UNIVERSITY *of* **MARYLAND**
SCHOOL OF MEDICINE

48th Annual Medical Student Research Day
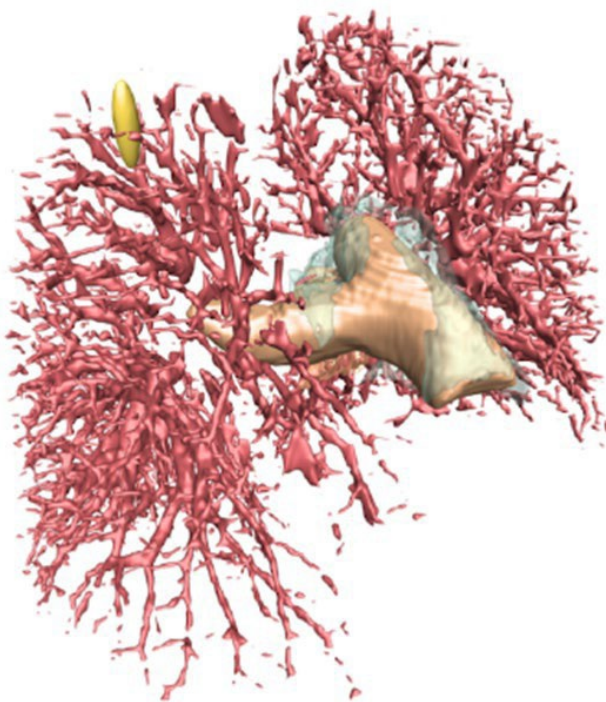
Presented by the

Office of Student Research &
Alpha Omega Alpha Honor Medical Society

Tuesday, November 18 and Wednesday, November 19, 2025
Southern Management Corporation (SMC) Campus Center
621 West Lombard Street
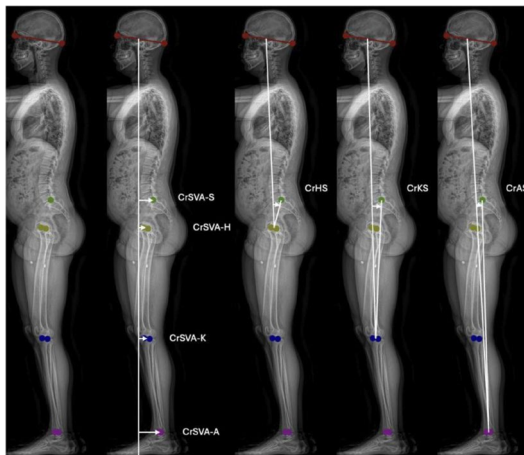Baltimore, MD 21201


Andrew Nguyen, P2.17
3D reconstruction of lung vessels (red), nodules (yellow), pulmonary veins (blue), pulmonary arteries (tan), and their corresponding perivascular adipose tissue (PVAