANP repeat region, termed the junctional region. This is a conserved region that is the target of protective antibody responses, thus this region may be a viable target for vaccine development. The development of humoral immunity to P. falciparum CSP was explored in a repetitive controlled human malaria infection (rCHMI) model in which participants were infected with P. falciparum malaria multiple times in a controlled environment to identify putative CSP epitopes that

that could be targets for next generation vaccine development. Malaria-naïve participants received up to three CHMIs over 2-3 years. We measured antibody responses to 5 antigenic variants of CSP represented on a peptide microarray as 16-amino acid peptides with 13-amino acid overlap from the day of the CHMI to 18 days after each CHMI. After three rCHMIs, participants developed antibodies that consistently bind amino acids corresponding to the junctional region and the NANP repeat region. Antibody responses to the C-terminal region were more variable, which aligns with a previous study that demonstrated allele-specific vaccine efficacy of RTS,S between vaccine vs. non-vaccine alleles that were defined by C-terminal epitopes. Our work suggests that the junctional region is a promising region to explore in future vaccine development.

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### **O.37**

**ELUCIDATING THE DIFFERENCES BETWEEN SYSTEMIC AND OCULAR GRAFT VERSUS HOST DISEASE.** Jerry Bohlen\*, Sarah Sunshine<sup>1</sup>, Cat Wandvik<sup>1</sup>, Arman Charkhabi<sup>2</sup>, Pooja Dharmendran<sup>1</sup>, Cassidy Reandeu<sup>1</sup>, Xuefang Cao<sup>3</sup>, and Rakhee Kalari Kandy<sup>4</sup>, <sup>1</sup>Department of Ophthalmology and Visual Sciences and <sup>3</sup>Tumor Immunology and Immunotherapy Program, University of Maryland School of Medicine and <sup>4</sup>University of Maryland, Baltimore, Baltimore, MD and <sup>2</sup>Department of Ophthalmology and Visual Sciences, University of Maryland, College Park, College Park, MD.

Graft-versus-host disease (GVHD) affects ~50% of post-hematopoietic stem cell transplant patients, affecting multiple tissues including the eyes, spleen, intestines, mouth, skin, and liver. There are multiple challenges to treating patients with GVHD, one notable challenge is the inability to fully prevent systemic GVHD as the graft versus tumor response is critical to the therapeutic success of the stem cell transplant in treating the underlying hematologic malignancy. What is unique about the eye is that it does not require a graft versus tumor response as the cancer cells are not present in the eye and the eye is a relatively immune privileged tissue. Therefore, a better understanding of the immune mediated changes that occur in the eye as compared to the rest of the body will allow for a more targeted treatment for ocular GVHD. We hypothesize that studying the transcriptional changes between the systemic and ocular tissue will highlight key differences between the development of graft versus host disease in the eye as compared to the rest of the body, which could be capitalized to improve understanding and treatment of oGVHD. An HLA-matched oGVHD mouse model was used in this study, comprised of two groups: (1) a control group of T cell and B cell depleted (TBCD-BM) mice without splenocytes; and, (2) TBCD-BM mice with splenocytes. Systemic GVHD and ocular GVHD severity scores were assessed on days 5, 12, 17, 28, and 37. Mice were sacrificed on days 15, 20, and 40 to collect ocular and systemic tissues. Quantitative PCR was performed to analyze the fold changes of gzmB, TNF-alpha, and IFN-gamma in the cornea and spleen of each group. We compared these results to the changes identified in the spleen. We identified significant differences at the transcriptional level between the cornea and spleen which supports our hypothesis that there is a mechanistic difference between the systemic and ocular development of GVHD.

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### **O.38**

**LENS CAPSULE MICROSCOPY IN PATIENTS WITH CATARACTS.** Gabrielle Brizzi\*, Nima Sharifai<sup>1</sup>, and Janet Alexander<sup>2</sup>, <sup>1</sup>Department of Pathology and <sup>2</sup>Division of Pediatrics, Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

Cataracts are the leading cause of treatable blindness worldwide. Cataracts occur when the lens becomes opaque leading to visual disturbances and blindness. This research study will compare lens capsule microscopy of adult and pediatric cataracts. Lens capsule microscopy will be analyzed using histopathology techniques to compare the size, quantity, and morphology of cellular organelles in both adult and pediatric patients. We hypothesize that patients with pediatric and congenital cataracts will have a greater amount of microscopic anomalies as their cataracts are most likely due to genetic mutations rather than the normal aging process that causes senile cataracts. Patients receiving cataract surgery by phacoemulsification and intra-ocular lens implantation are recruited from the University of Maryland Medical Center and University of Maryland

Midtown Campus. During the operation, the lens capsule is removed from the lens by the surgeon prior to phacoemulsification in a process known as capsulorhexis. The H&E stained lens capsule tissue is examined via microscope where cell morphology is assessed and the lens capsule microscopy is compared between adult and pediatric patients with cataracts.

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.39**

RETINAL BLOOD FLOW ASSOCIATION WITH AGE, WEIGHT, AND STAGE IN INFANTS AT RISK FOR RETINOPATHY OF PREMATURITY. Euna Cho\*, Urjita Das<sup>1</sup>, Danielle Sidelnikov<sup>1</sup>, Tara Balasubramanian<sup>1</sup>, Shaiza Mansoor<sup>1</sup>, Sripriya Sundararajan<sup>1</sup>, Moran Levin<sup>1</sup>, and Janet Alexander<sup>1</sup>, <sup>1</sup>Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

Retinopathy of prematurity (ROP) is the leading cause of preventable blindness worldwide. Laser speckle contrast imaging (LSCI) is a non-contact imaging device that is relevant in the clinical setting of ROP because it provides quantitative data on retinal blood flow metrics (BFM) with anatomic mapping. Our study investigates the relationship between BFM and birth parameters: gestational age (GA), postmenstrual age (PMA), birth weight (BW), and current weight (CW) in preterm neonates at risk for ROP. In this prospective study, 30 neonates (44 eyes) with PMA between 31-72 weeks received serial screening examinations with binocular indirect ophthalmoscopy and LSCI across several weeks. Correlation tests, comparisons of means, and linear regression analyses were performed to compare birth parameters and BFM. Peak blood flow velocity index (peak BFVi) correlated with CW ( $r=0.34$ ,  $p=0.01$ ) [ $\beta=1.0$  [0.3, 1.8],  $p=9.0E3$ ] and PMA ( $r=0.20$ ,  $p=0.03$ ) [ $\beta=0.19$  [0.02, 0.009],  $p=0.03$ ]. Mean blood flow velocity index (mean BFVi) correlated with CW ( $r=0.39$ ,  $p=0.002$ ) [ $\beta=1.06$  [0.38, 1.7],  $p=2.0E3$ ] and PMA ( $r=0.26$ ,  $p=0.006$ ) [ $\beta=0.2$  [0.05, 0.35],  $p=0.009$ ]. Dip blood flow velocity (Dip BFVi) correlated with CW ( $r=0.41$ ,  $p=0.002$ ) [ $\beta=1.1$  [0.43, 1.78],  $p=1.9E3$ ] and PMA ( $r=0.31$ ,  $p=9E3.3$ ) [ $\beta=0.22$  [0.07, 0.37],  $p=5.5E3$ ]. Our findings indicate that PMA and CW are positively correlated and significantly associated with increased blood flow velocity as measured by LSCI. Future studies will control for PMA and CW when investigating the associations between ocular BFMs and ROP staging and severity.

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### **O.40**

USING ULTRASOUND BIOMICROSCOPY TO EXAMINE CHANGES IN IRIS THICKNESS IN PATIENTS WITH CHILDHOOD GLAUCOMA. Joshua Estrada\*, Radhika Gholap<sup>1</sup>, and Janet Alexander<sup>2</sup>, <sup>2</sup>Division of Pediatric Ophthalmology and Adult Strabismus, Department of Ophthalmology and Visual Sciences, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

Childhood glaucoma is a rare but significant cause of vision loss. The pathogenesis of many types of pediatric glaucoma is believed to involve the structures of the anterior segment. This study aims to identify an association between thinner iris and pediatric glaucoma using ultrasound biomicroscopy (UBM), a relatively new, noninvasive technique that provides high resolution imaging of the anterior segment. To capture the complexity of the iris, its thickness was measured at the following 3 points: near the angle (minimum thickness), 2mm from the angle (mid-iris thickness), and around the pupil (maximum/peripupillary thickness). ImageJ was used to obtain iris measurements from 84 UBM images from 20 subjects (24 eyes, age range 0-12 years). Images were obtained from UMMC and associated hospitals. Mean mid-iris thickness in non-glaucomatous eyes was  $0.421 \pm 0.136\text{mm}$ , compared to  $0.341 \pm 0.133\text{mm}$  in glaucomatous eyes ( $p=0.008$ ). Mean peripupillary iris thickness in non-glaucomatous eyes was  $0.598 \pm 0.104\text{mm}$ , compared to  $0.459 \pm 0.135\text{mm}$  in glaucomatous eyes ( $p=3.84 \times 10^{-7}$ ). In subjects under 12 months old, mean mid-iris thickness in non-glaucomatous eyes was  $0.429 \pm 0.128\text{mm}$ , compared to  $0.302 \pm 0.0852\text{mm}$  in glaucomatous eyes ( $p=6.37 \times 10^{-4}$ ). Mean peripupillary iris thickness for this age group was  $0.563 \pm 0.0860\text{mm}$  in non-glaucomatous eyes, compared to  $0.410 \pm$

0.0717mm in glaucomatous eyes ( $p=2.15 \times 10^{-7}$ ). Peripupillary and mid-iris measurements were thinner in patients with glaucoma when compared to controls. This relationship did not change when adjusting for age 0-12 months. The results of this study describe a positive correlation between iris thickness and presence of glaucoma. Future directions may involve identifying relationships between anterior segment characteristics and complications of glaucoma surgery.

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.41**

**CHARACTERIZATION OF THE IRIS AND LENS IN SUBTYPES OF CONGENITAL GLAUCOMA USING ULTRASOUND BIOMICROSCOPY: A CASE-CONTROL STUDY.** Radhika Gholap\*, Esther Xu<sup>1</sup>, Taylor Kolosky<sup>1</sup>, Moran Levin<sup>2</sup>, Jana Bregman<sup>2</sup>, Andrew Lee<sup>3</sup>, Mohamad Jaafar<sup>4</sup>, and Janet Alexander<sup>2</sup>, <sup>2</sup>Division of Pediatrics, <sup>1</sup>Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD and <sup>3</sup>Department of Ophthalmology and Visual Sciences, Washington University in St Louis School of Medicine, St Louis, MI, and <sup>4</sup>Children's National Hospital, Washington DC.

Broad etiologic categories of congenital glaucoma include: 1) Primary, 2) Syndromic (Sturge-Weber syndrome, Oculo-Cerebral-Renal Lowe syndrome, Muscle-Eye-Brain disease, among others), and 3) Secondary (following congenital cataract or uveitis). Anatomic variants of the iris and lens have been described in association with each of these subtypes, but anatomic variants do not currently play a significant role in clinical glaucoma evaluation. We undertook a comparison of iris and lens parameters among diverse congenital glaucoma etiologies to describe the different structural patterns. Subjects were aged 0.25-12.5 years. Cases were defined as diagnosis of glaucoma prior to age 24 months; controls were age-matched subjects with normal eye exam undergoing general surgical procedure. 16 subjects with glaucoma and 16 controls were enrolled. Ultrasound biomicroscopy (UBM) images ( $n=128$ ) of the anterior segment were analyzed using ImageJ software by an observer masked to glaucoma status. Five lens and iris measurements (Fig. 1) were found to be significantly different between glaucoma and control eyes. Glaucomatous eyes had longer cross-sectional iris trajectory ( $P=0.04$ ), more iris convexity ( $P=0.0002$ ), lower iris thickness ( $P<0.0001$ ) (Fig. 2), increased angle-opening-distance (AOD500,  $P<0.0001$ ), and thinner lens ( $P=0.004$ ). Overall, syndromic glaucoma demonstrated more extreme differences than primary or secondary glaucoma, relative to controls. Earlier age of disease onset and increased number of invasive glaucoma surgeries were also associated with more extreme anatomic variants. Consideration of congenital glaucoma subtypes on a continuum of anomalous anatomy offers a better understanding of iris and lens changes associated with this family of diverse diseases. Iris and lens thickness may be markers for glaucoma severity. In the future, these associations with glaucoma subtype may improve diagnosis and lead to generalizable treatment heuristics in the context of diseases of variable severity, particularly in cases of unknown or multifactorial etiology.

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.42**

**SURGICAL MANAGEMENT OF IRIS BOMBE IN MUSCLE-EYE-BRAIN DISEASE.** Radhika Gholap\*, Diana Bharucha-Goebel<sup>1</sup>, Daniel Shats<sup>2</sup>, Bhakti Panchal<sup>2</sup>, Jessica Chong<sup>3</sup>, Moran Levin<sup>4</sup>, and Janet Alexander<sup>4</sup>, <sup>1</sup>Division of Pediatric Neuromuscular, <sup>3</sup>Department of Neurology, Children's National Hospital, Washington DC and <sup>4</sup>Division of Pediatrics, Department of Ophthalmology and Visual Sciences, <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD.

A 2-year-old girl with severe muscular dystrophy presented with unilateral eye pain and corneal clouding. She was found to have absent red reflex, hypotonia, cerebral hypoplasia, and iris bombe on ultrasound biomicroscopy, a feature not previously reported in this syndrome. She responded favorably to surgical management. Iris bombe can be a cause of glaucoma in muscle-eye-brain disease. This highlights the importance of incorporating ultrasound biomicroscopy into the diagnostic algorithm of muscle-eye-brain disease and other types of congenital syndromic glaucoma.

#### O.43

MUSCLE ECHOGENICITY AND PRESSURE-PAIN THRESHOLDS IN INDIVIDUALS WITH SEVERE MUSCLE STIFFNESS AFTER CEREBRAL INJURY. Kaitlin Ballenger\*, Nikhil Gopal<sup>1</sup>, Azin Etemadimanesh<sup>1</sup>, Robert Nickl<sup>1</sup>, Paria Arfa Fatollahkhani<sup>1</sup>, and Preeti Raghavan<sup>1</sup>, <sup>1</sup>Department of Physical Medicine and Rehabilitation, Johns Hopkins School of Medicine, Baltimore, MD.

Muscle stiffness and pain cause severe disability in people after cerebral injury. However, the relationship between muscle stiffness, muscle fibrosis and pain are not clear. The objective of this study was to examine muscles for fibrosis and assess muscle pain in individuals with severe spastic muscle stiffness before and after treatment with human recombinant hyaluronidase injections. Twenty-three subjects with severe muscle stiffness (stiffness rating across all muscles= $3.8\pm 0.12/4$ ) after cerebral injury were enrolled in a double-blind, randomized, placebo-controlled, Phase II trial of human recombinant hyaluronidase injections. The trial included evaluation at baseline, after the first injection (hyaluronidase or placebo), and at the final visit. All subjects had received both hyaluronidase and placebo in a random order by the final visit. Eight muscles on both upper limbs (pectoralis major-minor, middle deltoid, lateral biceps, medial biceps, brachioradialis, long head of triceps, lateral triceps and medial triceps) were evaluated using B-mode ultrasound. Muscle echogenicity was assessed using the Heckmatt scale; a rating of 4 indicates fibrosis. Pressure-pain thresholds of the same muscles were assessed using an algometer. Ultrasound Heckmatt scale scores showed an average ( $\pm$ SD) score of  $1.51\pm 0.16$  at baseline across all muscles, suggesting that the muscles had normal echogenicity and were not fibrotic at baseline. The average pressure threshold that elicited pain was  $7.62\pm 0.58$  lbs, and the pain elicited was  $3.54\pm 0.22$ . At the final visit, the Heckmatt score decreased to  $1.39\pm 0.16$  ( $p=0.007$ ) and pain reduced to  $3.15\pm 0.31$  ( $p=0.002$ ), while the pressure threshold increased to  $8.32\pm 0.59$  lbs ( $p=0.046$ ). The results suggest that the accumulation of hyaluronan in muscle produces stiffness without fibrosis and decreases pain-pressure thresholds after cerebral injury. Treatment with human recombinant hyaluronidase may further improve muscle echogenicity and increase pain-pressure thresholds. Further examination of the hyaluronidase versus placebo groups will confirm these findings.

Rehabilitation Research Experience for Medical Students (RREMS) through the Association of Academic Physiatrists (AAP)

#### O.44

OPIOID USE DISORDER IN PATIENTS UNDERGOING MAJOR LOWER EXTREMITY AMPUTATION: PREVALENCE AND OUTCOMES. Luke Pitsenbarger\*, Natalie Chao<sup>1</sup>, Allison Karwoski<sup>1</sup>, Maria Som<sup>1</sup>, Eyrusalem Workneh<sup>1</sup>, Nora Dunlap<sup>1</sup>, Suzanna Simmonds Fitzpatrick<sup>1</sup>, and Khanjan Nagarsheth<sup>1</sup>, <sup>1</sup>Division of Vascular, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

Patients with a history of Opioid Use Disorder (OUD) have higher postoperative complication rates and mortality in many settings. Yet, it remains poorly understood how the opioid epidemic has affected patients undergoing major lower extremity amputation (LEA) and whether outcomes differ by OUD status. We conducted a retrospective chart review of all 689 patients who underwent major LEA at a large tertiary referral center from 2015 to 2021. This study assessed patient characteristics and long-term postoperative outcomes for patients with preoperative OUD. 133 (19.3%) patients had a lifetime history of preoperative OUD. Preoperative OUD was associated with key characteristics, comorbidities, and outcome measures. OUD was significantly associated with younger age ( $P<0.001$ ), black race ( $P=0.026$ ), single relationship status ( $P<0.001$ ), BMI $<30$  ( $P=0.024$ ), no primary care provider ( $P=0.004$ ), Medicaid insurance ( $P<0.001$ ). Comorbidities significantly associated with OUD include current smoking ( $P<0.001$ ), Human Immunodeficiency Virus (HIV;  $P=0.003$ ), and history of osteomyelitis ( $P<0.001$ ). Preoperative OUD independently predicted lower rates of 30– 90-day readmission (odds ratio [OR] 0.54,  $P=0.018$ ) and 1-12-month reamputation (OR 0.41,  $P=0.006$ ). There was no significant difference in long-term mortality and follow-up. This study demonstrates the prevalence of OUD in patients undergoing major LEA and reports associations and long-term outcomes. Our findings highlight the importance of recognizing OUD and raise questions about the mechanisms underlying its relation to rates of postoperative readmission and reamputation.

#### O.45

NURSE PERSPECTIVES ON THEIR EXPERIENCES GIVING LOW-DOSE METHADONE TO NURSING HOME RESIDENTS: A QUALITATIVE STUDY USING SEMI-STRUCTURED INTERVIEWS. Jennifer O'Brien\*, Amber Kleckner<sup>1</sup>, and Takeshi Uemura<sup>2</sup>, <sup>1</sup>Department of Pain and Translational Symptom Science, University of Maryland School of Nursing, Baltimore, MD and <sup>2</sup>Department of Geriatrics and Palliative Medicine, Icahn School of Medicine at Mount Sinai School of Medicine, New York, NY.

Chronic pain is a prevalent problem in older adults in nursing homes. Current recommended pharmacotherapies include acetaminophen, which is not always sufficient to control pain, and opioids, which carry a high risk of side effects in frail older adults. Some observational studies have shown that methadone at a low dose (i.e., <10 mg) could be used as a first-line opioid for frail older adults. However, methadone is rarely used in nursing home settings, and it is unclear why. We aimed to explore nurse perspectives on the use of low-dose methadone in nursing home residents to assess the potential benefits and barriers of introducing methadone into clinical practice in nursing home settings. Semi-structured interviews (n=8) were conducted with nurses who administered low-dose methadone (<10 mg) in the past two years in post-acute care and long-term care settings. We explored three general themes: 1) General idea of methadone; 2) Experience and observation using low-dose methadone; 3) Opinion and attitude of using low-dose methadone. Interviews were transcribed then coded and analyzed by two coders using a modified phenomenological approach. Most participants were initially unfamiliar with low-dose methadone as an analgesic in nursing home settings and were only familiar with methadone as a treatment for substance use disorder. However, all nurses felt comfortable using low-dose methadone for pain control after their experiences administering it and/or after receiving training sessions about it. Additionally, all participants said low-dose methadone was effective to reduce pain with no serious side effects. Furthermore, many benefits were reported, including: 1) The long-acting formula was easier to administer; 2) The sublingual route was well tolerated, especially for those with dysphagia; and 3) There was no significant sedation noted. In conclusion, although nurses were initially unfamiliar with low-dose methadone in nursing home settings, their experiences were generally positive. These findings support future studies into the safety and efficacy of low-dose methadone as a novel approach to clinical management of chronic pain in nursing home patients.

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#### O.46

CHARACTERIZING THE IMPACT OF INCREASED TAKE-HOME METHADONE DOSES ON RETENTION IN ADDICTION TREATMENT. Kieran Tebben\* and Aaron Greenblatt<sup>1</sup>, <sup>1</sup>Department of Family and Community Medicine, University of Maryland School of Medicine, Baltimore, MD.

Methadone treatment, used for opioid use disorder (OUD), is associated with improved outcomes and lower risk of overdose. Methadone has historically been dispensed in person as directly observed therapy, with limited take home doses (THM) (typically two per week) available for established, stable patients. During the COVID-19 pandemic, restrictions on THM were relaxed to minimize in-person clinic time, allowing patients to have between 14 and 28 days of THM. While more flexible THM dosing has been associated with lower overdose risk and qualitative studies have identified strongly positive patient responses, little is known about how flexible THM dosing impacts retention in treatment at three-months post-initiation. Using Methasoft, an online database of methadone dosing per patient used by the University of Maryland Drug Treatment Center, we measured how THM dosing changed in the months after the start of the COVID-19 pandemic and how differences in dosing flexibility impacted retention in treatment after 12 weeks for 278 individuals enrolled before the pandemic and 300 individuals enrolled during the pandemic. We found that, although patients enrolled during the pandemic received a higher proportion of doses per week as THM, the 12-week retention rate was similar for patients enrolled pre- and post-COVID-19. Overall, we found that older, white patients were more likely to discontinue treatment and do so earlier during the 12 weeks. Additionally, we found that receiving more THM doses per week was associated with better retention in treatment in both cohorts. Patients who received more THM doses per week also received more methadone doses per week, overall, indicating that flexibility in THM dosing might improve treatment access. These results reiterate the benefits of flexibility

in THM dosing and suggest a positive relationship between THM doses and retention in treatment. As treatment centers revert to strict pre-COVID treatment policies, it is important to consider the benefits of flexible THM dosing for treatment engagement and access, separate from reducing the spread of COVID-19.

#### **O.47**

EMERGENCY DEPARTMENT OPIOID PRESCRIPTION PATTERNS—EFFECTS OF THE COVID-19 PANDEMIC. Syrus Razavi\*, Jeffrey Rea<sup>1</sup>, and Quincy Tran<sup>1</sup>, <sup>1</sup>Program in Trauma, Critical Care and Emergency Medicine, Department of Emergency Medicine, University of Maryland School of Medicine, Baltimore, MD.

On March 30, 2020, as a result of the COVID-19 pandemic, the state of Maryland issued a Stay-at-Home order that required its residents to practice social distancing and shelter-in-place. Since then, the state and its health care systems have been through an unpredictable series of events including the deployment of vaccines in record time. Our focus is on how Emergency Departments have adapted to this drawn-out crisis in their prescribing of a highly controlled substance – opioids. We will be analyzing the data of adults seen in an Emergency Department within the University of Maryland Medical System between January 01, 2019 and January 01, 2023, through an interrupted time-series analysis and general time-series analysis, to investigate how Emergency Department (ED) physicians altered their opioid prescribing behavior over this time period.

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.48**

COMPARISON OF GONIOMETER APPLICATIONS (APPS) UTILIZING AN IPAD IN THE CLINICAL SETTING. Dennis Morozov\*, Ave Keefer<sup>1</sup>, Catie May<sup>1</sup>, and Joshua Abzug<sup>2</sup>, <sup>2</sup>Division of Hand Surgery, Pediatric Orthopedic Surgery, Department of Orthopaedics, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

Applications for smartphones have been developed to assist with many aspects of patient care. There is currently no literature surrounding the effectiveness and feasibility of utilizing goniometer applications in the outpatient environment. Therefore, the purpose of this study is to assess the quality and efficiency of using goniometer applications in patient care settings. A prospective recruitment process was performed to identify all pediatric and adolescent patients that presented to the out-patient clinic. 3 Applications were used to evaluate 14 different range of motion measurements across the shoulder, elbow, and wrist: YROM, Rate Fast Gonio, and Get My ROM. The direction and strength of the deviation of the app measurement to the electronic goniometer will help reveal current trends as a part of this ongoing investigation. A total of 20 patients have been examined so far, with a complete collection of 12-14 sets of ranges (depending on which motion was recorded) and a total of 484 data points (Range: 5-17 years). Get My ROM achieved the greatest number of deviations that were closest to the standard established by the electronic goniometer (higher accuracy), with the application scoring better in 7 of the 14 (50%) of the ranges tested. Further analysis revealed that YROM was superior with wrist measurements, and Get My ROM was superior with shoulder measurements. Based on preliminary data and subjective assessments, the applications can be used as a substitute in certain clinical settings, but they may need to be tailored to the specific range of motion or joint tested. Currently, there is tremendous promise in the use of these smart device applications based on their widespread location throughout clinic and cheap alternative compared to electronic goniometers. However, the increased learning curve when implementing these applications may lead to some user error and difficulty.

This research was supported by the POSNA (pediatric orthopaedic society of North America) Microgrant - iPad and goniometer devices.

#### O.49

TEMPORAL SPIKE SEQUENCES AS A NOVEL METRIC OF IN VITRO NETWORK CONNECTIVITY. Ujwal Boddeti\*, Sabrina Nusraty<sup>1</sup>, Jenna Langbein<sup>2</sup>, Muzna Bachani<sup>2</sup>, Kareem Zaghoul<sup>4</sup>, and Alexander Ksendzovsky<sup>2</sup>, <sup>1</sup>Division of Functional Neurosurgery Section, Department of Neurosurgery, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD and <sup>2</sup>Department of Neurosurgery, University of Maryland School of Medicine, Baltimore, MD.

Epilepsy is a debilitating condition, with 30% of patients failing to respond to antiepileptic drugs. Many of these patients turn to surgical management; however, despite epileptogenic foci (EF) resection and neuromodulatory interventions, ~50% of patients continue to have seizures within a year after surgery. Over the last two decades, there has been a shift in thinking from the canonical view of epilepsy as a focal disorder to that of a distributed epileptogenic network. Our group has recently shown that there exists increased interictal connectivity among cortical regions involved in ictal activity. Furthermore, we previously showed that there is increased coherence-based functional connectivity in an *in vitro* model of hyperexcitability. However, metrics such as coherence and others used in literature fail to capture the complex directionality underlying network formation and strengthening. Here, we build on our prior work by proposing the use of a novel metric - temporal spike sequences – as a superior metric of *in vitro* connectivity. Specifically, we show in our established models of hyperexcitability that during *in vitro* bursting activity, the sequence in which electrode contacts in microelectrode array (MEA) plates are recruited is uniquely preserved across bursts in individual wells than expected by chance alone. Given our findings, we propose the use of temporal spiking patterns as a novel technique to characterize *in vitro* network connectivity. In addition to being precise, this metric serves to capture complex directionality information that would otherwise be missing in other metrics of connectivity. Additionally, this metric not only communicates functional connectivity, but may also confer information about underlying structural connectivity, capturing many features of connectivity than would otherwise be possible.

This research was supported by the NIH Medical Research Scholars Program (MRSP).

#### O.50

PREICTAL BURSTING ACTIVITY MAY PREDICT SEIZURE EVENTS. Ujwal Boddeti\*, Joshua Diamond<sup>1</sup>, Alexander Ksendzovsky<sup>2</sup>, and Kareem Zaghoul<sup>1</sup>, <sup>1</sup>Division of Functional Neurosurgery Section, Department of Neurosurgery, NIH NINDS, Bethesda, MD, and <sup>2</sup>Department of Neurosurgery, University of Maryland School of Medicine, Baltimore, MD.

Drug-resistant epilepsy (DRE) outcomes have been largely stagnant over the past two decades. Although recent advances have greatly improved seizure control, there is still much work to be done. Our group has recently shown that single unit bursting activity is uniquely stereotyped across ictal events, suggesting that bursting activity may reveal patterns in seizure activity that have not yet been explored. Here, we show that preictal bursting patterns begin to uniquely organize in a low-dimension manifold up to one-hour prior to ictal onset, suggesting a potential utility in advanced seizure prediction and intervention. We obtained intracranial recordings from epilepsy patients implanted with Utah Intracortical Electrode Arrays (UIEA) undergoing neuromonitoring at the NIH Clinical Center. We bandpass filtered signals (0.5-5 kHz) using a 4th-order Butterworth filter and subsequently smoothed signals using a gaussian kernel ( $\sigma=25$  ms). We then detected baseline, preictal (< 1 hr from seizure), and ictal bursting activity by applying a z-score threshold of three. We then used Uniform Manifold Approximation and Projection for Dimension Reduction (UMAP) to represent bursts in two dimensions. We visualized bursts on a UMAP manifold and quantified similarity of pre-ictal bursts to baseline and ictal bursts by measuring distance to baseline centroid. Preictal bursts localized spatially near ictal bursts on the UMAP manifold, starting ~1 hr prior to ictal onset, whereas baseline bursts are randomly distributed. Furthermore, preictal bursts deviate significantly from baseline centroid ( $P=3.00e-8$ ), akin to ictal bursts ( $P=1.92e-138$ ), suggesting that preictal bursting patterns are similarly uniquely stereotyped. These findings suggest that changes in bursting activity may begin much earlier than electrographic ictal onset. Ultimately, our findings portend the possibility of predicting seizures well in advance of ictal onset, opening doors for significantly improving preexisting treatments, such as closed-loop neuromodulation, but also paving the way for novel therapeutics.

This research was supported by the NIH Medical Research Scholars Program (MRSP).



### **O.51**

COMPARATIVE ANALYSIS OF BLUNT TRAUMA AND GUNSHOT WOUNDS TO THE HEAD ON THROMBOSIS IN PATIENTS WITH FRACTURES OVERLYING THE SUPERIOR SAGITTAL SINUS. Daisy Martinez\*, Kevin Kim<sup>1</sup>, Jeffrey Oliver<sup>1</sup>, Jesse Stokum<sup>1</sup>, and Gary Schwartzbauer<sup>1</sup>, <sup>1</sup>Department of Neurosurgery, University of Maryland School of Medicine, Baltimore, MD.

Head injuries, such as gunshot wounds of the head (GSWH) and blunt force trauma to the head, can impact the integrity of dural sinuses and increase the risk of cerebral venous sinus thrombosis (CVST). Currently, the rates of superior sagittal sinus (SSS) CVST in patients with GSWH and blunt trauma that result from fractures overlying the sinus is unclear. We aim to review patterns of traumatic fractures resulting in SSS CVST after GSWH and blunt trauma. We retrospectively reviewed patients presenting with skull fractures due to blunt trauma and GSWH with dedicated venous imaging. Of the 424 patients presenting with blunt trauma, 137 (32%) had fractures with dural venous sinus (DVS) injury on imaging. Among the 47 patients presenting with GSWH, 37 (79%) had traumatic skull fractures with DVS involvement. The average age was 38 and mean GCS was 9.8. There were 174 patients with fractures and DVS injury, 23% of which had SSS involvement—27 with thrombi and 13 with extrinsic compression. Of the 27 patients with SSS CVST, the anterior, middle, and posterior third of the SSS were affected in 11 (41%), 6 (22%), 16 (60%) of patients, respectively. There was no significant difference in the rates of SSS CVST in patients with fractures overlying the SSS after blunt head trauma (51.4%) and GSWH (47.4%). Of the patients with SSS CVST, 44.4% achieved full recanalization. There was no significant difference between the rate of full recanalization at follow-up between blunt trauma (50%) and GSWH (33.3%). Overall mortality for SSS CVST was 7.4%. We found that the rate SSS CVST resulting from an overlying SSS fracture after GSWH and blunt force trauma are similar.

### **O.52**

UNDERSTANDING THE ROLE OF ADENOTONSILLECTOMY IN CHILDREN'S BRAIN OUTCOMES. Anahita Shiva\*, Amal Isaiah<sup>1</sup>, and Nidhi Matthew<sup>1</sup>, <sup>1</sup>Division of Pediatric Otolaryngology, Department of Otorhinolaryngology - Head and Neck Surgery, University of Maryland School of Medicine, Baltimore, MD.

One in ten children are affected by sleep disordered breathing (SDB), which is associated with snoring, sleep disruption, and behavioral challenges. The first line therapy is adenotonsillectomy (AT), as this surgery relieves upper airway obstruction. However, the mechanistic impact of AT on children's brain and behavioral outcomes has not been fully elucidated. Using functional near-infrared spectroscopy (fNIRS), our research group has investigated and found that brain activation within the prefrontal cortex (PFC) is associated with behavioral measures in children with SDB. Our specific aim is to obtain a mechanistic understanding of AT on pediatric SDB outcomes. Our central hypothesis is that post-AT outcomes are mediated by changes in the functional activation of the PFC. We expect to see significant changes in PFC oxygenated hemoglobin in children following AT. In this prospective observational study, we will recruit children undergoing AT for management of SDB and evaluate the extent of effect that PFC activation, measured by oxygenated hemoglobin in fNIRS, has on AT outcomes. Children aged 3-16 years electing for early AT for SDB management will be enrolled. We will employ baseline and follow-up assessments and measure longitudinal changes in PFC activation, using fNIRS coupled with the Go-No-Go task, which tests patients' ability to withhold response driven by the PFC. Respondents must press a button as quickly as possible during Go trials and withhold a response to the No-Go trials. The proportion of correct Go and No-Go trials, and the median reaction times will be calculated while PFC activity is recorded. Results will be compared between baseline and surgical follow-up to determine the extent to which post-AT changes in cognition composite are associated with changes in functional activation of the PFC. Our study addresses gaps in the mechanistic understanding of AT outcomes in children with SDB.

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### O.53

LOWER EXTREMITY SOMATOSENSORY EVOKED POTENTIALS PREDICT FUNCTIONAL OUTCOMES IN COMPLETE TRAUMATIC CERVICAL SPINAL CORD INJURY. Ovais Hasan\*, Anthony Chiu<sup>1</sup>, Sabrina Bustos<sup>2</sup>, Louis Bivona<sup>1</sup>, Daniel Cavanaugh<sup>1</sup>, Eugene Koh<sup>1</sup>, Alexander Vaccaro<sup>3</sup>, and Steven Ludwig<sup>1</sup>, <sup>1</sup>Division of Spine Surgery, Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>Liberty University College of Osteopathic Medicine School of Medicine, Lynchburg, VA and <sup>3</sup>Division of Spine Surgery, Department of Orthopaedic Surgery, Rothman Orthopaedics at Jefferson Health School of Medicine.

Traumatic cervical spinal cord injury (tCSCI) is a severe condition, causing increased morbidity, mortality, economic burdens, and reduced quality of life. Accurate early prognosis is crucial for planning medical and surgical interventions. Currently, prognosis relies on physical exams, imaging, and patient data, but outcomes remain highly variable. This study aimed to assess the effectiveness of somatosensory evoked potentials (SSEPs) in predicting functional outcomes for tCSCI patients. A retrospective analysis was conducted using data from two academic institutions, focusing on tCSCI patients aged 18 and older who underwent posterior cervical decompression and stabilization with intraoperative neuromonitoring (IONM). We examined the association between SSEP detection during initial surgical treatment and outcomes, including American Spinal Injury Association (ASIA) Impairment Scale (AIS) grade at follow-up, AIS grade conversion, ASIA motor score at follow-up, change in ASIA motor score, and the ability to achieve a minimal clinically important difference (MCID) of 7 points in AIS motor score improvement. The analysis included 79 patients. Detectable lower extremity SSEPs were associated with incomplete injuries ( $p < 0.001$ ). In complete injuries, SSEPs were associated with higher ASIA motor scores at follow-up ( $p = 0.002$ ), significant increases in ASIA motor scores from admission ( $p = 0.009$ ), and a greater likelihood of achieving clinically important improvement in ASIA motor score ( $p = 0.024$ ). Patients with incomplete AIS grade C injuries were more likely to experience AIS grade conversion ( $p = 0.019$ ) and clinically important improvements in ASIA motor scores ( $p = 0.010$ ) compared to AIS grade A or B patients. Detecting lower extremity SSEP signals during the initial surgical treatment predicts greater postoperative improvement in ASIA motor scores, with the strongest association found in patients with complete injuries. In patients with incomplete injuries, AIS grade C patients experienced better ASIA motor score improvements and higher AIS grade conversion rates, regardless of SSEP detection.

### O.54

TRAUMATIC BRAIN INJURY IN PATIENTS WITH FRONTAL SINUS FRACTURES. Pharibe Pope\*, Bashar Hassan<sup>1</sup>, Kimberly Oslin<sup>2</sup>, Andrea Hebert<sup>3</sup>, Deborah Stein<sup>4</sup>, Natalie Justicz<sup>3</sup>, and Michael Grant<sup>1</sup>, <sup>1</sup>Division of Plastic and Reconstructive Surgery and <sup>4</sup>Program in Trauma, R. Adams Cowley Shock Trauma Center and <sup>3</sup>Department of Otorhinolaryngology - Head and Neck Surgery, and <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD.

Traumatic brain injury (TBI) has been reported in up to 83% of craniofacial fractures involving the frontal sinus. However, the risk factors for TBI at presentation and persistent neurologic sequelae in patients with frontal sinus fractures remain largely unstudied. We aim to evaluate the prevalence and risk factors associated with TBI on presentation and neurologic sequelae in these patients. We retrospectively reviewed patients who presented with traumatic frontal sinus fractures in 2019. Our primary outcome was prevalence of concomitant TBI on presentation, defined as any patient with neurologic symptoms on presentation and/or those with a GCS(100)]. Emergency physicians and referring providers should maintain a high degree of suspicion of TBI in patients with frontal sinus fractures. Head CT at presentation and close neurologic follow-up are recommended for frontal sinus fracture patients with combined anterior and posterior table fractures as well as those with concomitant orbital roof fractures.

### O.55

UNDERSTANDING ECMO USE IN THE PERIPARTUM PERIOD: ADVANCEMENTS, OUTCOMES, AND IMPLICATIONS FOR OBSTETRIC PATIENTS. Lena Abdulrahman\*, Samhati Mondal<sup>1</sup>, and Andrea Shipper<sup>2</sup>, <sup>1</sup>Division of Cardiothoracic Anesthesia, Department of Anesthesiology, University of Maryland School of Medicine and <sup>2</sup>University of Maryland, Baltimore, Baltimore, MD.

Extracorporeal membrane oxygenation (ECMO) is a vital intervention for severe cardiopulmonary failure. While adult ECMO use has risen, literature on its application in obstetric patients is limited. This study reviews ECMO use in peripartum patients and evaluates factors influencing ECMO course and patient outcomes. We aimed to conduct a systematic review of the role of ECMO use in the peripartum period by reviewing ECMO utilization in patients with refractory cardiac and/or pulmonary dysfunction since 2010. We also worked to evaluate maternal and fetal survival rates, as well as complications associated with ECMO use, and especially sought to identify factors associated with ECMO utilization, duration, indication, and type (veno-arterial vs. veno-venous) and factors contributing to higher risk of mortality and complications. Articles were selected based on inclusion and exclusion criteria, and searches included keywords related to ECMO and pregnancy. Two groupings were created for case reports and larger cohort studies for analysis and variables were categorized based on data characteristics. Univariate analysis, linear and logistic regressions were performed to identify significant associations between variables using SAS 9.4. The most common indication for ECMO identified across our case reports was cardiac failure and while complications occurred in some cases, the majority survived without issues. Pre-existing cardiovascular disease was associated with shorter ECMO duration, and a longer ECMO duration was linked to decreased maternal mortality. Among non-case reports, cardiomyopathy and ARDS were common indications for ECMO, and more complications were identified across these studies. Maternal mortality was noted to be as low as 10% in case reports and 13-22% in our case series and cohort studies, while fetal mortality was 15% and 16-20% in these groups. ECMO is an effective intervention for cardiopulmonary complications in pregnant individuals.

## O.56

SURGICAL MANAGEMENT OF CAROTID ARTERY WEBS. Thien Cao\*, Nikhil Prasad<sup>1</sup>, Maureen McClellan<sup>2</sup>, Swati Chaparala<sup>3</sup>, Rajabrata Sarkar<sup>3</sup>, Khanjan Nagarsheth<sup>3</sup>, Jeanwan Kang<sup>3</sup>, and Shahab Toursavadkoshi<sup>3</sup>, <sup>2</sup>West Virginia School of Osteopathic Medicine School of Medicine, Lewisburg, WV, and <sup>3</sup>Division of Vascular Surgery, <sup>1</sup>Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

We aim to demonstrate the demographic profile and postoperative outcomes among a large single-center series of patients undergoing carotid endarterectomy for carotid web. Carotid artery web (CaW) is a shelf-like intraluminal lesion at the carotid bulb that produces stagnant flow and can result in cerebrovascular ischemia among young and otherwise healthy individuals. While there was no consensus on the ideal management strategy for CaW with ipsilateral stroke, emerging evidence favors open surgical intervention. We present a large single-center experience of carotid endarterectomy for CaW. This single-center retrospective review of all patients admitted between January 2016 and October 2023 with acute ischemic stroke, had CT angiography findings consistent with CaW- shelf-like projection at the level of the carotid bulb- and underwent carotid endarterectomy. The main outcome variables were ipsilateral stroke or transient ischemic attack during the follow-up period. Twenty-three patients who underwent carotid endarterectomy for CaW were identified. The median age was 41 years old [IQR 38 – 47], 19 were female (82%), and 21 were African American (91%). One patient was originally managed with medical therapy alone and presented with recurrent stroke. All patients underwent carotid endarterectomy at a median of 29 days after presentation. Patch angioplasty was used in 16 (70%) of patients, 15 with bovine pericardial patch and one with collagen-impregnated polyester patch. Primary closure of the arteriotomy with 5-0 Prolene suture was used in the other 7 patients. Eleven (48%) patients had mobile thrombus associated with the web present on imaging or surgical exploration. No new cerebrovascular events occurred in the follow-up period, at a median of 154 days. Carotid endarterectomy is an established procedure that can be applied to the treatment of carotid web in the setting of associated ipsilateral cerebrovascular ischemia. The procedure is associated with minimal complications and demonstrates an absence of recurrent ischemic events at short and medium-term follow-up.

### O.57

RETROBULBAR HEMATOMA – PRESENTATION, MANAGEMENT, AND VISUAL OUTCOMES. Magdi Elghannam\*, Bashar Hassan<sup>1</sup>, Nawal Shams<sup>2</sup>, Michael Grant<sup>1</sup>, Paul Manson<sup>3</sup>, Shannath Merbs<sup>4</sup>, and Carolyn Drog<sup>3</sup>, <sup>1</sup>Division of Plastic and Reconstructive Surgery, R Adams Cowley Shock Trauma Center, Department of Surgery and <sup>4</sup>Department of Ophthalmology and Visual Sciences, <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD, and <sup>3</sup>Department of Plastic and Reconstructive Surgery, Johns Hopkins School of Medicine, Baltimore, MD.

Retrolbulbar hematoma (RH), a diagnostic and therapeutic emergency, is a serious complication of facial trauma that may cause permanent vision loss. Lateral canthotomy and cantholysis (LCC) is typically performed in cases of RH with elevated IOP or compromised vision. Existing literature on the presentation and treatment outcomes of RH is based on small case-series. We describe the outcomes of the largest cohort of patients with RH to date. Patients who presented with acute facial trauma and RH to the R Adams Cowley Shock Trauma Center between 2014 and 2022 were analyzed to describe their presentation, management, and visual outcomes. Descriptive statistics and multivariate logistic and linear regressions were performed. A total of 41 eyes (39 patients) with RH were analyzed. The majority were males (31 [76%]) who presented following assault (20 [50%]). The most common presenting symptoms were orbital pain (19 [46%]) and diplopia (13 [32%]). The most common signs on ocular examination were subconjunctival hemorrhage (33 [81%]), proptosis (32 [78%]), and elevated IOP (20 of 38 measured were > 21 mm Hg [53%]). In our series, half the RH cases were managed with LCC (n=20), and the other half were observed (n=21). The median (IQR) IOP was significantly higher in the LCC group versus observation: 33 mm Hg (26-44) vs 18 mm Hg (15-21) (P=0.001). Compared to the observation group, patients treated by LCC were significantly more likely to have no light perception (NLP) vision (0 [0%] vs 6 [50%], P=0.004) and higher intraocular pressure (median [IQR] 16 mm Hg [15-21] vs 33 mm Hg [23-44], P=0.001) at presentation. All patients who had NLP at presentation (n=6) were managed by LCC. Of 17 patients who had reported IOP before LCC, 14 (82%) had lower IOP after LCC. In the 3 NLP patients where IOP did not drop, IOP was normal prior to LCC. Although one of the 6 NLP patients regained some vision after LCC, LCC was not associated with significantly different odds of improvement in visual acuity compared with observation (aOR [95% CI] 0.32 [0.04-2.98]). Visual acuity at presentation was the only significant predictor of visual acuity after follow-up (B=0.64, P=0.016). Patients with RH typically present with proptosis, subconjunctival hemorrhage, and elevated IOP. LCC is indicated in cases of elevated IOP and results in a reduction of IOP, which helps with intraocular perfusion. Initial visual acuity at presentation is the most reliable predictor of long-term visual acuity outcome whether or not LCC is performed.

### O.58

PEDIATRIC DILATED CARDIOMYOPATHY: A REVIEW OF PROMISING NEW FINDINGS. Ian Malinow\*, Daniel Fong<sup>1</sup>, and Charles Hong<sup>2</sup>, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>Department of Medicine, Michigan State University College of Human Medicine, East Lansing, MI.

Pediatric dilated cardiomyopathy (DCM) is a rare, yet life-threatening cardiovascular condition characterized by systolic dysfunction with biventricular dilatation and reduced myocardial contractility. Therapeutic options are limited with nearly 40% of children undergoing heart transplant or death within 2 years of diagnosis. Central to this difficulty are distinct molecular pathologic changes existing between pediatric and adult DCM, exemplified by differences in gene expression patterns and active molecular pathways. Pediatric DCM pathogenesis is not well understood with approximately 67% of cases classified as idiopathic disease. Genetic factors are suspected culprits, and recent research efforts have pinpointed *RITN* as a causative gene in select cases of pediatric DCM. *RITN* is an evolutionarily conserved gene involved in centrosomal reduction, a process critical to proper structural organization of cardiomyocytes. This novel finding identifies centrosomal reduction as a previously undiscovered causative mechanism in idiopathic pediatric DCM. Furthermore, the discovery of a small molecule capable of reinstating structural integrity and contractility in pediatric DCM cardiomyocytes, as validated by in vitro experiments using diseased induced pluripotent stem cell cardiomyocytes, provides a potential therapeutic strategy for these patients. This review aims to discuss the established biological pathogenesis of pediatric DCM, current clinical guidelines, and promising therapeutic avenues, with the overarching goal of unraveling the complexities surrounding this predominantly idiopathic

condition. Ultimately, the objective is to facilitate the advancement of novel therapeutic interventions to improve prognosis and overall quality of life for pediatric patients affected by this condition.

#### **O.59**

ASSESSMENT OF IVC FILTER COMPLICATIONS AND RETRIEVAL RECOMMENDATIONS IN COMPUTED TOMOGRAPHY REPORTS. Shirin Parsa\* and Adam Fang<sup>1</sup>, <sup>1</sup>Division of Interventional Radiology, Department of Diagnostic Radiology and Nuclear Medicine, University of Maryland School of Medicine, Baltimore, MD.

Inferior vena cava (IVC) filters are devices placed into the inferior vena cava to prevent blood clots from migrating to the pulmonary arteries. The aim of this study is to identify the frequency of reported IVC filter complications and recommendations for IVC filter retrieval in radiology reports. This was a retrospective study completed at the University of Maryland Medical Center (UMMC) and includes computed tomography (CT) reports of patients who underwent IVC filter placement. Patient demographics, filter complications, and recommendations were analyzed from CT abdomen and pelvis reports. A total of 1,415 CT abdomen and pelvis radiology reports were reviewed, and a total of 24 patients were identified with an IVC filter stated in their reports. In conclusion, IVC filter complications and recommendations for retrieval are not commonly reported and may contribute to delayed detection and lower rates of IVC filter retrieval.

#### **O.60**

EVALUATING THE USE OF OCULAR THERMOGRAPHY TO DETECT CAROTID STENOSIS. Aidan Wiley\*, Frederick Durham<sup>1</sup>, Justin Marsella<sup>1</sup>, Georges Jreij<sup>1</sup>, Aman Kankaria<sup>1</sup>, Brajesh Lal<sup>1</sup>, and Sarasijhaa Desikan<sup>1</sup>, <sup>1</sup>Division of Vascular Surgery, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

About 3-19% of American adults have carotid artery stenosis (CAS), or a  $\geq 50\%$  narrowing of the internal carotid artery due to atherosclerotic plaque. When the internal carotid artery is narrowed, shearing force on the plaque increases and can lead to embolization and stroke. Each year, about 100,000 preventable strokes are attributed to CAS; however, current methods of detection are expensive, time-intensive, and require specialized imaging making screening at the population level difficult. The presence of CAS results in a regional pressure drop that may lead to flow reversal through the ophthalmic artery and may be reflected by temperature decreases in the cornea. The aim of this study was to identify if ocular thermography may be an effective way to screen a larger population for CAS and refer them for further evaluation. In this prospective study, patients  $\geq 18$  years who underwent a carotid duplex ultrasound were enrolled. After collecting a brief medical history, an ICI 8160p thermal camera configured with the *IRFlashPro* software was used to capture thermal images of the eye. Patients were classified via duplex results according to the laterality and degree of their CAS. Thermal imaging was analyzed by comparing the relative temperature difference (RTD) between the corneas for each patient. In total, 80 patients were eligible for ocular analysis, of which 40 (50%) were bilaterally non-stenotic. A one-way ANOVA revealed that the maximum RTD of patients with a unilateral moderate (UM) stenosis was significantly larger than those who were bilaterally non-stenotic, indicating a greater interocular temperature mismatch in these patients ( $p = 0.016$ ). Patients with a unilateral severe (US) stenosis were not found to have a larger RTD than the UM or non-stenotic cohorts ( $p = 0.80$  and  $0.52$ , respectively); however, the UM and US linear regressions indicated a more positive association between CAS severity and RTD than the non-stenotic cohort. This study suggests that ocular thermography may be useful for rapid detection of unilateral CAS in the future; however, this remains an ongoing study.

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## O.61

INFLUENCE OF GESTATIONAL AGE ON GLAUCOMA AND VISION OUTCOMES IN THE INFANT APHAKIA TREATMENT STUDY. Claudia Wong\*, Aashka Damani<sup>1</sup>, Urjita Das<sup>2</sup>, Euna Cho<sup>2</sup>, Shaiza Mansoor<sup>1</sup>, Ria Kapoor<sup>1</sup>, Moran Levin<sup>3</sup>, and Janet Alexander<sup>3</sup>, <sup>3</sup>Division of Pediatrics, <sup>1</sup>Department of Ophthalmology and Visual Sciences, <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD.

Glaucoma-related adverse events are a major sight-threatening complication of cataract removal in infants. The impact of gestational age on glaucoma risk in patients who have undergone cataract removal in infancy remains unknown. This study evaluated age adjusted for gestation compared to chronological age as a risk factor for glaucoma and poor vision in the Infant Aphakia Treatment Study (IATS). In a secondary analysis of a multi-center, randomized, controlled trial, we evaluated 111 infants who underwent unilateral congenital cataract surgery between 0-7 months of age. We compared adjusted age and chronological age as predictors of glaucoma and vision outcome at 10 years. The mean gestational age in this cohort (n=111) was  $38.8 \pm 1.3$  weeks (range 36-42 weeks). The mean gestational age among subjects who developed glaucoma or glaucoma suspect status at 10 years was  $38.5 \pm 1.3$  compared to the mean gestational age  $39.0 \pm 1.3$  among those who did not develop glaucoma ( $p=0.0764$ ). Adjusted age ( $p=0.0334$ ) was a stronger risk factor for glaucoma than chronological age ( $p=0.0473$ ). Both measures of age were associated with increased risk of glaucoma following congenital cataract surgery. Chronological age was a more significant predictor of vision outcome ( $p=0.0092$ ) than adjusted age ( $p=0.0157$ ). Adjusted age and chronological age are important risk factors for glaucoma and vision outcomes in patients who have undergone cataract removal in infancy. Among the children in the IATS, adjusted age was a more significant predictor of glaucoma than chronological age. Conversely, chronological age was a more significant predictor of vision outcome. Gestational age should be considered in addition to chronological age when determining age of cataract surgery to minimize risk of glaucoma and maximize vision outcomes.

## O.62

IMPROVING FOLLOW-UP RATES BY OPTIMIZING PATIENT EDUCATIONAL MATERIALS IN RETINOPATHY OF PREMATURITY. Susanna Yau\*, Elizabeth Fernandez Paz<sup>1</sup>, Rachel Steger<sup>1</sup>, Euna Cho<sup>1</sup>, Janet Alexander<sup>1</sup>, and Moran Levin<sup>1</sup>, <sup>1</sup>Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

Written parent education material adhering to health literacy standards has been shown to improve parent understanding and clinic follow up attendance rates in infants with retinopathy of prematurity (ROP). Increased compliance can decrease vision loss among premature infants. Video education can further improve patient understanding in patients with poor literacy or health literacy. We investigate the efficacy of a multimedia education program adhering to health literacy standards to improve parent knowledge of ROP and follow-up compliance. We created a novel multimedia education program consisting of a video and handout in English and Spanish written to health literacy guidelines. 296 parents of infants at risk for developing ROP were enrolled in this repeated-measures study. Surveys assessing knowledge of ROP and perceived importance of follow-up were administered before and after parents were provided access to our multimedia education program or the AAPOS handout. Participants who received new ROP multimedia education demonstrated a significant increase in knowledge scores (62.3% vs. 95.2%,  $p<0.001$ ). Those who only received the AAPOS handout also demonstrated an increase in knowledge scores (55.9% vs. 83.7%,  $p<0.001$ ). Parents who received the multimedia PEM had higher post-education average knowledge scores compared to those receiving the AAPOS handout (95.2 vs. 55.9%,  $p=0.005$ ). Follow-up attendance also improved in the multimedia PEM group (95.24% vs. 68.18%,  $p=0.08$ ). Using multimedia PEM that adheres to health literacy standards significantly improves ROP knowledge and follow-up compliance. The video and handout created for this study represent accessible methods of educating parents and improving follow-up attendance.

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.63

USE OF EHR TO EXTRACT NORMATIVE EYELID MEASUREMENTS. Jason Zhou\*, Bharanidharan Radha-Saseendrakumar<sup>1</sup>, Sally Baxter<sup>2</sup>, and Don Kikkawa<sup>3</sup>, <sup>2</sup>Division of Ophthalmology Informatics and Data Science and <sup>3</sup>Division of Oculofacial Plastic and Reconstructive Surgery, <sup>1</sup>Department of Ophthalmology and Visual Sciences, University of California San Diego School of Medicine, San Diego, CA.

MRD1 is the distance from the margin of the upper lid to the central corneal reflex and clinical literature defines this range to be 2.5 to 5mm. These measurements can be entered into EPIC via progress notes or the ophthalmology exam tab, Kaleidoscope. We are looking to identify normative MRD1 measurements by age group, ethnicity, race, sex, as well as data entry method, using EHR extraction. Retrospective EHR data was extracted on all adult patients seen by UCSD oculoplastics. We defined “normal” MRD as the diagnoses of skin and lid lesion, dry eye, squamous blepharitis, neoplasm of uncertain behavior, cosmetic procedures. Our analysis yielded normative MRD1 measurements from 911 patients from Kaleidoscope and 1215 patients from progress notes with a 310 patient overlap. Demographically, we had 1.5% of patients aged 18-27, 3.1% aged 28-37, 5.8% aged 38-47, 10.3% aged 48-57, 23.5% aged 58-67, 29.8% aged 68-77, 17.1% aged 78-87, 7.4% aged 88-97 and 1.5% aged 98+. There were 70.3% white patients, 10.7% Asian, 2.1% black, 0.4% Pacific Islander, 0.3% American Indian, 12.3% mixed race / other, and 3.3% unknown. 83.9% of patients were not Hispanic and 62.6% of patients were female. In a univariate ANOVA done across races, a p-value of 0.042 demonstrated significance and a post-hoc test demonstrated a p-value of 0.04 between white and unknown subgroups and 0.06 for unknown and Asian. In the mixed-effect multi-variate linear regression, age by decade was a significant predictor of MRD1, with age group 48-57 differing from 18-27 by -2.37 (-4.19, -4.67, 95% CI, p-value = 0.014), age group 68-77 differing from 18-27 by -1.7 (-3.45, 0.05, 95% CI, p-value = 0.057), 88-97 and 98+ age groups also saw significant decreases in MRD. Most surprising was the strong difference in recorded MRDs from Kaleidoscope data entry versus process notes – progress notes were -0.24 lower (-0.28, -0.21, 95% CI, p-value < 0.001). Age by decade and race are promising predictors of MRD, but larger sample sizes are needed to confirm. This project shows it is possible to get normative MRD values from EHR extraction, but standard entry methods will be needed for consistent measurements.

This research was supported by T35EY033704.

### O.64

THE USE OF OCULAR IMAGING TO DETERMINE THE RELATIONSHIP BETWEEN MICROVASCULATURE AND NEURODEGENERATION IN SCHIZOPHRENIA SPECTRUM DISORDERS. Fatima Nycole Hidalgo\*, Osamah Saeedi<sup>1</sup>, and Elliot Hong<sup>2</sup>, <sup>1</sup> Glaucoma Division, Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>Department of Psychiatry, University of Texas Health Science Center at Houston McGovern Medical School, Houston, TX.

Schizophrenia Spectrum Disorder (SSD) is a neurodegenerative disorder that is one of the leading causes of disability, affecting approximately 24 million people worldwide. Novel research used non-invasive retinal imaging such as optical coherence tomography (OCT) and optical coherence tomography angiography (OCTA) to identify structural and vascular biomarkers that successfully distinguish SSD subjects from healthy controls. Notably, these findings suggest that retinal nerve fiber layer (RNFL) thinning and reduced capillary density in the eyes of SSD patients reflect underlying neuropathology such as white matter loss and cerebral microvascular dysfunction, respectively. However, the intersection between such structural and vascular variations in SSD patients has yet to be established. This study will use ocular imaging to determine the relationship between RNFL thickness and microvasculature density, and how their association contributes to neurodegeneration in SSD. This retrospective study analyzes OCT and OCTA images of both eyes in 58 SSD patients (age  $37.2 \pm 12.3$  years) and 35 controls (age  $41.1 \pm 15.2$  years) collected at the Maryland Psychiatric Research Center. Participants received 3x3mm<sup>2</sup> macular OCTA scans with full retina thickness divided into four quadrants and 6x6mm<sup>2</sup> optic nerve head (ONH) OCTA images divided into eight regions. All scans were measured on skeletonized images and vessel densities were compared between the two groups, both of which were also separated into younger (age <30) and older (age  $\geq 30$ ) age groups. The statistical mixed model will analyze multiple retinal locations in the dataset and the relatedness of microvascular density and RNFL in each quadrant and globally. We expect reduced retinal microvascular density in patients with SSD to correlate with thinner

RNFL in both magnitude and retinal location. Furthermore, we anticipate that reduced retinal microvasculature will have a greater association with SSD than RNFL thickness. Ultimately, these findings would suggest a stronger microvascular contribution to neurodegeneration in SSD and significantly expand our current understanding of neurovascular degeneration in patients with SSD and other neurodegenerative disorders.

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.65**

**EVALUATING MEDICAL STUDENTS' PERSPECTIVES ON AGING AND DEMENTIA THROUGH GERIATRIC SIMULATION.** Euna Cho\*, Min Kyoung Park<sup>1</sup>, and Diane Martin<sup>1</sup>, <sup>1</sup>University of Maryland Graduate School, Baltimore, MD.

By 2034, the U.S. Census Bureau projects that there will be more adults aged 65 and older than children aged 17 and younger. This change consequently impacts the medical field. Older adults experience age-specific sensory changes that increase injury and vulnerability to multiple chronic diseases which significantly increase health care costs. Despite living in an aging society in which most medical specialty practitioners will be providing care to older adult patients, medical students lack interest in geriatrics. Interest may be enhanced, however, through pre-clerkship exposure. We implemented aging and dementia simulation to evaluate the medical student's change in attitude, interest, knowledge, confidence, and empathy toward older adults. Prior to the aging simulation, pre-clerkship medical students' attitudes toward older adults and aging were assessed (29 items). The faculty-led simulation consisted of 1) vision loss by wearing Vaseline-covered goggles, 2) hearing loss via stuffing ear canals with cotton balls or straws, 3) respiratory difficulties via stuffing nostrils, and 4) mobility impairments by putting corn seeds in their shoes. Students both directly experienced being the "older adult" and assisting as care providers. During the post-exercise reflection, students described the changes in navigating the environment, interacting with others, and developing empathy. Similarly, the dementia simulation utilizes the Dementia Live™ training module's specialized gear that affects ocular, auditory, and tactile sensations. Pre- and post-simulation surveys will be distributed to evaluate understanding, interest, attitude, and confidence in providing care for older patients living with dementia. The qualitative analysis of age simulation reflection indicates decreased visual acuity as the greatest difficulty in perceiving the surroundings, evolved self-consciousness due to impairments, and cultivation of empathy, willingness to accommodate, and respect. Incorporating the geriatrics simulation events has the potential to positively impact the medical student's perspective on the older population and increase interest in working with a geriatric population.

#### **O.66**

**ORBITAL FRACTURE CHARACTERISTICS AND OUTCOMES IN BALTIMORE: A MULTICENTER ANALYSIS.** Seray Er\*, Bashar Hassan<sup>1</sup>, Joshua Yoon<sup>2</sup>, Eric Resnick<sup>3</sup>, Cynthia Yusuf<sup>3</sup>, and Michael Grant<sup>1</sup>, <sup>1</sup>Division of Trauma Plastic and Reconstructive Surgery, Department of Surgery, <sup>3</sup>University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>Department of Surgery, George Washington University Hospital, Washington, DC.

Fracture characteristics and postoperative outcomes of patients presenting with orbital fractures in Baltimore remain poorly investigated. The purpose of this study was to determine the fracture patterns, etiologies, and postoperative outcomes of patients treated for orbital fractures at two Level I trauma centers in Baltimore. A multicenter retrospective cohort was conducted on patients who underwent orbital fracture repair at The R Adams Cowley Shock Trauma Center and The Johns Hopkins Hospital from January 2015 to December 2019. Of n=374 patients, n=179 (47.9%) had orbital fractures due to violent trauma, n=252 (67.4%) had moderate to near-total orbital fractures, n=345 (92.2%) had orbital floor involvement, and n=338 (90.4%) had concomitant neurological symptoms/signs. Almost half of patients had at least one postoperative ocular complication (n=163/333 [48.9%]). Patients who had orbital fractures due to violent trauma were more likely to develop postoperative ocular complications compared to those who had orbital fractures due to non-violent trauma (n=88/154 [57.1%], n=75/179 [41.9%]; P=0.006). After controlling for factors pertaining to injury severity, there was no significant difference in patient throughput or incidence of any postoperative ocular



complication following repair between the two centers. Patients presenting with orbital fractures due to violent trauma should receive timely surgical intervention to mitigate the risk of postoperative ocular complications.

#### **O.67**

EXPLORING THE ROLE OF FOXJ1 IN THE AUDITORY AND VESTIBULAR SYSTEM USING A FOXJ1 CONDITIONAL KNOCKOUT MOUSE MODEL. Han Dewan\*, Kathleen Gwilliam<sup>1</sup>, and Ronna Hertzano<sup>1</sup>, <sup>1</sup>Division of Neurotology Branch, National Institute on Deafness and Other Communication Disorders, National Institutes of Health, Bethesda, MD.

Forkhead Box J1(FOXJ1) is a transcription factor with an evolutionarily conserved role in ciliogenesis. Previous RNA-sequencing experiments have shown that *Foxj1* is highly and specifically expressed in developing cochlear and vestibular hair cells. Due to its high expression in inner ear hair cells, role in ciliogenesis in other systems, and interactions with other transcription factors, including RFX that have a known role in the inner ear, we hypothesize that FOXJ1 is necessary for hair cell development and function. Here, we explore the role of FOXJ1 within the inner ear. First, we validated the expression of *Foxj1* in the inner ear using fluorescent in-situ hybridization in C57BL/6J wildtype mice. *Foxj1* was expressed in vestibular hair cells in the utricle and saccule, vestibular ganglion neurons, and spiral ganglion neurons in 1-month-old mice, with no expression in cochlear hair cells at this timepoint. To study the role of FOXJ1 within the auditory and vestibular system, we used a conditional knockout mouse line *Foxj1<sup>flox/flox</sup>; Gfi1-Cre (Foxj1 cKO)* to knock out *Foxj1* specifically in hair cells beginning at embryonic day (E) 16.5. To measure auditory function, auditory brainstem response (ABR) testing at 8, 16, 24, and 32 kHz frequencies was performed on 1-month-old *Foxj1* cKO and control littermates. Immunohistochemistry was performed on 1-month-old cochleae to examine the morphology of inner and outer hair cells. There was no significant difference in ABR thresholds between *Foxj1* cKO mice and their wildtype littermates at 1-month. Correspondingly, 1-month-old cochlear tissue did not show morphological changes in the *Foxj1* cKO in comparison to their wild-type littermates. Normal cochlear hair cell morphology and auditory function indicate that expression of *Foxj1* beyond the E16.5 timepoint is not necessary for cochlear hair cell development and maintenance. As there is a high expression of *Foxj1* in vestibular hair cells, even in mature hair cells, follow up studies will include Vestibular Sensory Evoked Potential testing of *Foxj1* cKO and control littermates to examine vestibular function as well as histological analysis of vestibular hair cells.

This research was supported by the National Institutes of Health Summer Internship Program.

#### **O.68**

A NECK MASS OF THYMIC ORIGIN IN A PEDIATRIC PATIENT. Audrey Zauher\*, Jonathan Jacobs<sup>1</sup>, and Amal Isaiah<sup>2</sup>, <sup>1</sup>Department of Pathology and <sup>2</sup>Department of Otorhinolaryngology - Head and Neck Surgery, University of Maryland School of Medicine, Baltimore, MD.

In this study, we present the case of a 10-year-old boy with a left-sided neck mass. Although most neck masses in children are non-cancerous, their etiology can be complex, especially in neck masses of congenital origin. The workup of a pediatric neck mass includes imaging and cytopathology. In this case, the histopathology of the excised mass revealed thymic tissue, which helped establish the diagnosis of a thymopharyngeal duct cyst. Thymopharyngeal duct cysts, although rare, can be diagnosed preoperatively by characteristic tapering toward the mediastinum. Cytopathology may demonstrate Hassall corpuscles. These unique features can help disentangle the differential diagnoses, which commonly include thyroglossal duct cysts, venolymphatic malformations, and branchial cleft cysts.

#### **O.69**

POST-THYROIDECTOMY HYPOPARATHYROIDISM. Maria Som\*, Danielle Sidelnikov\*, Jane Tong<sup>1</sup>, and Kelly Moyer<sup>1</sup>, <sup>1</sup>Department of Otorhinolaryngology - Head and Neck Surgery, University of Maryland School of Medicine, Baltimore, MD.

Hypoparathyroidism is the most frequent complication of total thyroidectomy, with an expected incidence of 0-3% (for permanent hypoparathyroidism) and 19-38% (for transient hypoparathyroidism). Studies have identified some risk factors for the development of this condition including female gender, low-volume thyroid surgeons, and previous thyroid surgery. However, current literature has not established if BMI or thyroid gland

size are associated with the development of hypoparathyroidism following thyroidectomy. This study aims to identify patient characteristics that are associated with the development of hypoparathyroidism after total thyroidectomy. Specifically, this study will investigate if BMI, goiter size, and other patient factors are associated with development of this complication. This was a retrospective review of all patients who underwent a first-time thyroidectomy or completion thyroidectomy at our institution from 2017 to 2022. Logistic regression was performed to assess association between BMI, thyroid mass, and thyroid size and the presence of post-operative hypoparathyroidism. Once analysis is complete, this will aid in the identification of patients at risk for postoperative hypoparathyroidism. The results of the study have the potential to improve informed patient consent before surgery and prevent development of permanent hypoparathyroidism. This could improve medical outcomes as well as patient satisfaction.

#### **O.70**

**ELUCIDATING RELATIONSHIPS BETWEEN SERUM AMH LEVELS AND PEDIATRIC FOLLICULAR DENSITY IN OVARIAN HISTOLOGICAL TISSUE FOLLOWING OTC.** Sarina Hanfling\*, Jacqueline Maher<sup>1</sup>, Ninet Sinai<sup>2</sup>, Ramya Balasubramanian<sup>1</sup>, Hong Lou<sup>1</sup>, Lucy Sierra<sup>1</sup>, Taylor Badger<sup>1</sup>, and Veronica Gomez-Lobo<sup>1</sup>, <sup>1</sup>Division of Pediatric and Adolescent Gynecology, Department of Obstetrics, Gynecology and Reproductive Sciences <sup>2</sup>Department of Biostatistics and Clinical Epidemiology Service, NIH, Bethesda, MD.

Anti-Mullerian Hormone (AMH) is a key biomarker that is commonly used to quantify ovarian reserve and folliculogenesis in adult females. AMH is occasionally used to evaluate for premature ovarian insufficiency in prepubertal females and is commonly used to evaluate post-chemotherapy effects on ovarian reserve. There has been very limited research that highlights relationships between AMH and the physical cellular structure in the growing pediatric ovary. Human ovarian tissue slides were reviewed from the NICHD/Oncofertility Ovarian Tissue Image Bank in patients who underwent an oophorectomy for fertility preservation. Patients were 0-24 years old with AMH lab values drawn prior to oophorectomy. Diagnoses included cancer, hemoglobinopathies, and genetic/autoimmune conditions. Any diagnoses known to independently impact AMH were excluded, such as galactosemia, variations in sex characteristics, or Turner's Syndrome. 2-3 sections were analyzed to calculate a mean follicular density (MFD) (total follicles per mm<sup>2</sup> of cortical area) for each patient. 55 patients were identified, and 169 slides were reviewed for MFD. Of the 55 patients, 26 (47.3%) had solid tumors, 8 (14.6%) had hematological malignancies, 15 (27.3%) had hemoglobinopathies, and 6 (10.9%) had genetic immunodeficiencies. Likewise, while 30 (54.6%) received no treatment prior to oophorectomy, the remainder had received chemotherapy, radiation, hydroxyurea, or a mix of treatments. Patients' median AMH was 0.72 ng/mL (IQR 0.29-1.96, range 0-6.12). AMH did not correlate with average primordial or total follicle densities ( $r_s = -0.038$ , 95% CI -0.300-0.230,  $p = 0.78$  and  $r_s = -0.029$ , 95% CI -0.292-0.238,  $p = 0.83$ , respectively). AMH may not be a useful biomarker for ovarian reserve in the pediatric population since it did not correlate with MFD. Further research is needed to identify biomarkers that better correlate with follicular density in pediatric ovaries, which may assist in guiding clinical care.

This research was supported by Z1A HD009005.

#### **O.71**

**EVALUATION OF HYPERPARATHYROIDISM IN SIMULTANEOUS PANCREAS-KIDNEY TRANSPLANT RECIPIENTS.** Lane Cavey\*, Erin Foster<sup>1</sup>, Ruchin Patel<sup>2</sup>, Rapheal Meier<sup>2</sup>, Mohamed Ibrahim<sup>3</sup>, Hilary Whitlatch<sup>4</sup>, and Silke Niederhaus<sup>2</sup>, <sup>2</sup>Division of Transplant Surgery, Department of Surgery and <sup>3</sup>Division of Nephrology and <sup>4</sup>Division of Endocrinology, Diabetes, and Nutrition, Department of Medicine, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

Little is known about the effects of tertiary hyperparathyroidism (3HPT) on outcomes in simultaneous pancreas-kidney transplant recipients (SPKTR). We hypothesized that SPKTR with 3HPT may have lower patient, kidney or pancreas graft survival, and worse long term kidney allograft function. We hypothesized that SPKTR with 3HPT would have more worsening of iliac artery calcifications, more bone fractures, and cardiac events. A retrospective chart review included 157 consecutive SPKTR from 1/1/2013-12/31/2020. Eighteen were excluded due to lack of data ( $n = 11$ ) or prior transplant ( $n = 7$ ), leaving 139 for analysis. Both groups were similar in demographics. Since only 56.4% of patients had 1-year iPTH data, persistent 3HPT was defined as

iPTH>65pg/mL at most recent follow-up (mean 853 v 998 days in non-3HPT). Kaplan-Meier analysis showed no significant differences in patient, kidney or pancreas graft survival, cardiac events, or fractures. Scoring of iliac artery calcifications on computed tomography scans pre- and post- transplant were not different between groups. However, at 5 years, serum creatinine in 3HPT SPKTR was higher ( $1.98 \pm 0.22$  mg/dL) compared to non-3HPT patients ( $1.41 \pm 0.20$  mg/dL),  $p=0.009$ . SPKTR are inconsistently monitored for persistent 3HPT. At 5-years, persistent 3HPT was not associated with measurable differences in patient survival, kidney or pancreas graft survival, cardiac events, bone fractures, or iliac artery calcifications after SPKT. Persistent 3HPT may be associated with poorer long-term kidney allograft function; longer follow-up or a larger study population may show additional differences not seen in this cohort.

## O.72

PARATHYROIDECTOMY OUTCOMES AND PERFORMANCE MONITORING – INITIAL EXPERIENCE OF A JUNIOR SURGEON. Richa Beher\*, Yinin Hu<sup>1</sup>, Kendyl Carlisle<sup>2</sup>, and Aprill Park<sup>1</sup>,  
<sup>1</sup>Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

Parathyroidectomy is a low-risk operation that nevertheless has an experience-driven learning curve. The objective of this study was to capture the initial parathyroidectomy experience of a junior surgeon and compare performance against that of senior partners. We hypothesized that the junior surgeon would demonstrate gradual improvement in rate of successful parathyroidectomy, long-term normocalcemia, and operative duration. A single-institution retrospective cohort study accrued consecutive patients with primary hyperparathyroidism who underwent parathyroidectomy by one of three surgeons: 1 junior partner who just completed training (group A), and 2 experienced senior partners (group B). Measurement of intraoperative parathyroid hormone (ioPTH) was routine. Cases without operative duration ( $n=4$ ) or ioPTH ( $n=3$ ) were excluded. Successful parathyroidectomy was defined by satisfaction of Miami criteria (reduction in ioPTH by  $\geq 50\%$  within 10 minutes after excision). Surgical outcomes were compared using Mann-Whitney U or Fisher's exact tests as appropriate. A cumulative sum control chart (cusum) was generated to capture trends in operative duration, using average group B duration as reference. A total of 85 group A and 106 group B patients were included. There were no differences in the number of parathyroids removed (1.37 vs 1.33 respectively,  $p = 0.44$ ), rate of successful parathyroidectomy (94.1% vs 95.2%,  $p = 0.75$ ), rate of normocalcemia on last follow-up (95.3% vs 92.4%,  $p = 0.55$ ), or surgical complications (0% vs 2.8%,  $p = 0.26$ ). Average operative duration was longer for group A cases (median 110 min vs 92.5 min,  $p < 0.01$ ). Cusum chart indicates a transition in operative duration for the junior partner, with no out-of-bounds decision interval crossed after 25 cases. Careful scrutiny of efficacy outcomes is important in the early experience of junior surgeons performing parathyroidectomy. While nontherapeutic cases are rare, cusum can dynamically capture a "learning phase" through objective, continuous monitoring.

## Poster Presentation Abstracts

Presenters are indicated with “\*” next to their names. [View Posters](#)

### P.01

A CYTOKINE PROFILE ASSOCIATED WITH CORTICAL AND DEEP GRAY MATTER LESIONS IN MULTIPLE SCLEROSIS. Matthew Wilhide\* and Daniel Harrison<sup>1</sup>, <sup>1</sup>Division of Multiple Sclerosis and Neuroimmunology, Department of Neurology, University of Maryland School of Medicine, Baltimore, MD.

The advent of ultra-high field 7-Tesla (7T) magnetic resonance imaging (MRI) has allowed for significant improvements in the detection of cortical and deep (thalamus, caudate, and putamen) gray matter lesions in multiple sclerosis (MS). While white matter lesions are more commonly associated with the disease, gray matter lesions are typically found in progressive, treatment-resistant sub-types of MS that are associated with elevated rates of physical and mental disability. Previous studies have utilized 3T MRI, autopsy examinations, and MS animal models to correlate gray matter pathology in the cortex with increased levels of specific cerebrospinal fluid (CSF) cytokines associated with inflammation and lymphoid neogenesis - a pathophysiologic process in the leptomeninges that involves the formation of tertiary lymphoid follicles. We aim to further characterize cytokine profiles in the blood and CSF of MS patients in association with varying burdens of cortical and deep gray matter lesions. Simultaneously, we hope to explore the relationship between cortical and deep gray matter pathology and gain a better understanding of the underlying disease processes. We are currently utilizing the ITK-Snap segmentation software to identify, count, and calculate volumes for cortical and deep gray matter lesions in 7T MRI scans from 93 MS patients. Gray matter lesions are being manually identified as areas of hypointensity in the cortex, thalamus, caudate, and putamen on T1-weighted (MPRAGE-like) images. Multiplex cytokine analysis will be performed on blood samples collected from the 93 MS patients and CSF samples collected from a subpopulation of 17 patients to measure a variety of pro-inflammatory, B-cell related, and macrophage/monocyte related cytokine levels. Univariate correlation tests will be used to evaluate the relationship between gray matter lesion count/volume and cytokine levels.

Funding for this study was provided by NIH 1R01NS104403-01.

### P.02

A SILENT MAN FROM A VOICELESS POPULATION. Michael Karanja\* and Charles Robinson<sup>1</sup>, <sup>1</sup>Division of Consultation-Liaison, Department of Psychiatry, University of Maryland School of Medicine, Baltimore, MD.

Treatment of incarcerated individuals with severe mental illness has generally been noted to be insufficient. In our case, delayed identification and mismanagement of a mental health crisis greatly impeded medical and psychiatric care of a prisoner. A 36 yo male with a history of catatonic schizophrenia, after a 5-week “hunger strike”, 27- lb. weight loss, stiffness, and hallucinations, was transferred to a community hospital from the secure psychiatric area of the prison. He was found to have a subarachnoid hemorrhage and was found to be catatonic. The patient was returned to the prison health care facility when repeat imaging showed resolution of his subarachnoid hemorrhage. During six subsequent hospital admissions over the next three months, all triggered by decreased PO intake, his catatonic symptoms improved with benzodiazepines, but catatonia recurred after he was discharged back to prison, despite medication administration through NG tube. The medical director consulted an expert in catatonia, and both concluded that inadequate treatment of his severe mental illness and possibility of death; however, correctional staff pursued a gastrostomy tube instead of the recommended ECT therapy for benzodiazepine resistant catatonia. Following gastrostomy surgery, he again was hospitalized with altered mental status after a fall that occurred after his lorazepam dose was increased and imaging consistent with proctitis following diffuse abdominal pain. Medical records show no further change of psychiatric medications in the past five months. Accreditation for prison health care is voluntary and not regulated in the same way hospitals and clinics are regulated in the community. This can produce variation in service delivery and quality of care as well as a lack of oversight on the use of best practices in medical and mental health, leading to potential ethical violations (Canada et al, 2022). Additionally, incarcerated individuals with mental illness are disproportionately housed in state prisons’ disciplinary segregation and supermax units (Galenek et al, 2014), increasing the risk of psychiatric decompensation. In this situation, correctional staff are

effectively gatekeepers to care. Our patient's catatonia was treated as a "hunger strike," and the injury that led to his subarachnoid hemorrhage, which may well have triggered this episode of catatonia, apparently went altogether unnoticed. In addition, mismanagement of his mental health crisis led to limited medication trials and an unnecessary procedure with complications. Substandard care within prison, inaccurate attribution of symptoms, and inability to facilitate appropriate care at outside hospitals greatly worsened this patient's condition. Correctional health care providers, facilities, and staff are unprepared for complex, severe medical and psychiatric diseases; therefore substantial reform is needed.

### **P.03**

NEONATAL OUTCOMES ASSOCIATED WITH FETAL POSTERIOR FOSSA ABNORMALITIES ON PRENATAL ULTRASOUND. Grace Lechmann\*, Nicol Tugarinov<sup>1</sup>, Alison DiSciullo<sup>2</sup>, and Jude Crino<sup>2</sup>, <sup>2</sup>Division of Maternal and Fetal Medicine, Department of Obstetrics, Gynecology and Reproductive Sciences, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

Prenatal ultrasound is used throughout pregnancy to identify fetal anatomic anomalies, including cranial abnormalities. Abnormalities, specifically those affecting the posterior fossa of the fetal brain, can have varying effects on fetal survival and neonatal outcomes. This study aimed to describe common neonatal outcomes for fetuses identified to have posterior fossa abnormalities on prenatal ultrasound. This was a retrospective cohort study of 171 affected pregnancies receiving care at a single, large, urban, tertiary medical center from June 2018 to January 2023. Specific posterior fossa abnormalities included cerebellar abnormalities (banana sign, hypoplasia, and vermis abnormalities) and cisterna magna abnormalities (enlargement, Blake's pouch cyst, Dandy-Walker malformation and variants). Of 171 patients, 12 were lost to follow up. Out of the remaining 159 pregnancies, 55 (34.6%) resulted in elective termination, and 15 (9.4%) experienced an intrauterine fetal demise. Out of the 89 patients with a live birth, 12 were excluded due to lack of neonatal records. Analysis of the remaining 77 neonates provides valuable information regarding outcomes for these fetuses. Of those resulting in live birth, 14 (18.2%) had a subsequent neonatal demise. Thirty (38.9%) required respiratory support after delivery; with 31.2% receiving noninvasive methods (CPAP) and 7.8% needing intubation. Forty-three (55.8%) neonates were admitted to the NICU with an average stay of 23.2 days. The median NICU stay was 10 days with a range of 0 days (same day discharge) to 122 days. Twenty-nine (37.7%) neonates received a Neurology consult, with 15 (19.5%) undergoing Neurosurgical intervention. Neurosurgical interventions included ventricular peritoneal shunts, ventriculosubgaleal shunts, and myelomeningocele repairs. The average hospital stay for neonates not requiring ICU level care was 2.1 days. In terms of longer-term follow-up for these infants, 25 (32.5%) were referred to the NICU follow-up clinic and 30 (38.9%) were referred to the Maryland Infants and Toddlers Program. The data demonstrates that fetuses with posterior fossa abnormalities are at risk for poor outcomes, including fetal and neonatal demise with the majority requiring NICU care and long-term out-patient follow-up.

### **P.04**

VALUE OF ADDITIONAL TESTING IN PRENATAL DIAGNOSIS OF POSTERIOR FOSSA ABNORMALITIES ON ULTRASOUND. Nicol Tugarinov\*, Grace Lechmann<sup>1</sup>, Alison DiSciullo<sup>2</sup>, and Jude Crino<sup>2</sup>, <sup>2</sup>Division of Maternal and Fetal Medicine, Department of Obstetrics, Gynecology and Reproductive Sciences, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

The posterior fossa is a region of the fetal brain that is routinely surveyed on prenatal ultrasound (US). The anatomy of the posterior fossa is well visualized on US and there has been increased interest in the value of risk stratification of posterior fossa abnormalities in the context of additional prenatal testing. The aim for our study was to investigate the value of additional prenatal testing, including fetal MRI, genetic testing, and infection testing in the setting of prenatally diagnosed posterior fossa abnormalities. We conducted a retrospective study of pregnant patients receiving care at the Center for Advanced Fetal Care at University of Maryland Medical Center, a large, urban, tertiary medical center, between June 2018 and August 2023. We included fetuses found to have a posterior fossa abnormality on prenatal US for a total cohort of 171 patients. We included abnormalities specific to the cerebellum/vermis and cisterna magna. Of the patients with posterior fossa abnormalities on US, 48 (28.1%) had a follow up prenatal MRI, 142 (83%) underwent genetic testing (i.e., non-invasive prenatal testing (NIPT) or invasive genetic testing via chorionic villous sampling/amniocentesis), 23

(13.5%) had maternal TORCH serology testing, and 12 (7%) underwent amniocentesis for amniotic fluid infection testing. Of the patients that had genetic testing, 111 (78.2%) had NIPT and 118 (83.1%) had chorionic villous sampling or amniocentesis. NIPT showed elevated risk of T13, T18, T21, or other in 20 (18%). Twenty (17%) fetuses were identified to have a genetic abnormality by invasive testing. Maternal TORCH serology was positive in 10 (43.4%). Amniotic fluid testing was positive for Parvovirus in 1 (8.3%) and otherwise negative. This study demonstrates the wide range of findings that may be associated with posterior fossa abnormalities identified on prenatal US. Additional MRI imaging may be helpful to further characterize the neurologic abnormalities. Genetics testing demonstrates added value to the diagnosis and prognosis of the pregnancy. Finally, infection testing, though limited in frequency of abnormal findings, when identified may have significant implications.

#### **P.05**

**PLAY AND EXPLORATIVE BEHAVIORAL OUTCOMES IN FERRET MODEL OF COMBINED UNDER-VEHICLE BLAST AND CONTROLLED CORTICAL IMPACT-INDUCED TRAUMATIC BRAIN INJURY.** Lorena Hong\*, Molly Goodfellow<sup>1</sup>, Boris Piskoun<sup>1</sup>, Amanda Hrdlick<sup>1</sup>, Julie Proctor<sup>1</sup>, Ulrich Leiste<sup>2</sup>, William Fourney<sup>2</sup>, and Gary Fiskum<sup>1</sup>, <sup>1</sup>Department of Anesthesiology and the Center for Shock, Trauma, and Anesthesiology Research, University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>Department of Aerospace Engineering, University of Maryland-College Park, College Park, MD.

Under vehicle blast (UVB) caused by improvised explosive device detonation can lead to a unique traumatic brain injury (TBI) with or without concurrent head impact in military personnel. Aeromedical evacuation (AE) to higher echelons of care may cause secondary injury and increased risk of mortality in TBI patients. While rodent TBI models have provided useful insights into injury mechanisms, pharmaceutical interventions successful in rodents have not translated into clinical use, perhaps due to differences in neuroanatomy. The ferret is a promising alternative animal model for TBI. Unlike rats, ferrets have a human-like gyrencephalic brain, a ventrally located hippocampus, and higher white to grey matter ratio. Ferrets are also highly social and playful, making them ideal observational study candidates for neurologic injury research. Therefore, this study relies on a ferret model, seeking to characterize injury and/or AE-exposure related changes in explorative and play associated behaviors. Intact male sable ferrets underwent an experimental UVB followed immediately by controlled cortical impact procedure. The following day, animals were exposed to a 6-hour simulated AE in a vacuum chamber (574 mmHg, the equivalent air pressure to a commercial airplane cabin at cruising altitude) or remained at sea level. Approximately 1 week pre-injury (baseline), 6 days post-injury (DPI), and 3- and 6-months post-injury, solitary animals were released into a behavior suite stocked with a standard set of balls, pipes, and boxes and allowed to explore for 5 minutes. Behavior was recorded and the frequency of play (e.g., vocalizations) and explorative (e.g., burrowing) behaviors was quantified. On 6 DPI, one-way ANOVA found that injured animals expressed play behaviors significantly less frequently than naïve animals ( $p < 0.05$ ), regardless of AE exposure. Furthermore, injured animals that remained at sea level displayed significantly less explorative behaviors than naïve animals ( $p < 0.01$ ), but AE-exposed injured animals did not differ from either group. Results demonstrate an acute reduction in play behavior following TBI in ferrets. While analysis of explorative behavior suggests this may be linked to overall hypoactivity in injured animals that remained at sea level, AE-exposed injured animals played less while maintaining similar activity levels to naïve controls. This suggests altered mood may have influenced behavior in this group.

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#### **P.06**

**ADJUVANT INTENSITY MODULATED PROTON THERAPY FOR MANAGEMENT OF BREAST CANCER: A RETROSPECTIVE STUDY OF 5-YEAR ONCOLOGIC OUTCOMES.** Desiree Lejano\*, Elizabeth Nichols<sup>1</sup>, Melissa Vyfhuis<sup>1</sup>, Gurbani Singh<sup>1</sup>, and Sarah McAvoy<sup>1</sup>, <sup>1</sup>Department of Radiation Oncology, University of Maryland School of Medicine, Baltimore, MD.

Intensity Modulated Proton Therapy (IMPT) differs from traditional photon therapy techniques in its ability to fully target the tumor while better sparing its normal surrounding tissues. Proton beams have relatively low dose at entrance and deposits most energy over a narrow range. This range can be optimally targeted to

deliver most of the radiation to the tumor itself, thereby sparing nearby tissues. Due in part to its scarce availability, there is limited data reporting the outcomes of breast cancer (BC) patients treated with IMPT. The purpose of our study is to study 5-year oncologic outcomes in a BC patient population and compare these to historical standards primarily using photon therapy. We performed a retrospective chart review on 453 BC patients that received IMPT as part of adjuvant treatment at the Maryland Proton Treatment Center from 2016 to 2023. Nearly 30% of patients self-identified as black (n=135), average patient age was 54 and approximately 25% (n=109) of patients having Medicare/Medicaid insurance. The number of patients (%) corresponding to the AJCC 8th edition anatomical staging is as follows: Stage 0: 12 (2.7%); Stage I: 91 (20.1%); Stage 2: 197 (43.6%); Stage 3: 152 (33.6%). Median RT dose delivered for patients receiving comprehensive treatment was 50.4 Gy with 81% of patients receiving a boost to either scar, lumpectomy cavity and/or lymph node regions. Median RT dose delivered for patients receiving whole breast radiation was 42.56 Gy with a 10 Gy lumpectomy cavity boost. 5-yr OS by stage was: stage 0: 100%; stage I: 98.8%; stage 2: 93.5%; stage 3: 90.8%. 5-year OS by race was for Black patients: 85.3%; White patients: 95.8%; and other race patients: 96% (95% CI: 1.313-7.681, p=0.010 for Black patients).

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### **P.07**

**THE ROLE OF PD-L1 AND LTBETAR SIGNALING ON B16F10 TRANSENDOTHELIAL MIGRATION.** Greg Zapas\*, Wenji Piao<sup>1</sup>, and Jonathan Bromberg<sup>1</sup>, <sup>1</sup>Division of Transplant, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

Melanoma often has poor prognosis and treatment options once lesions have metastasized. One of the most important treatment options is immunotherapy with the checkpoint inhibitor anti-programmed cell death 1 (PD-1). Regulatory T Cells (Tregs) accumulate in the tumor microenvironment (TME), constrain anti-tumor immunity, and are critical targets for anti-tumor therapies. We previously showed Tregs use surface lymphotoxin (LT $\alpha\beta$ ) and PD-1 to signal LT $\beta$ R and PD-L1 on lymphatic endothelial cells (LECs), thereby promoting Treg lymphatic transendothelial migration (TEM). To further expand treatment options, understanding cellular mechanisms of melanoma biology and immune suppression is key for generating cellular targets. Melanoma cells constitutively express high levels of LT $\beta$ R and PD-L1 and preliminary data show these receptors interact and regulate melanoma growth and migration. These data suggest novel therapeutic potential and a need to decipher the interplay between PD-L1 and LT $\beta$ R signaling, and the tripartite interactions of LECs, Tregs and the TME. Here, we characterized LT $\beta$ R signaling through NF $\kappa$ B in wild type, PD-L1 blocking antibody treated, and PD-L1 depleted mouse B16F10 melanoma cells. We examined signaling molecules via immunofluorescence and Western blot at the protein level and analyzed transendothelial migration of B16F10 cells through LECs via Boyden chamber assays and flow cytometry. Our results showed that PD-L1 couples with LT $\beta$ R-nonclassical NF $\kappa$ B signaling to regulate tumor growth and migration. Blocking both classical and nonclassical NF $\kappa$ B signaling by tumor LT $\beta$ R enhanced immune checkpoint blockade efficacy. In contrast, Tregs stimulated LT $\beta$ R-nonclassical NF $\kappa$ B signaling to enhance tumor growth and migration. Overall, PD-L1 couples with LT $\beta$ R signaling for tumor migration and Tregs enhanced this process. These data suggest a therapeutic role for Treg modulation in cancer treatment to prevent immune suppression in the TME. To further understand the impacts of Tregs on LEC and its role in tumor TEM, we will focus on the downstream signaling molecules, like RelB and p100/p52 processing, in tumor and LECs to characterize the precise interactions between PD-L1 and LT $\beta$ R.

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### **P.08**

**DIGITAL ASSESSMENT OF CMYC AND KI67 IN DIFFUSE LARGE B-CELL LYMPHOMA.** Elise Ahn\*, Michael Kallen<sup>1</sup>, Madhurima Koka<sup>1</sup>, and Zeba Singh<sup>1</sup>, <sup>1</sup>Division of Hematopathology, Department of Pathology, University of Maryland School of Medicine, Baltimore, MD.

CMYC expression by immunohistochemistry has been shown to be an independent prognostic factor in diffuse large B-cell lymphoma (DLBCL), although manual scoring methods suffer from low reproducibility and both intra- and interobserver variation. The critical cut-off value of 40% CMYC expression is often difficult to

determine, due to variability in nuclear stain intensity in tumor cells. We sought to determine if digital image analysis demonstrates utility in CMYC quantification and prognostic impact, in new diagnostic samples of DLBCL. The pathology case files at our institution were reviewed for patients with a new diagnosis of DLBCL, obtained between 2010 and 2023. 30 such patients were selected, and CMYC immunohistochemical stains were scanned into the Aperio CS2 digital pathology scanning system (Leica Biosystems). Tumor areas were defined by manual region of interest selection, after review by 3 board certified hematopathologists. A customized image analysis algorithm was derived from Aperio ImageScope software's preset nuclear macro algorithm, by setting a score of 1+/3 (weak nuclear staining) at a threshold of 220. Percentages of weak (1+/3), moderate (2+/3), and strong (3+/3) tumor nuclei were computed, and H-scores were calculated. Digitally quantified CMYC expression percentages varied widely in the 30 samples (mean 32.8%, standard deviation 12.9%, range 13.5 – 66.7%). The calculated H-scores were similarly variable (average 53.1, standard deviation 26.8, range 21.6 - 131.8). H-scores demonstrated a negative correlation with overall survival ( $r=0.27$ ). When an H-score cut-off value of 75 was selected, the group with H-scores > 75 demonstrated lower overall survival (average 961 days, standard deviation 824 days) than the group with H-scores < 75 (average 2049 days, standard deviation 818 days); the relationship is statistically significant ( $p<0.05$ ). Digital image analysis of CMYC expression demonstrated diagnostic utility in a group of 30 patients with newly diagnosed DLBCL. Calculated H-scores correlated inversely with patient survival, and an H-score cut-off value of 75 separated patients into longer and shorter survival groups.

#### **P.09**

INVESTIGATION OF THE ANTI-CANCER PROPERTIES OF GLYCOLYSIS INHIBITOR 3-BROMOPYRUVATE (3-BP) AND RADIATION (RT) ON PANCREATIC CANCER CELL LINE MODELS.. Bolutife Olagunju\*, Hem Shula<sup>1</sup>, Sanjit Roy<sup>1</sup>, Tijana Dukic<sup>2</sup>, Binny Bhandary<sup>1</sup>, Young Ko<sup>3</sup>, and Zachery Keepers<sup>2</sup>, <sup>1</sup>Department of Radiation Oncology, <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD and <sup>3</sup>Department of Radiation Oncology, KoDiscovery, LLC, Baltimore, MD.

Pancreatic cancer is the fourth most lethal cancer in the world, with a low five-year relative survival rate of 12.5%. The development of novel chemotherapy drugs is vital to combat the disease. To achieve this aim, we targeted the glycolytic pathway in cancer cells in our study. In this study, we targeted the glycolytic pathway because most cancer cells rely on glycolysis for rapid growth based on the Warburg effect. In our experiments, we used two human pancreatic cancer cell lines (MIA-PaCa-2 and PANC-1). These cells were treated with 3-Bromopyruvate (newly formulated name: KAT- KOH Discovery advanced therapeutics), a strong inhibitor of the rate-limiting enzymes in the glycolysis pathway. We also treated the cells with radiation doses (2-6 Gy) for 24 hours. Then, we conducted a cell proliferation assay, Clonogenic survival assays (using crystal violet), ATP assay, cell morphology with a light microscope, and western blots using various antibodies. Preliminary results from the cell proliferation assay show that KAT dose-dependently inhibits cell growth in cancer tumor cells. Cell growth in both cancer cell lines was further inhibited when KAT was combined with low doses of radiation. The Clonogenic survival assays also show that KAT inhibited colony formation. Light microscope imaging shows that KAT induces unique morphological changes in cancer cells. The ATP assay shows decreased cell viability (based on the detection of ATP) in both cell lines. Lastly, western blots show that KAT dose-dependently inhibits the expression of active Phospho-beta-Catenin at position serine 552. This antibody is known to be essential for the development and progression of many cancer types. The results of this study demonstrate that KAT, in combination with radiation, might be a very effective anti-pancreatic cancer therapy.

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#### **P.10**

DECIPHER GENOMIC TESTING CAN STRATIFY RISK OF EXTRACAPSULAR EXTENSION IN PROSTATE CANCER PATIENTS WITH PI-RADS LESIONS SCORED 4 AND BELOW. Daniel Shats\*, Amir Khan<sup>1</sup>, Michael Naslund<sup>1</sup>, and Minhaj Siddiqui<sup>1</sup>, <sup>1</sup>Division of Urology, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.



Magnetic resonance imaging (MRI) is a highly utilized tool for risk-stratification of prostate cancer. The Decipher test is a genomic classifier and is being used for supplemental prognostic analysis of this disease. Extracapsular extension (ECE) is known to be a prognostic factor in prostate cancer. The aim of this study was to determine if the Decipher test can risk-stratify for ECE in patients with lower-risk MRI lesions. This is a retrospective case-control study looking at patients who underwent Decipher testing for prostate cancer between June 2015 and June 2023 at the University of Maryland Medical Center. A majority of the patient cohort underwent robotic-assisted radical prostatectomy (RARP) following their MRI. ECE in the RARP patients was determined on pathology, while the MRI interpretation was used to assess for ECE in patients without definitive treatment. The Decipher test reported a 5-year metastasis risk, a proprietary Decipher score, and genomic risk classification into tiers. Two-sample t-tests were employed to compare PI-RADS MRI score, Decipher 5-year metastasis risk, and Decipher score among those with and without ECE. Decipher genomic risk tiers and PI-RADS scores were also plotted in a contingency table, and stratified by ECE. Of the 67 patients included in the study, 55% (37) had ECE. Mean Decipher score for the ECE cohort was 0.65 compared to 0.53 for the cohort without ECE ( $p = 0.04$ ). Among patients with PI-RADS scores  $\leq 4$ , 20% (3/15) had ECE in the low Decipher genomic risk category, 33% (2/6) in the intermediate-risk category, and 65% (11/17) in the high-risk category ( $p = 0.03$ ). In addition, 0% (0/6) of patients with PI-RADS scores  $\leq 3$  and a low Decipher genomic risk had ECE. Both PI-RADS scores and Decipher metrics significantly differ among patients with and without ECE. Further analysis shows that Decipher may serve utility in stratifying risk for patients with lower-suspicion PI-RADS scores. This needs to be assessed more thoroughly in the future, as these techniques may serve a complementary role in the clinical decision making of a disease with many routes of potential management.

## P.11

INTERINSTITUTIONAL COMPARISON IN IMPLEMENTING OPHTHALMOLOGY SURGICAL WORKSHOP TO INCREASE INTEREST AND CONFIDENCE. Euna Cho\*, Dhruv Shah<sup>1</sup>, Geoffrey Nguyen<sup>2</sup>, Eric Lai<sup>2</sup>, Amrik Gill<sup>1</sup>, Erik Gunnarsson<sup>1</sup>, Janet Alexander<sup>1</sup>, and Moran Roni Levin<sup>1</sup>, <sup>1</sup>Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>Department of Ophthalmology and Visual Sciences, Yale School of Medicine, New Haven, CT.

In the United States, 7.5% of the population suffers from visual impairment, reflecting a need for early intervention and prevention led by primary care providers. However, ophthalmology education is not well defined in many medical school curriculums, limiting the capacity and comfort levels of primary care residents and medical students. This requires addressing the knowledge gap and supplementing ophthalmological medical education. We investigated the effect of an ophthalmology skills workshop on students' interest and confidence across varying institutions. Under the guidance of physician preceptors, 154 medical and undergraduate students participated in ophthalmology skills modules: 1) eye examination, 2) conjunctival suturing on a fabric-wrapped picture frame, 3) scleral pass on a silicon sphere, and 4) capsulorhexis simulation on a tomato. At five institutions, interaction variables were measured before and after workshop engagement via 10-point Likert scales. Paired t-test showed students' interest significantly increase from  $5.6 \pm 2.5$  to  $6.7 \pm 2.3$  ( $p < 0.001$ ). Likewise, understanding of the eye exam increased, the confidence level for modules 2-4 increased, and stress was reduced ( $p < 0.001$ ). Institution-specific analysis indicated increase in interest from [A= $5.4 \pm 2.3$  ( $p < 0.001$ ); B= $6.7 \pm 2.6$  ( $p = 0.604$ ); C= $6.0 \pm 3.1$  ( $p = 0.016$ ); D= $6.8 \pm 2.4$  ( $p = 0.001$ ); E= $4.9 \pm 2.1$  ( $p = 0.001$ )] to [A= $6.6 \pm 2.1$ ; B= $6.4 \pm 3.0$ ; C= $7.2 \pm 2.8$ ; D= $7.8 \pm 2.0$ ; E= $6.8 \pm 2.2$ ]. Other variables demonstrated a similar pattern across all institutions. ANOVA further confirmed no significant effect of institution on all pre-/post-interaction changes ( $p > 0.10$ ). Future studies may extend the workshop to the West Coast for increased regional diversity. This affordable, replicable ophthalmology skills workshop consistently enhanced interest, understanding, and confidence levels with stress reduction. There was no difference between different institutions, demonstrating the potential to augment ophthalmology exposure nationally via this workshop.

## P.12

ALTERATIONS IN RETINAL BLOOD FLOW AUTOREGULATION IN HUMAN SUBJECTS WITH EARLY GLAUCOMA AS MEASURED WITH LASER SPECKLE IMAGING.. Mary Ventimiglia\*, Yash Porwal<sup>1</sup>, Renad Alhabashi<sup>1</sup>, He Eun Forbes<sup>1</sup>, Lily Im<sup>1</sup>, Sarah Ullah<sup>1</sup>, Sara Francomacaro<sup>1</sup>, and Osamah Saeedi<sup>1</sup>, <sup>1</sup>Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

Dysregulation of retinal blood flow may contribute to the pathogenesis of primary open angle glaucoma (POAG) and serve as an early biomarker for disease. The purpose of this pilot study is to determine differences in retinal autoregulation between controls, pre-perimetric glaucoma (PPG), and mild POAG patients. We hypothesize that subjects with PPG and mild POAG will have impaired blood flow as compared to controls. Eligible participants were recruited into three groups: control, PPG, and mild POAG as per Hodapp-Parrish-Anderson criteria. Sequential imaging was obtained with the XyCAM RI at baseline and induced-hyperoxia. Blood flow velocity index (BFVi) metrics were calculated in the optic disc, optic disc vessels and fundus. Paired t-tests were used to compare metrics between baseline and hyperoxia. Unpaired t-tests were used to compare metrics between groups. This pilot study included 19 eyes from 11 subjects with mild POAG, 7 eyes from 4 subjects with PPG, and 4 eyes from 2 control subjects. Broadly, this cohort was aged  $63 \pm 11$  years, 60% female and 40% male with a racial composition of 73% black, 20% white and 7% other. We found that in POAG, mean BFVi decreased from  $6.6 \pm 1.1$  at baseline to  $6.1 \pm 1.2$  in hyperoxia ( $p = 0.03$ ). In controls a larger decrease in mean BFVi from baseline was shown from  $9.1 \pm 1.1$  to  $7.7 \pm 0.8$  but did not reach statistical significance in this small sample ( $p = 0.06$ ). Mean BFVi was greater in controls than in POAG at baseline ( $p = 0.0003$ ) and in hyperoxia ( $p = 0.08$ ). This study confirms clear differences in baseline retinal blood flow demonstrated in our prior work, while also suggesting alterations to blood flow autoregulation in glaucoma patients. These data highlight mean BFVi as a potential indicator of pathogenic changes to dynamic blood flow in early glaucoma. Vasoconstriction limits baseline retinal perfusion in glaucoma, thus we hypothesize that a larger sample will show greater perfusion changes in controls than in glaucoma as well as clear differences between glaucoma and PPG group. This study is actively recruiting from the faculty practice of the University of Maryland Department of Ophthalmology and Visual Sciences.

## P.13

THE IMPACT OF RETINOPATHY OF PREMATURITY SCREENING ON FEEDING READINESS AND VOLUME OF ORAL INTAKE IN PRETERM INFANTS. Urjita Das\*, Euna Cho<sup>1</sup>, Sera Chase<sup>1</sup>, He Eun Forbes<sup>2</sup>, Madi Kore<sup>1</sup>, Roni Levin<sup>1</sup>, Sripriya Sundararajan<sup>3</sup>, and Janet L Alexander<sup>1</sup>, <sup>1</sup>Department of Ophthalmology and Visual Sciences, and <sup>3</sup>Division of Neonatology, Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>Department of Ophthalmology and Visual Sciences, New York Institute of Technology College of Osteopathic Medicine, Old Westbury, NY.

Serial retinopathy of prematurity (ROP) screening with binocular indirect ophthalmoscopy allows for early detection and improved vision outcomes in preterm infants. However, screening is painful and stressful as widely evidenced by vital signs and behavioral pain scores. Oral feeding intolerance is an additional adverse effect of ROP screening with little information in the current literature. In this retrospective study between February 2022 and July 2023, the feeding behavior of preterm infants ( $N=100$ ) was measured using the volume and percentage of oral (PO) intake of goal enteral feeding volumes, frequency of emesis episodes, and feeding readiness scores using the Infant Derived Feeding Scale (IFDS) at 3-hour time intervals 24 hours before and after examination, and then analyzed using paired t-tests and comparison of means. During the study period, 190 binocular indirect ophthalmoscopy (BIO) exams were completed on infants with gestational ages of  $27.5 \pm 2.6$  weeks and birthweights of  $991 \pm 323$  grams. Compared to pre-examination, there was significantly poorer feeding readiness after screening (mean difference:  $-0.148$ ,  $p=0.04$ ). Total PO intake volume ( $p=0.33$ ) and percentage of PO intake of enteral goal ( $p=0.72$ ) did not significantly decrease. Frequency of emesis was insignificant ( $2.9$  pre- vs  $2.4$  post-examination;  $p=0.88$ ). Infant feeding behaviors are negatively impacted by ROP screening. Specifically, we found worse feeding readiness scores, reflecting poorer infant alertness, rooting, taking the pacifier, and extremity tone following 24 hours after examinations. Our findings improve the current understanding of the stress caused by ROP screening and should prompt investigation into gentler methods of examination with the use of comfort tools during and after screening.

#### **P.14**

IDENTIFYING INFLUENTIAL FACTORS ON PERCEIVED SOCIAL SUPPORT IN AGING IN RURAL COSTA RICA. Christine Wan\*, Lillianna Pedersen<sup>1</sup>, Shania Bailey<sup>1</sup>, Hima Konduru<sup>1</sup>, Nicholas Leahy<sup>1</sup>, Melissa Rallo<sup>1</sup>, Alexis Vetack<sup>1</sup>, and Carlos Faerron Guzmán<sup>1</sup>, <sup>1</sup>Department of Medicine, University of Maryland School of Medicine, Baltimore, MD.

Costa Rica has one of the world's highest life expectancies, rivaling that of other countries that spend more per capita health spending. Considerable interest has thus been devoted to understanding health determinants that contribute to a higher life expectancy and healthy aging among Costa Ricans. Most research has focused on urban areas and not much is known about the determinants of healthy aging, such as perceived social support, among rural Costa Ricans. This study aimed to identify correlations between perceived social support and other factors, such as age, gender, and civil status, in rural Coto Brus, Costa Rica. The survey given included the Spanish version of the Multidimensional Scale of Perceived Social Support (MSPSS), a 12-item questionnaire that assesses an individual's perceived social support. The scale consists of three subdimensions (family, friends, significant other) and each item is rated on a 7-point Likert scale (1 = very strongly disagree to 7 = very strongly agree). Data were collected by traveling to various community groups to recruit participants. Participants consisted of 63 adults (21 males, 42 females), ranging in age from 62 years to 95 years with an average age of 73 years (SD=7.01). For total MSPSS scores, 49 adults had high perceived social support, 12 had medium, and 2 had low. Most participants reported high levels of perceived social support, emphasizing the importance of social connections in this community. Notably, participants that were married ( $p = 0.04$ ) or male ( $p = 0.001$ ) reported higher levels of perceived social support compared respectively to their unmarried and female counterparts. The former finding aligns with existing research and highlights the importance of marital relationships in promoting well-being. The latter finding suggests potential gender-specific dynamics and prompts further exploration into the specific factors influencing social support among males in this community. These results may guide health care providers and policymakers, both in Costa Rica and other countries, to create strategies focused on improving perceived social support to foster healthy aging in their communities.

This research was supported by the Alicia and Yaya Fellowship.

#### **P.15**

EXAMINING PHYSICAL ACTIVITY AND LIFE EXPECTANCY IN AN AGING POPULATION IN COSTA RICA. Lillianna Pedersen\*, Shania Bailey<sup>1</sup>, Hima Konduru<sup>1</sup>, Nicholas Leahy<sup>1</sup>, Melissa Rallo<sup>1</sup>, Alexis Vetack<sup>1</sup>, Christine Wan<sup>1</sup>, and Carlos Faerron Guzmán<sup>1</sup>, <sup>1</sup>Department of Medicine, University of Maryland School of Medicine, Baltimore, MD.

Increased levels of physical activity are known to be positively correlated with cardiovascular health, reduced risk of chronic diseases, enhanced cognitive function, and better mental well-being. These associations are particularly important in aging populations, as increased physical activity can improve health-related quality of life, and begin to reveal relationships contributing to discrepancies in life expectancy between countries. Costa Rica, a middle income country, has a life expectancy that exceeds several high-income countries, including the United States, despite lower relative healthcare spending. This study aims to describe frequency, duration, and intensity of physical activity, as well as indicators of a sedentary lifestyle, of older adults in San Vito de Coto Brus, Costa Rica. Prior studies have been done exploring factors contributing to aging in more urban areas of Costa Rica, but not in rural areas such as San Vito. We conducted sixty-three face-to-face interviews with participants aged 65 and over, using the Spanish version of the International Physical Activity Questionnaire (IPAQ). This validated instrument assesses various dimensions of physical activity, including light, moderate, and vigorous-intensity activities, as well as time spent sitting per day. Preliminary results of this study demonstrate that older adults in this population spend a relatively low amount of time sitting each day, doing sedentary activities such as watching television or resting. Many interviewees reported spending up to several hours per day doing housework, gardening, farm labor, or taking care of family members. Additionally, some reported routinely participating in community-based activities such as dance classes. These results contrast a more commonly sedentary lifestyle seen in aging populations in some high-income countries, such as the United States. Further research exploring clinical indicators of cardiovascular health is warranted to further elucidate the effects of physical activity on morbidity and mortality in this population.

This research was supported by the Alicia and Yaya Fellowship.

### **P.16**

EXPERIENCE OF AGING IN INDIGENOUS COMMUNITIES IN COSTA RICA: A QUALITATIVE STUDY OF THE NGÄBE-BUGLÉ COMMUNITY IN COTO BRUS. Melissa Rallo\*, Hima Konduru<sup>1</sup>, Nicholas Leahy<sup>1</sup>, Shania Bailey<sup>1</sup>, Lillianna Pedersen<sup>1</sup>, Alexis Vetack<sup>1</sup>, Christine Wan<sup>1</sup>, and Carlos Faerron Guzmán<sup>2</sup>, <sup>1</sup>University of Maryland School of Medicine and <sup>2</sup>University of Maryland, Baltimore, Baltimore, MD.

Indigenous communities grapple with unique challenges in the aging process, often encountering amplified barriers to healthcare and resources, perhaps due to their remote locations and distinctive cultural backgrounds. Nevertheless, little research exists on the aging experience within Coto Brus, Costa Rica's indigenous community (geographically located in "La Casona"). The aim of this study is to identify challenges and potential resources essential for enhancing the quality of life and aging experience for elderly community members. This study employs a qualitative design, utilizing semi-structured interviews to collect data from elderly participants. The study comprised of interviews with 14 participants (6 female, 8 male) aged 52-90, each lasting between 20-50 minutes. Participants were selected through purposeful and snowball sampling, and individual interviews were conducted at their residences. Interviews were recorded and transcribed if consent was provided, and thematic analysis was employed to evaluate the interviews. Three themes emerged: economic difficulties, insufficient social support, and cultural aspects related to La Casona, with a total of nine subcategories. Economic challenges encompassed financial constraints, food insecurity, housing and infrastructure needs, and difficulties in accessing healthcare. Insufficient social support was evident through heavy reliance on family, limited community aid, and an absence of engaging activities. Cultural aspects highlighted the community's deep connection to nature and concerns about the fading cultural heritage among younger generations. Addressing the economic and social needs of the Ngäbe-Buglé elderly community is crucial. Improving healthcare accessibility, enhancing social interactions, and preserving cultural heritage are vital for a holistic and improved aging experience. Additionally, the findings provide insights for public health interventions and policy changes to enhance the well-being of the elderly within this community. To support the indigenous community and its' elders, these themes must be addressed by government leaders in Coto Brus.

This research was supported by the Alicia and Yaya Fellowship.

### **P.18**

CARDIOVASCULAR AND MUSCULAR CHANGES DURING LONG-DISTANCE HIKING. Alexander Noonan-Shueh\*, Hannah Frederick<sup>1</sup>, Alexis Salerno<sup>2</sup>, Daniel Craighead<sup>3</sup>, Daniel Gingold<sup>2</sup>, and Douglas Sward<sup>2</sup>, and <sup>2</sup>Department of Emergency Medicine, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD and <sup>3</sup>University of Colorado Boulder, Boulder, CO.

Long-distance hiking has gained significant popularity in recent years. Hikers are exposed to a range of stressors, including extended periods of aerobic exercise, suboptimal nutrition, and limited opportunities for recovery. This case study examines the relationship between long-distance hikes spanning from 200 to 800 miles and the changes on arterial elasticity, pulse wave velocity, and muscular thickness in four individuals. Changes in arterial elasticity were measured using an ultrasound via flow mediated dilation and pulse wave velocity software. The variables were measured within 48 hours before and after the hikes, with continued biweekly post-hike measurements to monitor any lasting physiological changes. Two of the four hikers also recorded daily measurements on the trail using a portable ultrasound device. The findings revealed an average increase of 9.04% (95% CI 9.14% - 8.93%) in pulse wave velocity, indicating an increase in arterial stiffness. Arterial elasticity decreased by an average of 20.25% (95% CI 8.34% - 32.3%) via flow mediated dilation measurements of the hikers' brachial arteries. There was also a decrease in rectus femoris thickness of 7.6% (95% CI -1.44% - 16.7%) among the hikers. These results highlight the potentially unwanted physiological changes that may be associated with these long distance hikes.

### **P.19**

WORSENERD CARDIAC OUTCOMES FROM IMPELLA 5.5 PRIOR TO LVAD PLACEMENT. Hannah Frederick\* and Aakash Shah<sup>1</sup>, <sup>1</sup>Division of Cardiothoracic Surgery, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

An increasing number of heart failure patients are receiving Impella 5.5 prior to a left ventricular assist device (LVAD). Yet, little is known about the effects of pre-implantation impella support on patient outcomes.

The flow readout for Impella and durable LVAD are both estimations based on algorithms. In addition, the Impella device is maintained across the aortic valve and can induce varying degrees of aortic insufficiency. We hypothesized that at similar flow estimations, a durable LVAD would provide better support for end-organ perfusion and ventricular unloading. A retrospective study was performed on ten patients who received Impella 5.5 as a bridging device prior to LVAD placement. Mean and median were utilized to determine patient outcomes on ejection fraction, left end diastolic diameter, and valvular abnormalities. Secondary outcomes included changes in laboratory values during and after Impella support. Descriptive data was also collected on patients' past medical history and hospital course. From 2020 to 2023, 10 patients were examined who received pre-implantation Impella support prior to LVAD. Mean left ventricular end diastolic diameter increased from 65 mm to 66 mm after one week of Impella support, compared to a decrease from 65 mm to 50 mm improved within 24 hours of LVAD placement. The average classification of aortic regurgitation was normal prior to Impella placement, and then worsened to mild regurgitation after Impella placement. Aortic regurgitation then improved to trace within 24 hours after LVAD placement. Creatinine improved within 24 hours of Impella placement from 1.3 to 1.1. The creatinine also improved with LVAD compared to Impella, from 0.91 to 0.81 within 24 hours of LVAD placement. In conclusion, the current flow estimations may underestimate the additional cardiac output provided by Impella compared to durable LVAD, which may be due to increased AI. Also, end organ perfusion improved with LVAD placement compared to Impella based on patient creatinine levels.

#### **P.20**

**AN ENDOVASCULAR APPROACH TO THE TREATMENT OF TYPE A AORTIC DISSECTION.** Maxwell Emmanuel\* and Samhati Mondal<sup>1</sup>, <sup>1</sup>Division of Cardiothoracic Anesthesia, Department of Anesthesiology, University of Maryland School of Medicine, Baltimore, MD.

Our patient is an 81-year-old female, presenting with a type A aortic dissection involving the aortic arch, along with multiple comorbidities, deemed inoperable for open repair. Diagnosis-associated mortality rates are up to 2% per hour after symptom onset (Nienaber & Eagle, 2003). In response, an endovascular approach was taken with general anesthesia administration at an increased risk of cardiovascular events. Thus, induction was performed with close monitoring. A femoral vein central line provided minimal risks of impeding the fluoroscopic field. Cerebral oximetry and intraoperative neurologic monitoring also enabled successful management. Post-operatively, she remained intubated and demonstrated full neurological recovery.

#### **P.21**

**MAPPING BLACK CARBON EXPOSURE MEASURED THROUGH MOBILE MONITORING IN BALTIMORE CITY NEIGHBORHOODS IN 2022.** Leena Khoury\*, Snehal Patel<sup>1</sup>, and Timothy Canty<sup>2</sup>, <sup>1</sup>Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>University of Maryland College Park, College Park, MD.

Air pollution continues to pose a significant threat to public health, and it is understood that urban cities have a higher overall exposure to air pollution. At this time, there is an incomplete understanding of the daily exposure to greenhouse gas emissions and other air pollutants experienced by urban communities, particularly those in Baltimore. Black carbon is a particulate that has been demonstrated to have significant health implications for cardiovascular and respiratory health, and it is commonly emitted by machines that use gas and diesel engines. Using data collected from the National Oceanic and Atmospheric Administration's Air Resources Car (ARC) on days in March, April, and May of 2022, and common source GIS mapping software, we can demonstrate a preliminary but suggestive black carbon profile of Baltimore City. Using publicly available US census data, we can begin to understand the demographic of people affected by this black carbon profile on a day-to-day basis. Within our black carbon profile, we have also identified areas of higher risk for exposure that involve outdoor facilities like parks, public pools, and schools. These preliminary findings are demonstrative of the need to further this kind of research in medicine as climate exposures will continue to contribute to public health risk and influence how we will practice medicine in the future.

This work was supported by Dr. Timothy Canty.

## P.22

EPIDEMIOLOGY AND PREDICTORS OF CAR SEAT TOLERANCE SCREEN FAILURE IN PATIENTS WITH TRISOMY 21. Emily Gerard\* and Natalie Davis<sup>1</sup>, <sup>1</sup>Division of Neonatology, Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD.

The American Academy of Pediatrics (AAP) recommends routine pre-discharge car seat tolerance screening (CSTS) for all infants born <37 weeks gestational age (GA). They also note that hospitals should develop additional protocols for premature/SGA infants and those at risk for obstructive apnea, bradycardia, or oxygen desaturation, such as infants with hypotonia or Trisomy 21. Previous studies have demonstrated that 10-20% of NICUs and nurseries screen all infants with Trisomy 21 and 30-55% test all those with hypotonia, but no published studies have focused on CSTS outcomes in this high-risk population. The object of this study is to identify incidence and predictors of CSTS failure in a large cohort of infants with Trisomy 21. This study is designed as a retrospective medical record review of infants born 2013-2021 diagnosed with Trisomy 21. Identified CSTS failure incidence in this cohort. Collected data on antenatal and clinical factors during admission including birth GA, cardiac and gastrointestinal (GI) comorbidities, and evidence of hypotonia. Performed bivariate analyses comparing clinical and demographic data between infants who did vs. did not undergo CSTS, and between those who passed vs. failed initially. Of 84 infants with Trisomy 21, 89% (n=75) had documentation of a pre-discharge CSTS. Ninety-six percent (n=81) had hypotonia and 20% (n=17) were born prematurely. 11% (n=8) failed their initial CSTS, of which 88% (n=7) were due to desaturation events. Only one (12.5%) premature infant failed initial CSTS; the remaining 7 (87.5%) CSTS failures were term. In addition, no SGA infants failed; all failures were in infants of appropriate size. We found no differences in cardiac, GI, or neurologic diagnoses between those who passed vs. failed initial CSTS. Infants with Trisomy 21 have many risk factors for deterioration in the semi-upright car seat position; 11% of subjects in our cohort had unstable respiratory status on testing. The majority were term and AGA and would not have been caught by current screening guidelines. CSTS protocols may need to be updated to optimize patient safety and allow for interventions prior to discharge home.

## P.23

IMPACT OF HYPERBARIC OXYGEN THERAPY IN SKIN AND SOFT TISSUE INFECTIONS ON PATIENT OUTCOMES. Samantha Asuncion\*, Sharon Henry<sup>1</sup>, William Teeter<sup>2</sup>, Kinjal Sethuraman<sup>2</sup>, Quincy Tran<sup>2</sup>, Brook Andersen<sup>3</sup>, and Anna Brown<sup>3</sup>, <sup>1</sup>Division of Wound Healing and Metabolism, Department of Surgery and <sup>2</sup>Department of Emergency Medicine, University of Maryland School of Medicine, Baltimore, MD and <sup>3</sup>Department of Shock Trauma, University of Maryland Medical Center, Baltimore, MD.

Necrotizing soft tissue infections (NSTIs) are severe bacterial infections with high morbidity and mortality rates. Standard treatment involves surgical debridement, antibiotics, and in some cases, hyperbaric oxygen therapy (HBO) is used as adjunct therapy. The use of HBO in treatment of NSTIs is not standardized across clinical practice due to the limited evidence for its efficacy in improving patient outcomes. This retrospective study aims to compare the outcomes of patients with NSTIs who have or have not received HBO in addition to standard treatment in order to provide further evidence for or against its standard use in clinical practice. This study employed logistic regression to calculate propensity score for need of hyperbaric treatment. Patients with SSTIs who underwent HBO were then propensity score matched with those who did not undergo HBO therapy. Various clinical factors and outcomes were then analyzed. Sixty-eight patients per group were analyzed and were matched using demographics, clinical factors, and infection location and type. Clinical parameters, including SOFA score, LRINEC score, lactate levels, shock index, culture results, and major amputation rates (9%, 15%), showed no significant differences (all  $p > 0.41$ ). However, the HBO group had significantly more debridements (median 3 vs. 2;  $p = 0.008$ ) and longer hospital stays (median 14 vs. 10 days;  $p = 0.018$ ). Discharge location (home vs rehab/nursing facility) (38% (59), 33% (49)), and mortality rates (3% (4), 4% (6)) did not significantly differ between groups ( $p = 0.49$  and  $p = 0.99$ , respectively). These results showed no significant difference in mortality between HBO and non-HBO groups. However, those receiving HBO were found to have a longer length of stay and a higher number of debridements. The rate of discharge home directly was non-statistically significant, but notably lower for the HBO group, which is clinically significant because it means lower cost for patients and society. It was likely because these HBO patients had lower rates of major amputations that required rehab. Further studies with a larger sample size are necessary.

## P.24

PREVALENCE AND BURDEN OF RHINOCONJUNCTIVITIS IN ATOPIC DERMATITIS PATIENTS: A CROSS-SECTIONAL STUDY. Isaac Betaharon\* and Jonathan Silverberg<sup>1</sup>, <sup>1</sup>Department of Dermatology, George Washington University School of Medicine and Health Sciences, Washington DC.

Allergic rhinoconjunctivitis can be highly symptomatic and burdensome and complicates the management of eyelid and facial dermatitis in persons with atopic dermatitis (AD). However, little is known about the prevalence, burden and predictors of allergic rhinoconjunctivitis symptoms in patients with AD, particularly among adults. The purpose of this study is to determine the prevalence and predictors of allergic rhinoconjunctivitis severity in patients with AD. A cross-sectional, dermatology practice-based study was performed at an urban academic medical center. AD severity was assessed by investigator-assessed Eczema Area and Severity Index (EASI), body surface area (BSA), investigator's global assessment (IGA), and objective-SCORing AD (SCORAD) and patient-reported Global Assessment (PtGA). Impact of allergic rhinoconjunctivitis symptoms was assessed by Rhinoconjunctivitis Quality of Life (RCQOL) Questionnaire. The study enrolled 507 patients with atopic dermatitis. 246 (48.5%) reported a history of hay fever. 15 (3.0%) and 416 (82.1%) of AD patients reported having trouble with one or multiple rhinoconjunctivitis symptoms; 30 (5.9%) and 365 (72.0%) of AD patients had quite a bit or extreme trouble with one or multiple rhinoconjunctivitis symptoms in the past 2 weeks, respectively. Increasing AD severity, erythema severity, flexural erythema severity, and Xerosis severity were generally associated with worse rhinoconjunctivitis symptoms, whereas race, gender, and presence of Nummular Dermatitis is generally not an indicator of rhinoconjunctivitis symptom severity. Quite a bit trouble or extreme trouble from one or more rhinoconjunctivitis symptom were reported in 39 (56.5%) of patients with clear-almost clear, 85 (74.6%) mild, 135 (82.8%) moderate and 106 (84.8%) severe patient-reported global AD severity. In multivariable ordinal logistic regression models that controlled for demographics, AD severity was significantly associated with higher odds of multiple nasal and eye symptoms, as well as rhinoconjunctivitis negatively impacting daily activities, causing sleep and practical problems, and negative emotions.

## P.25

UNDERSTANDING THE RISK OF HOSPITAL READMISSION AMONG PEOPLE WITH SKIN ULCERS RELATED TO INJECTION DRUG USE: SUB-ANALYSIS OF THE CHOICE INVESTIGATION. Ishan Vaish\*, Sarah Kattakuzhy<sup>1</sup>, Meghan Derenoncourt<sup>2</sup>, Elana Rosenthal<sup>1</sup>, Omari Habib<sup>3</sup>, and Edward Traver<sup>4</sup>, <sup>4</sup>Division of Clinical Care and Research,<sup>1</sup>Department of Medicine, University of Maryland School of Medicine and <sup>3</sup>University of Maryland, Baltimore, Baltimore, MD and <sup>2</sup>National Institute of Health-Clinical Center, Bethesda, MD.

Skin ulcers are common among people who inject drugs (PWID) with prolonged, severe addiction and may indicate illness severity and identify those at higher risk for worse outcomes. Xylazine, a nonopioid tranquilizer reported to cause skin ulcers, has increasingly been found in fentanyl samples in recent years and may require specific withdrawal management. We hypothesized that if skin ulcers are a marker of worse health status in patients who are injecting opioids, then people with skin ulcers will be more likely to be readmitted within one year. To assess this relationship, we performed a retrospective analysis of patients hospitalized with infectious complications of IDU between 2018 and 2020 in UMMS. Patient charts were reviewed through Epic, and data was collected in REDCap. We analyzed charts for the presence and type of infectious disease diagnosis. Qualitative characteristics of skin ulcers and drug use practices were also recorded. The primary outcomes were hospital readmissions and ED visits within one year of sentinel admission. We analyzed the risk of these outcomes among PWID with skin ulcers compared to those without skin ulcers through a univariate and multivariate analysis. After multivariate analysis, the adjusted risk of rehospitalization for people with skin ulcers was 2.92 (95% CI .78-10.9) and 1.00 (0.81 – 1.24) for ED visits. In this retrospective cohort analysis of people admitted to UMMS hospitals with infectious complications of IDU, skin ulcers were not associated with increased adjusted risk of rehospitalization or ED visits.

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.

## P.26

CUTANEOUS COCCIDIOMYCOSIS: A CASE REPORT. Madeline Brown\*, Albert Zhou<sup>1</sup>, David Jaffe<sup>2</sup>, and Richard Pfau<sup>2</sup>, <sup>1</sup>Department of Dermatology, University of Connecticut Health, Farmington, CT, and <sup>2</sup>Department of Dermatology, University of Maryland School of Medicine, Baltimore, MD.

Coccidiomycosis is an infectious primary pulmonary disease caused by two highly virulent fungi, *Coccidioides immitis* and *C. Posadasii*. *Coccidioides* spp. are endemic to the southwestern USA, Central America, and South America with infection predominate in the summer and fall seasons. The disease commonly presents with flu-like symptoms i.e., cough, fever, fatigue, and shortness of breath. Cutaneous manifestations are rare and are a sign of more serious infection with poorer outcomes. In this case, a 60-year-old female with a past medical history of hypertension, chronic kidney disease, and diabetes mellitus presented to the dermatology clinic with a 3-month history of a mild, non-pruritic, erythematous rash located on her proximal arms and legs. She reported headaches, joint pain, fatigue, upper and lower extremity tingling, intermittent diarrhea, and muscle weakness, however, did not endorse cough, fever, or shortness of breath. Two 4-mm punch biopsies were obtained, and she was found to have a non-endemic case of disseminated coccidiomycosis. Although a 2-month course of itraconazole was prescribed, the patient elected not to receive treatment for the disease.

## P.27

STRAIN-SPECIFIC AND CROSS-REACTIVE ANTIBODY RESPONSES TO *PLASMODIUM FALCIPARUM* CIRCUMSPOROZOITE PROTEIN. Andrew Kim\*, DeAnna Friedman-Klabanoff<sup>1</sup>, Olukemi Ifeonu<sup>2</sup>, Emily Stucke<sup>3</sup>, Kirsten Lyke<sup>4</sup>, Matthew Laurens<sup>1</sup>, Joana Silva<sup>5</sup>, and Andrea Berry<sup>1</sup>, <sup>1</sup>Division of Infectious Diseases and Tropical Pediatrics, Department of Pediatrics, <sup>2</sup>Institute for Genome Sciences, <sup>3</sup>Center for Vaccine Development and Global Health, <sup>4</sup>Department of Medicine, and <sup>5</sup>Department of Microbiology and Immunology, University of Maryland School of Medicine, Baltimore, MD.

Malaria remains a critical public health threat and is a leading driver of mortality in children under five years of age in sub-Saharan Africa. Vaccination is one of the key strategies for malaria prevention endorsed by the World Health Organization (WHO) and is considered an essential tool for malaria eradication. The WHO has now recommended two malaria vaccines, RTS,S/AS01 and R21/Matrix-M, for children living in regions of moderate to high transmission of *Plasmodium falciparum*. RTS,S/AS01 demonstrated modest efficacy and supply chain is limited, and both vaccines provide short-lived protection; therefore, development of more broadly efficacious vaccines remains imperative. RTS,S and R21 are based on the circumsporozoite protein (CSP), a major surface protein that is necessary for sporozoite invasion into liver cells, a necessary step to establish infection. CSP is a key target for vaccine-induced antibody responses. One of the challenges of malaria vaccine development is parasite allelic recombination and resultant antigenic polymorphism of many surface proteins, including CSP, which could limit vaccine efficacy and potentially select for “vaccine-resistant” strains that could decrease vaccine efficacy over time. Although CSP epitopes are well-described for the most common laboratory *P. falciparum* strains, such as NF54 and 7G8, little is known about antibody responses to epitopes of other CSP variants and the degree of amino acid variability that still permits cross-reactivity and therefore cross-protection to CSP variants. By probing sera from Controlled Human Malaria Infections (CHMI) on peptide microarrays, the degree to which CSP epitopes across variants are cross-reactive with antibodies produced in response to CSP epitopes of NF54 and 7G8 will be characterized. *P. falciparum* double C2 domain protein, DOC2, a cell-surface protein shown to elicit strong antibody response after a single infection, will concurrently be used to validate epitope identification and serogrouping methods. This work will yield a computational framework to identify cross-reactive surface protein epitopes across diverse variants of *P. falciparum* and inform future vaccine development.

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## P.28

IDENTIFYING FACTORS TO INCREASE TREATMENT-SEEKING FOR MALARIA AMONG ALL AGE GROUPS IN RURAL MALAWI. Christine Wan\*, Hillary Katasabola<sup>1</sup>, Alick Sixpence<sup>1</sup>, Don Mathanga<sup>1</sup>, Miriam Laufer<sup>2</sup>, Andrea Buchwald<sup>2</sup>, and Lauren Cohee<sup>2</sup>, <sup>1</sup>Kamuzu University of Health Sciences, Malaria Alert Centre, Blantyre, Malawi, and <sup>2</sup>Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD, USA.

Malaria continues to be a major health problem worldwide. Although interventions have been significantly scaled up over the last decades, malaria risk and morbidity remain high. Among the primary malaria control interventions is universal access to prompt diagnosis and treatment. Access to diagnosis and treatment is generally reported in terms of the rate of treatment seeking for fever in children younger than 5 years old. While this age group is most likely to develop severe malaria, older children and adults also experience uncomplicated malaria and older children are the primary reservoirs for human-to-mosquito parasite transmission. Therefore, it is vital for symptomatic people of all ages to seek treatment and receive effective care. This analysis aims to quantify predictors of treatment seeking in the formal and informal health sectors across age groups in rural Malawi. The ultimate goal is to identify modifiable factors to increase treatment seeking for all age groups in the formal health sector. Data was collected from a prospective longitudinal study that followed 198 households containing 962 individuals of all ages for 12 months. Active case detection (monthly visits to the household) included reported treatment seeking in the interval between study visits. Passive case detection (a study nurse at the local government health center assessed participants presenting to the clinic) was also conducted. The formal health sector included government and private health systems, whereas the informal sector included purchasing medicines at local shops, traditional healers, or from friends/family members. Participants who visited the study health clinic were more likely to be female, Plasmodium PCR positive, either older than 15 years or under 60 months, and these visits occurred more frequently during the rainy season. At the active case detection visits, among participants who sought treatment since the last study visit, 231 (79%) sought treatment in the formal compared to the informal health system. Longitudinal analyses are underway to further investigate factors influencing subsequent presentation with clinical malaria.

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## P.29

RISK FACTORS ASSOCIATED WITH TRANSMISSION OF CANDIDA AURIS IN THE ACUTE CARE SETTING. Sarah Bejo\* and Anthony Harris<sup>1</sup>, <sup>1</sup>Division of Genomic Epidemiology and Clinical Outcomes, Department of Epidemiology and Public Health, University of Maryland School of Medicine, Baltimore, MD.

Candida auris (*C. auris*) is an emerging pathogen whose risk factors for transmission in healthcare facilities are not well known. This study aims to fill this knowledge gap by determining which risk factors, such as patient and healthcare personnel (HCP) characteristics, and patient care and environment interactions are at highest risk of *C. auris* transmission from patients to healthcare worker gowns and gloves. We aimed to evaluate the rates of glove and gown contamination with *C. auris* among different HCP types, after different types contact with the patient or environment, and after performing specific activities in the room. This was a prospective observational study that enrolled patients with positive *C. auris* cultures at hospital systems in four states in the US. Ten HCP gowns and gloves per patient were cultured after being in the patient's room. Of 51 *C. auris*-positive patients and 485 glove and gown cultures, HCP gloves were contaminated with *C. auris* 26.0% of the time and gowns 13.4% of the time. Transmission to HCP gloves or gowns occurred 30.7% of the time. Occupational and physical therapists were most frequently contaminated with *C. auris* (100%), followed by other types of HCP including medical and nursing students, pastoral care, radiology technicians, nutritionists, and phlebotomists (32.5%), and nurses (31.4%). We found that HCP gloves and gowns were contaminated 33.3% of the time when touching only the patient, 20.2% of the time when touching only the environment, and 34.5% of the time when touching both. The findings of this study can be used to identify the highest-risk scenarios for *C. auris* transmission to inform infection prevention policies.

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.

### **P.31A**

ARE PATIENTS COMPLETELY BETTER AFTER A MENISCUS REPAIR? Bruce Chen\*, Ryan Lashgari\*, Dominic Ventimiglia<sup>1</sup>, Michael Rocca<sup>2</sup>, and Frank Henn III<sup>1</sup>, <sup>1</sup>Division of Sports Medicine, <sup>2</sup>Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

Patient-reported outcomes (PROs) play a pivotal role in evaluating the success of orthopaedic interventions. This is particularly relevant in the context of meniscus repair surgery, where the ultimate goal is to completely restore optimal knee function. Hence, the use of a patient-perceived measure of feeling "completely better" (CB) could be valuable in assessing success after meniscus repair surgery. The primary objective of this study was to determine whether patients are able to achieve CB status after meniscus repair surgery. We also aimed to identify what specific factors determine whether a patient achieves CB status. We retrospectively analyzed a cohort of adult patients undergoing primary meniscus repair surgery at a single academic center. Patients were given a series of surveys preoperatively and postoperatively at 6 months, 1 year, and 2 years. The anchor question, "Is the condition for which you underwent surgery completely better now?", with answer choices "yes" or "no", was asked at each timepoint and used to determine CB status. The rate of achieving CB status will be determined and inferential statistics will be performed to determine the differences between the CB and non-CB groups.

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### **P.31B**

LIVER TRANSPLANTATION WITH DONOR MACROSTEATOSIS  $\geq 50\%$ . Shani Kamberi\*, Massimo Arcerito<sup>1</sup>, Saad Malik<sup>1</sup>, Josue Alvarez-Casas<sup>1</sup>, Kirti Shetty<sup>2</sup>, Daniel Maluf<sup>1</sup>, Chandra Bhati<sup>1</sup>, and Raphael Meier<sup>1</sup>, <sup>1</sup>Division of Transplant, Department of Surgery and <sup>2</sup>Division of Hepatology, Department of Medicine, University of Maryland Medical Center, Baltimore, MD.

Liver grafts with over 30% macrosteatosis are typically considered unsuitable for transplant. Organ shortage compels us to explore all options for intermediate MELD patients. We developed a protocol that enables the evaluation and transplantation of liver grafts with  $\geq 50\%$  macrosteatosis. Between 2021 and 2023, we implemented a protocol for transplanting liver grafts containing  $\geq 50\%$  macrosteatosis that encompassed: donor age  $\leq 45$ , brain dead, AST/ALT  $\leq 500/300$ , projected CIT of  $\leq 4$  hours, and recipient MELD score  $\leq 30$ . Five patients underwent our protocol with a mean age of  $60 \pm 12$  years and MELD averaging  $22 \pm 8$ . Their indications for transplantation were cirrhosis due to chronic hepatitis C (2), NASH (2), and alcohol (1), with one having HCC. Donors, aged  $43 \pm 9$  years with a BMI of  $35 \pm 3$  kg/m<sup>2</sup>, had causes of death including anoxia, cerebrovascular/stroke, and meningoencephalitis. CIT averaged  $4.2 \pm 1.3$  hours (1.8-5.5h). Anastomosis took an average of  $43 \pm 8$  minutes. Two patients required reoperation. Postoperative LFTs and liver-related values are in Figure 1. Prothrombotic conditions, one case of PVT and one of HAT, were both managed surgically. All were discharged after an average stay of  $13.8 \pm 7.5$  days. At the latest follow-up (median 7.1 months, 2-25 months), all patients are alive with functioning grafts. A strict protocol allowed for the transplantation of high macrosteatosis livers into intermediate MELD recipients. Longer LOS and more thrombotic complications were noted. High-steatosis livers should be considered for intermediate MELD score patients with end-stage liver disease. Machine perfusion is expected to expand their utilization.

### **P.32**

A GENOME-FIRST INVESTIGATION OF DIGENIC FANCONI ANEMIA INHERITANCE. Joseph Deng\*, Burak Altintas<sup>1</sup>, and Lisa McReynolds<sup>2</sup>, <sup>1</sup>Department of Pediatrics, Washington University, St. Louis Children's Hospital, St. Louis, MO, and <sup>2</sup>Division of Cancer Epidemiology and Genetics, Department of Epidemiology and Public Health, National Cancer Institute, Rockville, MD.

Fanconi anemia (FA) due to pathogenic in two different FA genes (or digenic FA) has been hypothesized as a mode of inheritance in humans with some evidence from mouse models and human case reports. This study investigated whether the presence of digenic FA variants causes clinical manifestations in humans by analyzing 170,503 people with exome sequencing and electronic health data using the DiscovEHR Cohort. Variants in 22 FA genes were identified and annotated using ANNOVAR, snpEFF, and ClinVar and checked with multiple secondary sources. We identified 95 individuals (cases) as having a single P/LP variant in two

different FA genes from this cohort and pursued two analytic approaches. We first utilized the Human Phenotype Ontology (HPO) FA phenotype codes and compared observed to expected ratios of all FA related codes in the digenic case group to the control population. Second, we focused on individual phenotypes and compiled ICD-10 codes, laboratory data, and manual chart review for phenotypes in individual patients. Suspicion of FA was determined individually by considering the aggregate of the clinical data. In the population-based mode of analysis, the only ICD-10 code with a statistically significant association observed was I35.8: Other nonrheumatic aortic valve disorders (OR 4.33,  $p = 0.0014$ ). In the individual analysis, three individuals were found to have both abnormal laboratory values and suspicious findings in ICD-10 codes or manual chart review. However, further review of these patients found insufficient evidence of FA features to consider it the diagnosis. Overall, this study found no evidence of digenic inheritance of FA. On a population level, no ICD-10 codes for typical FA phenotypes were found to be statistically increased in the digenic population versus the general population. Amongst the 95 digenic individuals, detailed medical review of patient medical records did not meet the burden of evidence to suggest clinical features of FA.

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### **P.33**

**IMPACT OF NEONATAL DRUG SCREEN ON MONITORING AND MANAGEMENT OF NEONATAL OPIATE WITHDRAWAL SYNDROME.** Amy Huddleson\*, Ayda Soltanian Tiranchi\*, Kristina Witcher<sup>1</sup>, and Katrina Mark<sup>1</sup>, <sup>1</sup>Department of Obstetrics, Gynecology and Reproductive Sciences, University of Maryland School of Medicine, Baltimore, MD.

Neonatal opiate withdrawal syndrome (NOWS), secondary to opiate exposure in utero, results in an array of autonomic, gastrointestinal, and neurologic symptoms. Infants with severe symptoms of NOWS require pharmacological therapy with morphine and subsequent weaning. Time from delivery to the onset of NOWS is variable and may be later than the discharge timeline for many neonates. Identifying neonates at risk for NOWS ensures that they are adequately monitored and treated if symptoms occur and become severe. Our study seeks to determine the effectiveness of neonatal drug screening in identifying neonates who require additional monitoring for NOWS. We hypothesized that a documented maternal history of opiate use would be prevalent and better predict the need for monitoring at our institution than neonatal drug screening. A retrospective chart review was conducted for neonates with documented neonatal abstinence scores (NAS) at the University of Maryland Medical Center in Baltimore, MD from 1/1/2017 through 1/1/2022. Charts were first evaluated for availability of data and appropriateness of inclusion in our study. Following exclusion, 467 charts were included in our study. Paired maternal and neonatal charts were reviewed. Maternal medical history as documented in the admission H&P and maternal drug screen results were reviewed in addition to neonatal drug screen, NAS scores, and the need for pharmacologic treatment of neonates. Maternal history of opiate use or maternal drug screen results are present for 97.9% of neonates monitored for NOWS at our institution. Maternal history, as documented in the admission H&P, is 94.1% sensitive for detecting neonates that will require pharmacologic treatment for NOWS. When combined with universal maternal drug screening, sensitivity improves to 99.6%. The sensitivity of neonatal drug screening for detecting neonates that will require pharmacologic treatment for NOWS is 80.6%. Neonatal drug screening is inferior to maternal history as a screening tool for neonates at risk for developing severe NOWS. Strategies to expand neonatal drug screening or to require universal neonatal drug screening may not provide clinical benefit regarding monitoring for NOWS.

### **P.34**

**PRIMARY MPFL RECONSTRUCTION/REPAIR FOR RECURRENT PATELLAR INSTABILITY: PATIENT REPORTED OUTCOMES AT TWO YEARS FOLLOW-UP.** Douglas Cooper\*, Frank Henn<sup>1</sup>, Ovais Hasan<sup>2</sup>, Dominic Ventimiglia<sup>2</sup>, Matt Kolevar<sup>1</sup>, and Sean Meredith<sup>1</sup>, <sup>1</sup>Division of Sports Medicine, Department of Orthopaedics, <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD.

The Medial Patellofemoral Ligament (MPFL) accounts for roughly 3% of all knee injuries and insufficiency may result in patellar instability. Surgical reconstruction or repair is effective for restoring patellar stability, however, there is little data on patient-reported physical function, pain and satisfaction after surgery. The

purpose of this study was to report the two-year patient-reported outcome (PRO) scores after MPFL reconstruction or repair and to identify possible preoperative predictors of better PROMIS Physical Function (PF) and IKDC. Patients older than 12 years who underwent primary MPFL reconstruction or repair from April 2016 to November 2019 were identified from an orthopedic registry hosted at a single academic institution. Patients completed baseline and two-year post-operative surveys regarding sociodemographics, physical function, pain, psychosocial health, activity level, and satisfaction. PRO measures included six PROMIS domains and IKDC. Bivariate analysis was performed using Spearman's Rank correlation coefficient for continuous variables, and a Wilcoxon rank sum test for categorical variables. Multivariable linear regression was performed to identify preoperative predictors of better PROMIS PF and IKDC at two years. Of the 57 patients who underwent surgery, 40 (70%) reported two-year follow-up scores. The mean (SD) PROMIS PF score was 39.8 (7.93) at baseline and 53.8 (10.6) at two-years ( $p < 0.001$ ). The mean (SD) IKDC score was 40.5 (18.5) at baseline and 74.2 (19.6) at two years ( $p < 0.001$ ). The mean (SD) satisfaction score was 78.6 (21.4). Fewer comorbidities and prior ipsilateral knee surgeries were independent predictors of better PROMIS PF. Higher education level, history of ipsilateral knee injury, and less baseline knee pain were independent predictors of better IKDC. In conclusion, patients undergoing MPFL reconstruction or repair demonstrated markedly improved functional outcomes at two-years. Independent preoperative predictors of physical function and IKDC should be considered when informing a patient on their expected two-year outcomes.

This work was supported by a grant from The James Lawrence Kernan Hospital Endowment Fund, Incorporated.

### **P.35**

**SOCIOECONOMIC DEPRIVATION PREDICTS WORSE FUNCTIONAL STATUS TWO YEARS AFTER ORTHOPAEDIC SURGERY.** Isaiah Harris\*, Evan Honig<sup>1</sup>, Samir Kaveeshwar<sup>1</sup>, Nathan O'Hara<sup>1</sup>, Samuel Li<sup>1</sup>, Natalie Danna<sup>1</sup>, Craig Shul<sup>1</sup>, and Frank Henn<sup>1</sup>, <sup>1</sup>Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

Socioeconomic deprivation is associated with worse orthopaedic surgery outcomes. Area deprivation index (ADI) measured at the census block level allows us to measure a patient's level of socioeconomic deprivation at the level of their neighborhood rather than a larger geographical unit. Higher ADI equals greater deprivation. This study aimed to assess whether socioeconomic status, as measured by area deprivation index (ADI) at the census block level, was associated with patient outcomes two years after elective orthopaedic surgery. 1483 (70.1% of 2117 initially enrolled) patients from a single urban tertiary referral center undergoing elective orthopaedic surgery completed two-year follow up. Patients that completed baseline and two-year follow up questionnaires were included. Area deprivation index was computed to the level of the census block for each patient. Patients completed the Patient-Reported Outcome Metric Information System (PROMIS), joint-specific surveys, and other orthopaedic patient-reported outcome measures. Achievement of minimally clinically important difference (MCID) was determined using established values from the literature. Bivariate analyses were run to analyze for associations with deprivation. Greater ADI (lower SES) was associated with and predictive of worse physical function, pain interference, fatigue, Numerical Pain Scale at operative site, Tegner Activity Scale (TAS), MARS Lower extremity, and International Knee Documentation Committee (IKDC) two years after surgery. ADI was predictive of improvement level in physical function, pain interference, and IKDC when compared with baseline. Greater ADI was associated with decreased achievement of MCID in physical function, pain interference, social satisfaction, TAS, and IKDC. Greater ADI was predictive of decreased achievement of MCID with the IKDC. This study suggests that socioeconomic deprivation, when measured at the census block level, corresponds with worse two-year outcomes, decreased improvement from baseline, and decreased achievement of a clinically important difference.

### **P.36**

**PATIENT-REPORTED OUTCOMES AFTER SURGERY FOR PIGMENTED VILLOUS NODULAR SYNOVITIS IN THE KNEE: A COHORT STUDY.** Ryan Lashgari\*, Bruce Chen\*, Dominic Ventimiglia<sup>1</sup>, Leah Henry<sup>2</sup>, Matthew Kovelar<sup>2</sup>, Jonathan Packer<sup>1</sup>, and Frank Henn, III<sup>1</sup>, <sup>1</sup>Division of Sports Medicine, <sup>2</sup>Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

Pigmented Villonodular Synovitis (PVNS) is a rare neoplastic proliferation of large joints, including the knee. Localized type PVNS (LPVNS) is focal and remains intra-articular, while diffuse type PVNS (DPVNS) is more widespread. DPVNS is known to recur at a higher rate following resection, however, there is little evidence comparing patient-reported outcomes (PROs) between the two types. The purpose of this study was to compare PROs between patients with LPVNS and DPVNS involving the knee two years after surgical resection. We hypothesized that DPVNS would have worse two-year PROs than LPVNS. A cohort of 16 patients with pathology-confirmed PVNS involving the knee were enrolled in a prospective registry at a tertiary institution between January 2017 and November 2020. Several PROs, including six PROMIS domains and IKDC, were assessed at baseline and at two-years postoperatively via electronic survey. Mean scores between LPVNS and DPVNS groups were compared using a Wilcoxon exact test, while categorical variables were compared using a Fisher's exact test. 11 patients (7 LPVNS and 4 DPVNS) completed both the baseline and two-year PRO surveys. There were no significant differences in the demographic variables between groups, including age, BMI, or prior surgical history (p

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### **P.37**

**A CROSS-SECTIONAL ANALYSIS OF INSURANCE COVERAGE OF SPINAL INFECTION AND SPINAL TUMOR SURGERIES.** Madeline Brown\*, Garyn Metoyer<sup>1</sup>, Tito Porras<sup>2</sup>, Omar Zalatimo<sup>3</sup>, Michael Ha<sup>4</sup>, and Yvonne Rasko<sup>4</sup>, <sup>3</sup>Division of Neurosurgery, <sup>1</sup>Department of Surgery, Sinai Hospital, New York City, MD, <sup>2</sup>Division of Neurosurgery, Department of Surgery, Johns Hopkins Hospital, Baltimore, MD, and <sup>4</sup>Division of Plastic and Reconstructive Surgery, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

Insurance companies have varying policies for spinal infection and tumor treatment options. This may impact patient care and delay treatment if patients and providers are unaware of these established criteria. The aim of this project was to evaluate the frequency and coverage details of insurance companies that cover spinal infection and spinal tumor procedures. A cross-sectional analysis of 58 insurance companies by web-based search was performed to conclude the number of insurers who had publicly documented policies on spinal infection and spinal tumor surgeries. For each policy, coverage criteria were recorded for further analysis. Results showed there were 38 insurance companies that had a publicly available policy on spinal infection and spinal tumor treatments. Of the 38 policies that covered spinal infections, 47.3% required anticipated instability and 10.5% require the presence of osteomyelitis, discitis, or spinal abscess for coverage. Of the 38 insurance companies that cover the management of spinal tumors, 42.1% required anticipated instability and 15.7% require cord compression. Our data shows that inclusion coverage and criteria for spinal tumors and infection surgeries needs to be clearer to ensure patients are receiving optimal treatment and comprehensive care.

### **P.38**

**RISK FACTORS FOR COMPLICATION REQUIRING REOPERATION AFTER OPEN FRACTURES OF THE SUPRACONDYLAR DISTAL HUMERUS.** Zachary Wilhelm\*, Raymond Pency<sup>1</sup>, and Peter Mittwede<sup>1</sup>, <sup>1</sup>Division of Trauma, Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

Open supracondylar distal humerus fractures (OSDHFx) are a major treatment challenge in the orthopedic trauma setting. The high likelihood of articular comminution, soft tissue damage, and wound contamination elevates the severity of open fractures relative to closed fractures of the distal humerus; however, comparatively few studies have investigated complication rates among open fractures. Concern exists regarding what factors increase risk for complication requiring reoperation during treatment of OSDHFx. We hypothesized that these factors would include greater Orthopedic Trauma Association Open Fracture Classification (OTA-OFC) system scores, higher Gustilo-Anderson (GA) grade, articular involvement, and use of an olecranon osteotomy exposure technique. This retrospective cohort study was performed at a Level-1 trauma center with a cohort of 153 patients ranging from 18 to 85 years old (average of 45 years old) with 118 males and 35 females. Patients were treated with open reduction internal fixation (ORIF) between September 2009 and December 2020. Collected data included patient demographics, OTA-OFC score, GA grade, presence of nerve and/or vascular

injury, fracture characteristics, and specific operative techniques used. Complications included infection, nonunion, hardware failure, stiffness, irritation, nerve-related complications, and other. Standard statistical comparisons were used to evaluate the correlation between variables and rate of reoperation. Reoperation occurred in 34 of 153 patients (22.2%). Complications included infection (14/34, 41.2%), stiffness (8/34, 23.5%), hardware irritation (4, 11.8%), nonunion (4, 11.8%), hardware failure (1/34, 2.9%), pain (1/34, 2.9%), and other (2/34, 5.9%). Following Univariate analysis, only intra-articular fracture involvement ( $p=0.040$ ) significantly correlated with reoperation. The rate of complications requiring reoperation during the treatment of OSDHFX is substantial. Univariate analysis showed intra-articular fracture involvement to be significantly correlated with need for reoperation. Further statistical evaluation is needed to elucidate the significance of each variable fully.

### P.39

HOW CAN THE OTA-OFC AND GA BE USED TO PREDICT FRACTURE RELATED INFECTIONS (FRI)? Philip Khoury\*, Nina Hazra\*, Nina Hazra<sup>1</sup>, Anthony DeMartino<sup>1</sup>, Kevina Birungi<sup>1</sup>, Robert O'Toole<sup>2</sup>, Gerard Slobogean<sup>2</sup>, and Nathan O'Hara<sup>2</sup>, <sup>2</sup>Division of Trauma, Department of Orthopaedics, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

The Gustilo-Anderson (GA) scoring system is a common tool used to assess open fracture severity. Many studies have demonstrated correlations with increased risk of infection with higher GA scores. Recently, the Orthopedic Trauma Association Open Fracture Classification (OTA-OFC) was developed. It is a more complex system using a variety of domains (Skin, Muscle, Arterial, Contamination, Bone loss). It is unknown whether the increased complexity of the OTA-OFC provides additional prognostic value in determining a patient's risk of infection. We conducted a retrospective cohort study on fractures assigned an OTA-OFC and GA score prospectively (at the time of debridement). Main eligibility criteria include patients with an open tibia fracture assigned an OTA-OFC and GA score at the time of debridement with a minimum of 12 months of follow-up. Our primary outcome of interest was whether an individual was diagnosed with a fracture-related infection (FRI) within 12 months of their injury that required reoperation. Logistic regression models were used to compare the OTA-OFC and GA. Results were reported as an odds ratio. A predictive model was built using linear regression and evaluated via a confusion matrix yielding sensitivity and specificity values for FRI. 1,168 patients with open tibia fractures were screened for eligibility. 912 patients were eligible with a mean age of 43. FRIs had a total incidence of  $N = 142$  (15.6%). Within the OTA-OFC, the odds that an FRI occurred given the most severe score of 3 were significant in contamination (OR 2.17; CI 1.07 - 4.31) The GA showed a significant odds ratio for FRI (OR 4.22 CI 2.6 - 15.6). Contamination plus the GA system yields a sensitivity of 87.84% ( $p$ -value = 0.015) for predicting FRIs. The OTA-OFC fails to stand out against the GA system as a predictive measure for FRIs. The only value of significance the OTA-OFC contains is contamination, which is not accounted for in the GA. We propose combining the GA classification system with the OTA-OFC contamination severity score to better predict FRIs.

### P.40

VIRTUAL REALITY IS EQUIVALENT TO IN PERSON CADAVER BASED TRAINING. Heather Groves\*, Kristina Fuller<sup>1</sup>, Vondel Mahon<sup>1</sup>, Steven Butkus<sup>2</sup>, Amitabh Varshney<sup>3</sup>, Barabara Brawn<sup>3</sup>, Jonathan Heagerty<sup>3</sup>, and Sida Li<sup>3</sup>, <sup>1</sup>Department of Anatomy and Neurobiology, University of Maryland School of Medicine, Baltimore, MD, <sup>2</sup>Department of Anatomy and Neurobiology, Johns Hopkins University School of Pharmacy, Baltimore, MD, and <sup>3</sup>University of Maryland College Park, College Park, MD.

In traditional surgical educational settings multiple trainees share a cadaver, often due to logistical and fiscal limitations precluding routine one-to-one trainee to cadaver ratios. Thus, some procedures are learned via observation of a fellow trainee performance rather than hands on performance. Cadaveric training opportunities are rarer for those practicing in low resource environments such as rural communities yielding training inequity and in military combat zones. This pilot study assessed feasibility of VR surgical educational training (VR-SET) in open trauma surgery procedures compared to in person cadaver-based training (CBT). Medical students (4<sup>th</sup> year,  $n=10$ ) who completed VR-SET training were compared to a control group (residents,  $n=22$ ) who completed an in-person Advanced Surgical Skills for Exposure in Trauma (ASSET) course. Participants were evaluated on performance of a lower extremity fasciotomy on a cadaver. VR-SET

study participants decompressed an average of  $2.45 \pm 1.09$  (range 1 to 4) compartments compared to the control group decompressed had an average of  $2.06 \pm 0.93$  (range 0.5 to 4), statistically indistinguishable between the groups ( $p=0.35$ ). Numerical scores for anatomic knowledge, surgical management, and procedure performance were also not significantly different between groups. Control subjects had significantly higher pathophysiology knowledge and surgical technique scores. Overall, VR-SET participants were indistinguishable from the in-person CBT cohort in number of compartments successfully decompressed. This pilot study suggests utilization of VR technologies in trauma educational settings may be effective and considered as a cost-effective solution for training to supplement cadaveric based courses.

This study was supported by funds received from MPOWER Maryland and Edward St. John Foundation.

#### **P.41**

THE ORTHOPAEDIC TRAUMA ASSOCIATION OPEN FRACTURE CLASSIFICATION AS A PREDICTOR OF OPEN TIBIA FRACTURE-RELATED INFECTIONS. Anthony DeMartino\*, Kevina Birungi-Huff\*, Philip Khoury<sup>1</sup>, Nina Hazra<sup>1</sup>, Nathan O'Hara<sup>2</sup>, Gerard Slobogean<sup>2</sup>, and Robert O'Toole<sup>2</sup>, <sup>2</sup>Division of Trauma, <sup>1</sup>Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, MD.

The Orthopaedic Trauma Association Open Fracture Classification (OTA-OFC) was designed to be a standardized clinical stratification system for open fractures, aimed at overcoming the disadvantages of other classification schemes. The OTA-OFC has five domains, including bone loss, skin, arterial, muscle, and contamination, with each domain assigned a severity score of 1-3. The purpose of this study is to investigate if the OTA-OFC domains predict fracture-related infections among patients with open tibia fractures. We conducted a retrospective cohort study using prospectively collected data from a single academic trauma center. The study included all patients who underwent surgical treatment for an open tibia fracture from 2010 to 2021. The treating surgeon prospectively graded the OTA-OFC domains. Our primary outcome was a fracture-related infection occurring within 12 months of injury. We used logistic regression to assess the association between the five OTA-OFC domains and fracture-related infection with bivariate and multivariable models. The associations reported for each domain use the least severe level as the reference category. During the study period, 912 patients (mean age, 43 [SD, 17]) met the eligibility criteria. Fracture-related infections occurred in 142 patients (15.6%). Two of the five OTA-OFC domains were significant predictors of a fracture-related infection. Specifically, embedded wound contamination (OR, 2.2; 95% CI, 1.1 – 4.4;  $p=0.03$ ) and severe muscle damage (OR, 2.5; 95% CI 1.1 – 5.8;  $p=0.03$ ) were associated with significantly increased odds of infection. This study found that, among the OTA-OFC domains, embedded wound contamination and severe muscle damage were associated with significantly increased odds of a fracture-related infection in open tibia fracture patients. This result is consistent with previous studies. However, the overall merits of the OTA-OFC to guide clinical decision-making require further investigation.

#### **P.42**

LIVER TRANSPLANT WITH A COLD ISCHEMIC TIME <3H WITH OR WITHOUT NORMOTHERMIC MACHINE PERFUSION: A COMPARISON. Erin Foster\*, Shani Kamberi\*, Raphael Meier<sup>1</sup>, and Daniel Juan<sup>2</sup>, <sup>1</sup>Division of Transplant Surgery, Department of Surgery, UMB School of, and <sup>2</sup>University of Maryland College Park, College Park, MD.

Recent U.S. data on normothermic machine perfusion (NMP) in orthotopic liver transplantation (OLT) has shown 93-94% 12-month patient survival and 97-99% graft survival. NMP trials patients had a MELD of 19 to 28 and a DCD use rate of 16% to 19%. Their actual cold ischemia time (CIT) ranged between 2.3h and 2.9h. We thought to analyze UNOS data to see if those outcomes are comparable to donors with very a CIT <3h. Deceased donor OLT performed between 2018 to 2020 were recorded. CIT was stratified into four categories: <3h, 3-6h, 6-9h, and >9h. Kaplan-Meier and Cox regression analyses were used. 20,590 recipients were analyzed. We found that CIT 3-6h, 6-9h, and >9h groups had 40%, 60%, and 110% higher chance of graft failure rates compared to the CIT <3h group (all  $p \leq 0.05$ ), respectively. Recipients falling within the <3h CIT represented a smaller subset ( $n=660$ ) and had 93% 12-month patient survival and 94% graft survival (Figure). The average CIT was  $2.7 \pm 0.3h$ , the mean MELD was  $22.3 \pm 10.3$ , and there were 5.2% DCDs in the

<3h CIT group. Reasons for graft failure were PNF, HAT, infection, rejection, GVH, and biliary issues. There was no statistical difference in patient and graft survival between DCDs and DBDs within the <3h CIT group ( $p>0.2$ ). Liver transplants from deceased donor with <3h CIT have similar patient and graft survival rates compared to liver with <3h CIT pumped with NMP. Using deceased donor livers with a projected CIT<3h might be a complementary option to NMP when the situation allows.

#### **P.43**

**EVALUATION OF CANNABIDIOL AS A THERAPEUTIC FOR NOISE-INDUCED HEARING LOSS.** Erika Lipford\*, Benjamin Shuster<sup>1</sup>, Beatrice Milon<sup>1</sup>, and Ronna Hertzano<sup>2</sup>, <sup>1</sup>Department of Otorhinolaryngology - Head and Neck Surgery, National Institute on Deafness and Other Communication Disorder, Bethesda, MD and <sup>2</sup>Department of Otorhinolaryngology - Head and Neck Surgery, University of Maryland School of Medicine, Baltimore, MD.

The neurons that innervate the murine cochlea are known to be both genetically and physiologically heterogeneous and can be divided into three subtypes: type 1A, 1B, and 1C. Prior research from our laboratory found that type 1A neurons upregulate the pro-survival ATF family of transcription factors in response to permanent threshold shift (PTS)-inducing noise trauma. We have identified several compounds that could be used to pharmacologically induce the ATF transcription factors in neurons. One such compound is cannabidiol (CBD). We investigate whether administration of CBD can upregulate the ATF transcription factors and reduce hearing loss following a PTS-inducing noise exposure. Male and female mice were randomly assigned to either the treatment or control group ( $n=24$ , 12 per group) and underwent baseline auditory brainstem response (ABR) testing at 9 weeks of age. At 10 weeks of age, mice received a single dose of CBD (60mg/kg) or vehicle solution via intraperitoneal (IP) injection 1 hour before exposure to a PTS-inducing noise (8-16 kHz, 105 dB SPL, 2 hours). ABR testing was repeated 24 hours and 1-week following noise exposure to assess the acute and permanent hearing, respectively. To determine whether CBD can modulate ATF mRNA expression within the murine cochlea, 10-week-old adult female mice ( $n=4$ , 2 per group) were divided into either an experimental or control group, then administered a CBD or vehicle solution, respectively. The cochleae from both groups were collected 24 hours following injection and prepared for fluorescent *in situ* hybridization to assess the spatiotemporal changes of ATF transcription factors. ABR testing performed 24 hours and 1-week after noise exposure showed no significant difference in threshold shifts between CBD and vehicle treated mice in either sex. However, pre-treatment with CBD was found to provide statistically significant protection in wave I amplitude 24 hours following PTS noise exposure in both male and female mice when compared to vehicle treated males and females ( $p<0.01$ ). Immunohistochemical analysis found no differences in expression of *Atf3*, *Atf4*, *Ddit3*, and *Gadd45a* between CBD and vehicle treated mice.

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#### **P.44**

**FUNCTIONAL RECOVERY IN A COHORT OF ECMO AND NON-ECMO ACUTE RESPIRATORY DISTRESS SYNDROME SURVIVORS.** Mackenzie Snyder\*, Binta Njie<sup>1</sup>, Noel Britton<sup>2</sup>, and Andrea Levine<sup>3</sup>, and <sup>2</sup>Division of Pulmonary and Critical Care, Department of Medicine, Johns Hopkins, Baltimore, MD, and <sup>3</sup>Division of Pulmonary and Critical Care, Department of Medicine, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

The mortality benefit of VV-ECMO in ARDS has been extensively studied, but the impact on long-term functional outcomes of survivors is poorly defined. We aimed to assess the association between ECMO and functional outcomes in a contemporaneous cohort of survivors of ARDS. Multicenter retrospective cohort study of ARDS survivors who presented to follow-up clinic. The primary outcome was FVC% predicted. Univariate and multivariate regression models were used to evaluate the impact of ECMO on the primary outcome. This study enrolled 110 survivors of ARDS, 34 of whom were managed using ECMO. The ECMO cohort was younger (32 [Q1 28, Q3 50] v. 51 [44, 61] yo,  $p<0.01$ ), less likely to have COVID-19 (56% v. 96%,  $p<0.01$ ), more severely ill based on the Sequential Organ Failure Assessment (SOFA) score (7 [5, 9] v. 4 [3, 6],  $p<0.01$ ), dynamic lung compliance (15 mL/cmH<sub>2</sub>O [11, 20] v. 27 mL/cmH<sub>2</sub>O [23, 35],  $p<0.01$ ), oxygenation index (26 [22, 33] v. 9 [6, 11],  $p<0.01$ ), and their need for rescue modes of ventilation. ECMO patients had significantly longer lengths of hospitalization (46 [27, 62] v. 16 [12, 31] days,  $p<0.01$ ) ICU stay



(29 [19, 43] v. 10 [5, 17] days,  $p < 0.01$ ), and duration of mechanical ventilation (24 [14, 42] v. 10 [7, 17] days,  $p < 0.01$ ). Functional outcomes were similar in ECMO and non-ECMO patients. ECMO did not predict changes in lung function when adjusting for age, SOFA, COVID-19 status, or length of hospitalization. There were no significant differences in the FVC% predicted, or other markers of pulmonary, neurocognitive, or psychiatric functional recovery outcomes, when comparing a contemporaneous clinic-based cohort of survivors of ARDS managed with ECMO to those without ECMO.

#### **P.45**

**IMPACT OF INTRAOPERATIVE DDAVP ON POSTOPERATIVE URINE IN ADULT CADAVERIC RENAL TRANSPLANT – A SINGLE CENTER RETROSPECTIVE STUDY.** Catherine Wasylshyn\*, Samhati Mondal<sup>1</sup>, Roumen Vesselinov<sup>2</sup>, Miranda Gibbons<sup>1</sup>, Bhati Chandrasekhar<sup>3</sup>, Stephanie Jones<sup>1</sup>, Peter Rock<sup>1</sup>, and Megan Anders<sup>1</sup>, <sup>1</sup>Department of Anesthesiology, <sup>2</sup>Department of Epidemiology and Public Health, and <sup>3</sup>Department of Surgery, University of Maryland School of Medicine, Baltimore, MD.

Desmopressin (DDAVP) is a synthetic analogue of the hormone vasopressin produced by the posterior pituitary gland [1]. Vasopressin is released to maintain bodily fluid homeostasis. Similarly, DDAVP increases water absorption from the kidney, but also decreases bleeding via stimulation of Von Willebrand Factor (VWF), which in turn improves platelet function and carries clotting Factor VIII [2,3]. During surgery, DDAVP is often administered to control bleeding in patients who experience uremia-induced platelet dysfunction; however, it also has a downstream effect of decreasing urine output (UOP) by increasing fluid retention in renal tubules [1]. In kidney transplant patients, this secondary effect could be deleterious to post-surgical monitoring, as UOP is a primary measure of the new kidney function and transplant success [4]. This retrospective medical chart review aimed to determine the impact of intraoperative DDAVP use on perioperative and post-surgical UOP in adult cadaveric renal transplant patients. Specifically, we hypothesized that DDAVP administration during surgery would decrease UOP in kidney transplant patients at both 12 and 24 hours postoperatively compared to those who did not receive DDAVP. We also collected data related to potential confounders such as age, gender, ASA (American Society of Anesthesiology) physical status, history of (H/O) diabetes insipidus (DI) or Syndrome of Inappropriate ADH release (SIADH), H/O anuria; total intravenous fluid (IVF; ml) administered; length of surgery (LOS; duration of surgery, and number of anesthesiologists and surgeons who took part in caring for study patients. This study was conducted by analyzing electronic medical chart data of adult patients who underwent cadaveric renal transplant surgery at the University of Maryland Medical Center from 2016-2022. Our results indicated that DDAVP was associated with significant decreases in postoperative UOP both crudely and, although less profoundly, after covariates were analyzed. This suggests that DDAVP use may be detrimental to post-transplant monitoring and recovery; however, more research is needed to determine the full impact of these effects.

#### **P.46**

**MULTIMODAL PRENATAL AND POSTNATAL IMAGING OF MICROPHTHALMIA WITH ORBITAL CYST.** Taylor Kolosky\*, Olivia Uddin<sup>1</sup>, Bhakti Panchal<sup>2</sup>, Alexander Engelmann<sup>3</sup>, Moran Levin<sup>4</sup>, Sifa Turan<sup>5</sup>, Ozhan Turan<sup>5</sup>, and Janet Alexander<sup>4</sup>, <sup>1</sup>Johns Hopkins University School of Medicine, Baltimore, MD, <sup>3</sup>Doheny Eye Center University of California, Los Angeles Pasadena, Pasadena, CA, and <sup>4</sup>Division of Pediatrics, Department of Ophthalmology and Visual Sciences and <sup>5</sup>Department of Obstetrics, Gynecology and Reproductive Sciences, <sup>2</sup>University of Maryland School of Medicine, Baltimore, MD.

Congenital ocular anomalies may be detected on prenatal assessment using fetal ultrasound and magnetic resonance imaging (MRI), although standard prenatal ultrasound for fetal physical development does not currently include ocular and orbital evaluation. We present the case of a male infant born at 39 weeks' gestation with microphthalmia with orbital cyst that was characterized using serial multimodal imaging, including fetal ultrasound and MRI, B-scan ultrasonography, ultrasound biomicroscopy, and postnatal MRI. Multiple prenatal and postnatal imaging modalities yielded comparable evaluations of the ocular and orbital pathology, validating the prenatal assessments. Although various congenital ophthalmic conditions can be well-characterized on fetal imaging, fetal intervention is not currently available. The role of the pediatric ophthalmologist in fetal medicine is therefore limited. Fetal ocular evaluation has the key advantage of prompting timely referral to pediatric ophthalmology soon after birth. The role of the pediatric ophthalmologist in fetal medicine may expand with

future technological advancement and may be more relevant in underserved areas where prenatal care is more accessible than pediatric ophthalmology.

#### **P.47**

ACE QUESTIONNAIRES: LET'S TALK ABOUT IT. Michael Karanja\* and Deborah Badawi<sup>1</sup>, <sup>1</sup>Division of Developmental Pediatrics, Department of Pediatrics, UMB School of Medicine, University of Maryland School of Medicine, Baltimore, MD.

There is substantial evidence that Adverse Childhood Experiences (ACEs) are associated with health risk behaviors in adulthood, ranging from smoking, alcohol use, and risky sexual behavior. ACEs included psychological/emotional abuse, physical neglect, and the psychological neglect of basic needs (Ramiro et al, 2010). Children with specific developmental disabilities, such as autism, have been found to have an increased risk for ACEs. Screening children for these experiences is recommended due to their long-term impact, and community experiences such as discrimination and neighborhood violence are often included (Benard et al, 2022). In our clinic sites, very few caregivers endorsed discrimination or community violence on their ACEs form, despite high rates of violence and racial discrimination in the greater Baltimore area. First, we aimed to understand if the number of ACEs reported by caregivers of children in a clinical sample differed based on the method of inquiry. Specifically, we aimed to investigate differences between written and oral reports of ACEs, with a focus on targeted interview probes in the discrimination and community violence items. Second, we aimed to identify themes in respondents' interpretation of the ACEs items in oral interviews. Caregivers were recruited from two developmental behavioral pediatrics specialty clinic sites in the greater Baltimore area. Parents completed the paper version of the Center for Youth Wellness ACEs questionnaire divided into two sections. During the oral interview, we asked additional probes focused on community violence exposure and discrimination items in section 2 of the questionnaire. To answer Aim 1, we compared the written versus oral answers to section 1, section 2, and the total score using paired t-tests. For Aim 2, we qualitatively explored themes in participants' responses to the oral questions. A total of 35 patients and their caregivers participated in the study. We found a statistically significant difference ( $p < .05$ ) between the mean total number of ACEs reported in an oral interview (1.63) versus on the written questionnaire (1.03). There was also a statistically significant difference in mean ACEs reported in section 2 of the questionnaire; oral interview with 0.60 and written questionnaire with 0.37. Our preliminary qualitative analyses included themes of uncertainty if the caregiver is able to answer from the child's point of view and uncertainty of certain events in the child's life. We identified a small, yet statistically significant difference in the number of ACEs reported in written versus oral questionnaires. Our results suggest the potential benefit of administering the ACE survey orally, in order to, discuss specific items with the patient and caregiver. Furthermore, our results suggest the importance of including the child in the interview when possible, as caregivers were not fully knowledgeable about some items. Future research with larger samples is needed to confirm findings.

#### **P.48**

WHAT ABOUT RACE? A SYSTEMATIC REVIEW ON THE RACIAL DISPARITIES SEEN IN KIDNEY XENOTRANSPLANTATION LITERATURE. Ijeoma Obizoba\*, Sabrina Hidalgo-Ahmed\*, Madeline Brown<sup>1</sup>, Garyn Metoyer<sup>2</sup>, Yvonne Rasko<sup>3</sup>, and Chandra Bhati<sup>4</sup>, <sup>2</sup>Sinai Hospital, Baltimore, MD, and <sup>3</sup>Division of Plastic Surgery and <sup>4</sup>Division of Transplantation Surgery, Department of Surgery, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

Kidney Failure is a life-altering condition that plagues many Americans yearly, with Black Americans being four times more likely to have kidney failure than White Americans. Though kidney transplantation is the definitive treatment, the demand for transplants far exceeds the available supply. With an ever-growing transplant list, xenotransplantation may be a solution in addressing the shortage. The purpose of this study is to determine if race, in relation to kidney xenotransplantation, is discussed in current literature. We searched PubMed using the term "Kidney Xenotransplantation" for any article type published within the last 5 years that mention *race* in their manuscript. Manuscripts must be written in English and discuss human participants. Articles not in the specified timeframe, did not mention kidney xenotransplantation, were nonhuman studies, and did not discuss race were excluded from the review. 193 peer-reviewed articles related to kidney xenotransplantation were published on PubMed. Of those articles, only two studies discussed race in relation

to kidney xenotransplantation. In both studies, patients' attitudes towards kidney xenotransplantation were assessed and showed that Black patients were deemed more "cautious" and less likely to accept xenotransplantation compared to White patients ( $p=0.03$ ). Both studies suggested medical mistrust as a reason for this disparity. We conclude that there is limited amount of literature that includes race, specifically of black individuals, in the discussion of kidney xenotransplantation. Medical mistrust may play a role in this racial disparity and thus echos the need for researchers to address these concerns. This will result in better engagement from minority communities and further increase inclusivity within the field of kidney xenotransplantation.

#### **P.49**

**IMPACT OF GOSLINGS II ON NICU PARENT-INFANT INTERACTIONS.** Tiffany Cao\*, Lisa Shanty<sup>1</sup>, Barbara Henschel<sup>2</sup>, Betsy Diamant-Cohen<sup>3</sup>, and Brenda Hussey-Gardner<sup>4</sup>, <sup>1</sup>Johns Hopkins University, Baltimore, MD, <sup>2</sup>Port Discovery Children's Museum, Baltimore, MD, <sup>3</sup>Mother Goose on the Loose: Goslings, Baltimore, MD, and <sup>4</sup>Division of Neonatology, Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD.

Mother Goose on the Loose: Goslings is a parent education program implemented in a Level IV, single-room NICU. It taught parents how to talk and sing with their infant using a provided kit, while responding to signals. Unfortunately, despite initial success, Goslings was not fiscally sustainable. Goslings was revised to decrease program length from 75 to 60 minutes and kit cost from \$55 to \$15. The revised program included all of the same principles while simplifying content and kit items. During Goslings-II, an instructor provided families with language and literacy activities for interacting with their infants, taught parents how to understand their infants' signals, and used a "traffic light" model to convey the infants' medical readiness for activities. Participants completed a pre- and post-program survey. Data was analyzed with SPSS-24. Parents also participated in semi-structured interviews 1-2 weeks after attending Goslings-II to discuss program impact on their interactions with their infants. Interviews were coded using Atlas.ti and inductive theme analysis. 63 family members of 72 infants completed both pre- and post-program surveys. Parents indicated that after Goslings-II, they were significantly more likely to talk, read, recite rhymes, and sing to their infant. Parents also noted that they were significantly more knowledgeable of signals and their infants' readiness for interaction. 5 themes also emerged from 7 parent interviews: (1) increased interactions, (2) parent wisdom as indicated through increased confidence and understanding of infant signals, (3) awareness when infant was not ready, (4) program strengths including the content and bonding with other parents, and (5) barriers to program implementation including parent schedule and traffic light usage. Thus, evaluation of Goslings-II yielded positive results similar to Goslings, demonstrating program effectiveness at a more affordable price. It also resulted in self-reported positive behavioral changes in parent-infant interactions, increased implementation of early language and literacy activities, and enhanced confidence.

This research was supported by PNC Grow Up Great.

#### **P.50**

**STUDENT EVALUATION OF REAL-TIME VIRTUAL IMMERSIVE CLINICAL EXPERIENCE.** Nicol Tugarinov\*, Nima Karodeh<sup>1</sup>, Ann Bon<sup>1</sup>, and Regina Macatangay<sup>2</sup>, <sup>2</sup>Division of Pediatric Hematology/Oncology, <sup>1</sup>Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD.

Clinical shadowing is an important aspect of the pre-medical student experience and is a strongly recommended component of the application into medical school. During the COVID-19 pandemic, opportunities for in-person clinical shadowing were limited, which made it difficult for applicants to obtain appropriate exposure to the medical field. During this time, there was a rise in various forms of virtual shadowing opportunities; however, they were largely financially limiting or asynchronous in nature. In 2022, we designed a unique structured virtual shadowing curriculum within the UMMC Pediatric Department. The program consists of a two-week schedule with a pediatric specialist that encompasses many aspects of an academic pediatric provider's daily life including rounds, patient encounters, and didactics. It also includes 1-on-1 interactions with physicians, medical students, and other health care members for long-term mentorship opportunities. Our research aims are to assess the perceived effectiveness of a virtual clinical shadowing

program before and after participation in program. The study was conducted using anonymous REDCap surveys completed prior to and following participation in the program. All virtual shadowees were given the option to participate in the research study. The surveys collected basic demographic information, responses to 4 Likert scale statements evaluating the participant's understanding of, preparedness for, interest in, and exposure to medicine prior to and upon completion of the program, as well as free-text responses for the strengths, weaknesses, favorite experiences, and recommendations for program development. We have recruited 4 pre-medical students to participate in the program with a 100% survey response rate. Paired T-Tests were used to analyze pre- and post- Likert scale statements and qualitative analysis of the free-text responses was performed. Preliminary analysis of the data is notable for a trend towards increased perceived effectiveness of virtual compared to in-person shadowing for exposure to medicine after completion of the program ( $p=0.09$ ). We will continue to expand our study sample size for further interpretation.

#### **P.51**

**PUBLICATION OUTCOMES OF ABSTRACTS PRESENTED AT SKIN OF COLOR UPDATE ANNUAL MEETING FROM 2018 TO 2020.** Madeline Brown\*, Chiemelum Amechi<sup>1</sup>, Ramona Khanna<sup>2</sup>, and Angel Byrd<sup>1</sup>, <sup>1</sup>Howard University College of Medicine, Washington DC and <sup>2</sup>Georgetown University School of Medicine, Washington DC.

The Skin of Color Update (SOCU) is an annual dermatology conference where medical professionals present cutting-edge research with the goal of attaining purposeful mentorship and education on the best practices to treat dermatologic conditions, including addressing the aesthetic needs of patients with skin of color. The objective of this study was to analyze the publication rates post-presentation and determine the variables that contributed to publication outcomes. A literature search was conducted for each abstract presented from 2018 to 2020 using PubMed and Google Scholar. An abstract was considered unpublished if there was no relevant search result found. Publication outcomes, journal destination, study design, and latency to publication were all extracted and analyzed. Results showed that of the SOCU abstracts presented in 2018, 2019, and 2020 only 53%, 50%, and 62% were published, respectively. For all three years, most abstracts were published in the *Journal of Drugs in Dermatology* and the *Journal of the American Academy of Dermatology*. For abstracts published after the conference date, the average latency to publication in 2018, 2019, and 2020 meetings were 11 months, 9.1 months, and 8.6 months, respectively. In 2018, retrospective chart reviews, reviews, meta-analyses, and surveys were the most published type of study design. The following year, surveys were the most published type of study design. Then in 2020, the distribution was the same for retrospective chart reviews, systematic reviews, and *On a Human Scale* (specific to the *International Journal of Dermatology*) as the most published type of study design. There are a variety of factors that can influence abstract publication rates, including, but not limited to, the type of study design, publication bias, or low statistical power of a study. These insights provide aspects to consider when designing projects, drafting abstracts, and selecting which conferences to attend and present findings.

#### **P.52**

**INITIATION OF SICKLE CELL EDUCATION IN PEDIATRIC HEMATOLOGY ANNUAL VISITS.** Arley Wolfand\*, Leah Daniel<sup>1</sup>, Becky Halagarda<sup>2</sup>, Holly DeLuca<sup>2</sup>, Diane Keegan Wells<sup>2</sup>, Ricki Weisbrot<sup>2</sup>, Teddi Roseman<sup>2</sup>, and Regina Macatangay<sup>2</sup>, <sup>2</sup>Division of Pediatric Hematology/Oncology, <sup>1</sup>Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD.

Sickle cell disease (SCD) is an autosomal recessive blood disorder affecting approximately 100,000 Americans, making it the most common inherited blood disorder in the United States. In 2010, it was estimated to be responsible for 113,000 hospitalizations and \$488 million dollars in hospitalization costs annually. Given that SCD is mostly diagnosed by routine neonatal screenings it requires a lifelong commitment by patients and their families to manage their healthcare. Therefore, effective education is necessary for maintaining the health of patients and reducing hospitalizations and their associated costs. The purpose of this research was to assess the efficacy of a patient education curriculum by physicians, child-life specialists, and nurse practitioners in the Division of Pediatric Hematology/Oncology at the University of Maryland Medical Center. The curriculum includes an annual education visit with age-appropriate information packets and activities for teaching patients

and their families about SCD. Topics covered include general understanding of the disease, the importance of the patient's medications, and when to seek medical care.

A total of 14 patients between the ages of 0-22 years of age with a diagnosis of SCD, including variations, were identified. Prior to the annual teaching session, patients able to give assent or consent and all guardians of underaged patients were given brief surveys where they rated their knowledge in different areas related to their disease on a scale of 1 to 5. A post-education survey with the same questions was then administered via phone one week and at least one month after the visit. Differences in overall knowledge as well as knowledge in individual areas of understanding (e.g. medications, triggers) were assessed. Of the 12 guardians and 2 patients surveyed, 7 showed an increase in their overall knowledge of their disease and 6 maintained the same level of knowledge. On average, the total knowledge score increased by 4.06 points at 1-week post-education and 1.09 at 1-month. Based on the survey results, the education provided has demonstrated efficacy in increasing knowledge of disease in patients and their guardians. The goal is to implement the education curriculum for 100% of the sickle cell patients at this institution to benefit their knowledge as they transition to adult care.

### **P.53**

IMPLEMENTATION OF A "BIAS CHECK" INTERVENTION ON ACADEMIC ROUNDS AND ITS IMPACT ON IMPLICIT BIAS IN PATIENT CARE: EXPANSION TO INTERNAL MEDICINE. Julianna Solomon\*, Rebecca Carter<sup>1</sup>, and Sylvia Lane<sup>2</sup>, <sup>1</sup>Division of General Pediatrics, Department of Pediatrics and <sup>2</sup>Department of Medicine-Pediatrics, University of Maryland School of Medicine, Baltimore, MD.

Provider implicit bias contributes to the persistence and evolution of healthcare disparities. Presence of stereotypic thoughts may impact clinician-patient interactions, content and delivery of patient care, and subsequent patient health outcomes. It is therefore essential to make providers aware of their own implicit biases and encourage replacement with non-stereotyped attitudes (1). The aim of this research project is to evaluate the efficacy of a "bias check" intervention to increase internal medicine (IM) resident self-awareness of bias and decrease its impact on patient care. It is an expansion of a previous study completed within the pediatrics department. Efficacy of the intervention is evaluated via a validated 24-item, Likert-scale questionnaire given to both the intervention and control group and the Top 2 Box Scores are compared. Members of the intervention group show increased perception of the impact of bias and decreased confidence to manage bias, as compared to the control group; however, this is not statistically significant due to insufficient sample size (intervention n= 5, control n = 3).

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.

### **P.54**

QUALITY OF LIFE THROUGH IMPLEMENTATION OF THE CASP-12 SCALE IN AGING POPULATIONS OF RURAL COTO BRUS, COSTA RICA. Shania Bailey\*, Alexis Vetack<sup>1</sup>, Hima Konduru<sup>1</sup>, Melissa Rallo<sup>1</sup>, Nicholas Leahy<sup>1</sup>, Christine Wan<sup>1</sup>, Lillianna Pedersen<sup>1</sup>, and Carlos Faerron Guzmán<sup>2</sup>, <sup>1</sup> University of Maryland School of Medicine, <sup>2</sup>Unveristy of Maryland, Baltimore, Baltimore, MD.

Costa Rica, a middle-income country, outcompetes even some high-income countries in life expectancy. Previous data has been drawn mainly from urban Costa Rican populations while limited documentation exists on the perceptions of aging within the rural population. It is fundamental to understand the health conditions and quality of life elderly individuals experience as the global geriatric population grows exponentially. This study focuses on the perceived overall quality of life using the CASP-12 scale in elderly Costa Ricans living in rural Coto Brus, Puntarenas, Costa Rica. A survey was administered to 63 participants aged 60 years or older where Quality of Life (QoL) was measured using the CASP-12 scale. This scale measures QoL through four domains: control, autonomy, self-realization, and pleasure. Of the 63 study participants, 67% identified as female (42/63) and 33% male (21/63), with an overall mean age of 73.14 (range: 62-95, SD: 7.01). 47.6% of the sample size were married and 47.6% were retired and/or receiving pension. The average QoL score was 27.12 out of a total possible score of 36 with individual domain scores of 5.28 (Control), 5.97 (Autonomy), 8.28 (Self-realization), and 7.59 (Pleasure) out of 9 possible points. The overall QoL for the participants sampled in rural Coto Brus, Costa Rica was generally well. The participants scored particularly high in the Self-realization

and Pleasure categories. 54 and 59 out of 63 (85.7% and 93.7%, respectively) participants responded “Often” to “I look forward to each day” and “I feel that my life has meaning.” During interviews, many participants had a great outlook on their life overall despite challenges and economic hardships they are currently facing, or difficulties faced throughout prior years. Though Costa Rica is a middle-income country and resources in the rural setting may be limited, the geriatric population appears to be happy and aging well. Future studies are warranted to understand the root of this communities’ healthy aging, to help assist healthy aging globally.

This research was supported by the Alicia and YaYa Fellowship in Global Aging Research

## **P.55**

UTILIZING AN ADVANCED TELEMEDICINE CLINIC FOR THE MANAGEMENT OF DIABETES. Reynier Hernandez\*, Fiorella Sotomayor<sup>1</sup>, Chikara Gothong<sup>1</sup>, Garrett Ash<sup>2</sup>, Lillian Pinault<sup>3</sup>, Lakshmi Singh<sup>1</sup>, John Sorkin<sup>4</sup>, and Ilias Spanakis<sup>1</sup>, <sup>1</sup>Division of Endocrinology, Diabetes and Nutrition, <sup>3</sup>Department of Medicine and <sup>4</sup>Department of Biostatistics and Informatics, University of Maryland School of Medicine, Baltimore, MD and <sup>2</sup>Division of Biomedical Informatics and Data Science, Department of Medicine, Yale School of Medicine, New Haven, CT.

Many patients with type 2 diabetes (T2D) are managed by multiple daily injections (MDI) and point of care glucose (POC) testing. Yet, patients often face limitations to access. Telehealth visits have the potential to improve clinic access and glycemic control. This study examined whether a new Diabetes Telemedicine (DT) clinic can improve glycemic control when compared to the standard of care (SC). (T2D) patients were randomized to DT clinic or SC. DT intervention consisted of continuous glucose monitoring devices, “smart” insulin pens, telecommunication systems (i.e., video encounters, online messaging, and/or telephone) and the promotion of physical activity (PA) through an exercise physiologist consultation. The SC group was managed by using point of care glucose monitoring, traditional insulin pens, in-person visits, and provider counseling of PA. Primary outcome measured was change in HbA1c and secondary outcomes were time in range (TIR) 70-180 mg/dl, time above range (TAR)>180 mg/dl and time below range (TBR)< 70 mg/dl. Exercise was evaluated using a senior fitness test and assessed by Hedges g effect size. A total of 18 patients were recruited, 14 completed 90 days in the trial. DT clinic subjects had an HbA1c reduction of 1.6% (0.60) (DT) vs 0.4 (0.69) (SC) [difference -1.2% (0.92), p=0.19]. TIR 70-180 mg/dl increased 8.5% (13.6) (DT) vs 4.4% (15.8) (SC) [difference +4.1% (20.8), p=0.84]. DT had decrease in TAR>180 mg/dl of 8.7% (13.7) compared to 4.4% (15.8) in SC [difference -4.3% (21.0), p=0.85] and TBR

## **P.57**

THE EFFECT OF THE COVID-19 PANDEMIC ON PARENTING CHILDREN WITH A DEVELOPMENTAL DISABILITY. Jernelle John\*, Deborah Badawi<sup>1</sup>, and Charina Reyes<sup>1</sup>, <sup>1</sup>Division of Behavioral and Developmental Pediatrics, Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD.

The COVID-19 pandemic has given rise to a multitude of stressors within families, including social isolation, health-related challenges, unemployment, and ensuing financial insecurities. These stressors, in turn, have the potential to induce adverse psychological changes among parents, consequently affecting their propensity for abusive behaviors and exerting negative consequences on child development. A particularly vulnerable demographic affected by these pandemic-induced stressors comprises parents who are caregivers to children with mental or physical disabilities. The primary objective of this study is to investigate the impact of the COVID-19 pandemic on parenting practices within families that have a school-aged child diagnosed with a neurodevelopmental disorder. While existing research has explored the association between the COVID-19 pandemic and the health and well-being of parents and children, limited attention has been given to families with children diagnosed with developmental disorders. This research contributes to the growing body of literature that explores both the direct and indirect repercussions of the pandemic on diverse family units. To accomplish this objective, we engaged caregivers responsible for children between the ages of 5 and 18, diagnosed with a developmental disorder, who were receiving care at the University of Maryland School of Medicine Department of Pediatrics, Division of Developmental-Behavioral Pediatrics. Participants completed two key assessments: the COVID-19 Exposure and Family Impact Scale (CEFIS) to evaluate their level of exposure to COVID-19, and the Multidimensional Assessment of Parenting (MAPS) Parenting Scale to assess

their parenting practices. A total of 42 participants completed the survey. Presently, we are in the process of analyzing the collected data to discern the study's outcomes and implications.

#### **P.58**

USING THE SOCIAL DETERMINANTS OF HEALTH TO ASSESS EMPLOYMENT BARRIERS IN PATIENTS WITH OPIOID USE DISORDER IN BALTIMORE CITY. Donald De Alwis\*, Marianne Cloeren<sup>1</sup>, and Marissa Tan<sup>2</sup>, <sup>1</sup>Division of Occupational and Environmental Medicine and <sup>2</sup>Division of Addiction Research and Treatment, Department of Medicine, University of Maryland School of Medicine, Baltimore, MD.

Nationwide, 9.49 million Americans (3.4%) have misused opioids at least once during the past year, and 2.702 million qualify as having a diagnosable opioid use disorder (OUD). Treatment of substance use disorder (SUD), including OUD, often requires a multifactorial approach to improve an individual's social determinants of health. Of these factors, employment is often a top priority of individuals with SUD. In this study, we assessed employment and employment-related barriers in individuals beginning treatment for SUD using a cohort with Medical Assistance as their insurance provider. The authorization process for this care required enrollment in the Maryland Outcome Measurement System (OMS) - a questionnaire designed to track how well Marylanders were being served by the Maryland Public Behavioral Health System (PBHS). The dataset was comprised of OMS responses from over 7,500 patients with opioid-use disorder across three treatment centers in Baltimore from 2015-2019. Multivariate logistic regression was performed for the outcome of current employment, demographic data, housing stability, zip code poverty level, self-reported legal barriers to employment, polysubstance use disorder, and mental health domains. When adjusted for demographics, clinic site, and year of enrollment, individuals with stable housing were almost twice as likely to be currently employed (OR 1.92, 95% CI 1.26-2.90) than people with unstable housing. For every 10% increase in poverty level in a resident's zip code, an individual was 20% less likely to be currently employed (OR 0.79, 95% CI 0.74-0.84) when adjusted for all factors. Of the mental health domains tested, only the psychosis and substance use severity domains had statistically significant associations with current employment (OR 0.67, 95% CI 0.58- 0.78 and OR 0.90, 95% CI 0.84-0.96, respectively).

#### **P.59**

SOCIOECONOMIC STATUS IS ASSOCIATED WITH ACCESS TO SIMULTANEOUS PANCREAS AND KIDNEY TRANSPLANT. Shani Kamberi\*, Josue Alvarez-Casas, Silke Niederhaus<sup>1</sup>, Cynthia Drachenberg<sup>1</sup>, Chandra Bhati<sup>1</sup>, Daniel Maluf<sup>1</sup>, Saad Malik<sup>1</sup>, and Raphael Meier<sup>1</sup>, <sup>1</sup>Division of Transplant, Department of Surgery, University of Maryland Medical Center, Baltimore, MD.

Socioeconomic disparities have been associated with stratifications in access to care and outcomes in solid organ transplantation. Worse social and physical environments, psychological burdens, and care inaccessibility are contributing factors. We aimed to characterize SES in Simultaneous Pancreas and Kidney (SPK) transplant recipients and analyze their effect on outcomes and transplant accessibility. A retrospective cohort study consisting of 377 SPK recipients between 1991 and 2022 was performed. SES was measured using average household income data from reported United States tax statistics. Recipients were stratified into four quartiles based on income. Univariate Kaplan-Meier curves were generated to analyze survival. Patients were divided into four quartiles according to their household income. Recipients in the lowest quartiles were found to have a lower chance of completing postsecondary education and more frequently self-identified as Black or African American. There were no significant differences among income brackets when assessing baseline characteristics. Age at transplant and age at diabetes onset were not statistically different between groups. SPK recipients in the lowest income bracket were less likely to receive a preemptive transplant. There were 11% preemptive SPK in the lowest income quartile, 25% in the second, 19% in the third, and 44% in the highest income quartile ( $p < 0.001$ ). Among recipients on dialysis at the time of transplant, there were no significant differences in dialysis time ( $2.1 \pm 3.1$  years on average). Kidney/pancreas graft and patient survival were not statistically different between the four groups. Our data found that low SES was not associated with differences in terms of graft survival in SPK recipients. We highlight a potential disparity in SPK transplant accessibility among the lowest income bracket recipients in the US. More research should be done to understand the systemic barriers that affect access to care and transplant referrals among diabetic patients.

## P.60

CHARACTERISTICS OF SPANISH-LANGUAGE PELVIC ORGAN PROLAPSE CONTENT ON TIKTOK. Amy Huddleson\*, Julianna Lebron Echandy\*, Maria Vera Alvarez<sup>1</sup>, Jonathan Konel<sup>2</sup>, and Madeline Dick-Biascochea<sup>3</sup>, <sup>3</sup>Division of Urogynecology and Pelvic Reconstructive Surgery, <sup>2</sup>Department of Obstetrics, Gynecology and Reproductive Sciences, <sup>1</sup>University of Maryland School of Medicine, Baltimore, MD.

Language barriers for non-English speakers negatively affect access to health care, quality of care, and health outcomes. Spanish is the most common non-English language spoken in the United States. Social media in Spanish may be the primary source of health information in this community. Knowledge of this information helps us provide culturally competent care and improve outcomes. In this study we aim to describe a sample of Spanish language TikTok videos on pelvic organ prolapse (POP). The first 150 videos for each of the following POP-related hashtags were identified: #prolapso, #prolapsouterino, #prolapsogenital, #prolapsovaginal, #cistocele, and #prolapsorectal. Videos were excluded if they were not in Spanish, they were not about POP, and/or did not pertain to humans. The data collected included: the source characteristics, the video's purpose (educational vs. non-educational), the nature and accuracy of its content, video length and additional metrics that help determine engagement such as the number of likes, comments, and shares. Nine hundred videos were identified. Seven-hundred and sixteen of those videos were excluded as per protocol and 104 videos were excluded for being duplicates. One hundred and eighty-four videos were analyzed. Analysis shows that 51% of sources are physicians, 15% are physical therapists, 12% are chiropractors, 3% are patients, and 17% come from other sources or the source is unclear. Forty-seven percent of the videos are evidence-based, 27% are not evidence-based, 7% included a mix of both and 19% did not fit into any category. Seventy-eight percent are educational, 22% are not. The most common country of origin is Peru. The video with the most comments and shares and the video with the most "likes" are by physical therapists. The most viewed video, with 8.6 million views, was created by a medical aesthetics clinic, advertising laser vaginal rejuvenation. There is a notable presence of Spanish content relating to POP on TikTok and over half the sources are physicians. However, the videos that generate the most interest, as judged by the amount of comments, shares and likes are not by physicians, and many are presenting information that is not evidence-based. This work is a foundation to help understand the information available to our Spanish-speaking patients. It shines a light on the need to not only increase the amount of evidence-based information in Spanish but, more importantly, to present the information in a more effective and engaging manner making it accessible to a larger population.

## P.61

AN ANALYSIS OF SOCIAL AND EMOTIONAL LONELINESS IN AN ELDERLY POPULATION OF SAN VITO DE COTO BRUS, COSTA RICA. Nicholas Leahy\*, Melissa Rallo<sup>1</sup>, Hima Konduru<sup>1</sup>, Christine Wan<sup>1</sup>, Lillianna Pedersen<sup>1</sup>, Shania Bailey<sup>1</sup>, Alexis Vetack<sup>1</sup>, and Carlos Faerron Guzmán<sup>1</sup>, <sup>1</sup>Department of Medicine, University of Maryland School of Medicine, Baltimore, MD.

The burden of loneliness in geriatric populations on a global scale is increasing as trends in life expectancy continue to improve. With advancing age comes an increase in the number of life events – such as the loss of a life partner, dwindling social networks, and deteriorating health conditions – that could perpetuate a state of loneliness. This burden can manifest in a variety of mental and physical consequences. While loneliness has been studied in a few communities around the world, there is a need to study loneliness in the context of Latin American communities in Central America, particularly Costa Rica. The aim of the present study is to assess the prevalence and associated factors of Social and Emotional Loneliness (SEL) in a geriatric sample in the canton of Coto Brus, Costa Rica. A cross-sectional study was conducted that sampled 63 older adults aged 65 years or above in the canton of Coto Brus. Investigators conducted face-to-face interviews in Spanish with the aid of translators. The primary instruments used for the present study were a content-validated version of the 11-item De-Jong-Giervald Loneliness Scale, and socio-demographic questions that included age, gender, address, civil status, and level of education. After the prevalence of SEL was calculated, a high degree of SEL was found with 60.3% of participants noting at least a moderate degree of loneliness with the average score being 3.33 on the 11-point scale. When SEL was broken up into its respective subscores, the average score for Social Loneliness (SL) was found to be 0.67 on the 5-point scale, and the average score for Emotional Loneliness (EL) was found to be 2.67 on the 6-point scale. There was also evidence that supports both level of education and marital status serving as protective factors in the development of SEL. These results could



indicate a stronger association of loneliness linked to missing a life partner compared to loneliness linked to having smaller social networks. Given the associations that were found in this preliminary study, it would be pivotal to explore loneliness in this community with a larger sample size. It would also be crucial to expand the study to explore any associations between loneliness and comorbid mental and physical health conditions.

This research was supported by the Alicia and Yaya Fellowship

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**NUTRITIONAL PROFILE OF OLDER ADULTS IN SAN VITO DE COTO BRUS, COSTA RICA.** Hima Konduru\*, Nicholas Leahy<sup>1</sup>, Melissa Rallo<sup>2</sup>, Shania Bailey<sup>3</sup>, Lillianna Pedersen<sup>4</sup>, Alexis Vetack<sup>5</sup>, Christine Wan<sup>6</sup>, and Carlos Faerron Guzmán<sup>7</sup>, <sup>1</sup>Department of Medicine, University of Maryland School of Medicine and <sup>2</sup>University of Maryland, Baltimore, Baltimore, MD.

Costa Rica is a middle-income country with a life expectancy similar to or even higher than some high-income countries. Dietary quality substantially impacts various aspects of health and likely plays a role in increased life expectancies. Previous reports have explored the nutritional intake of Costa Ricans, primarily focusing on populations of different age groups living in urban areas. This project aims to characterize the nutritional profile of elderly adults living in rural Coto Brus, Puntarenas, Costa Rica. Sixty-four participants were administered a survey tool, the Diet Quality Questionnaire (DQQ). The DQQ gathers data on the consumption of 29 different food groups centered around sentinel foods, those which are the most frequently consumed items within a food group in a given population. In this case, it was adapted to represent foods in the Costa Rican context. The DQQ is able to identify indicators about diet patterns in a population based on global dietary recommendations, as well as analyze the consumption of specific foods of interest. Among 64 participants, 68.8% consumed all five recommended daily food groups in the previous day or night, with 84.4% having at least one vegetable, 89.1% having at least one fruit, 79.7% having at least one pulse, nut, or seed, 100% consuming at least one animal-source food, and 98.4% consuming at least one starchy staple. The Food Group Diversity Score was 6.9/10. This indicator is calculated from the number of food groups consumed in the previous day or night out of ten defined food groups, with a higher score indicating inclusion of more food groups in the diet. More directly related to health outcomes, the NCD-Protect Score was 4.4/9; higher scores indicate greater protection against non-communicable diseases. The NCD-Risk Score was 2.5/9; higher scores indicate greater risk for non-communicable diseases. Overall, the majority of participants consumed a diet that was varied and included foods from the recommended food groups. Further investigation is needed to understand the details of economic and physical barriers to food access and how this affects the health of the elderly population in Coto Brus.

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**IMPACT OF GENDER AFFIRMING THERAPY ON MENTAL HEALTH RESOURCE UTILIZATION IN TRANSGENDER AND GENDER DIVERSE PATIENTS.** Danielle Sim\*, Bashar Hassan<sup>1</sup>, Shep Heaton<sup>1</sup>, and Fan Liang<sup>1</sup>, <sup>1</sup>Division of Plastic and Reconstructive Surgery, Johns Hopkins University School of Medicine, Baltimore, MD.

Transgender and gender-diverse (TGD) individuals experience disproportionate rates of mental health challenges, including anxiety, depression, and suicidality compared to cisgender individuals. Gender-affirming hormone therapy (HT) has been associated with improved psychosocial symptoms in TGD individuals. However, our understanding of the impact of HT on psychosocial functioning is limited based on studies with subjective assessments and short-term follow-up. Here we evaluate utilization of mental health resources before and after HT, to assess long-term changes in suicidality and mental health resource use. We conducted a retrospective chart review of TGD individuals who pursued HT at a single institution from January 2017 to July 2023. Patients were included if they had at least one year of documentation prior to HT and two years of documentation following HT. For each patient, outcomes were analyzed within equal before and after HT follow-up periods. Suicidality, non-suicidal self-injury (NSSI), acute mental health care (ED or hospitalization), and psychotropic medication use were compared. McNemar and Wilcoxon signed rank tests were used to compare outcomes before versus after HT. A total of 51 TGD individuals were analyzed with a median (interquartile range [IQR]) age of 18 [14-22] years. The median [IQR] matched follow-up period was 3.8 [1.7-

5.8] years before and after HT. HT was associated with a lower average (SD) number of SA compared with that prior to HT (1.3 [0.8], 0.6 [0.9],  $P=0.008$ ). Fewer patients reported SA (7 [14%], 17 [33%],  $P=0.004$ ) and NSSI (13 [25%], 22 [43%],  $P=0.049$ ) after versus before HT. The number of prescribed psychotropic medications and acute mental health assessments did not change between the two follow-up periods. Patients who sought acute mental health care after HT initiation, compared to those who did not, were significantly more likely to have history of abuse (17 [53%], 1 [5.3%],  $P < 0.001$ ) and unstable housing (e.g., homelessness or multiple foster placements) (10 [31%], 0 [0%],  $P=0.008$ ). Our findings corroborate previous studies of improved psychosocial well-being following HT in the setting of long-term follow-up. Identification of patient and psychosocial factors associated with increased risk of poor mental health outcomes is needed to better support TGD patients undergoing medical transition.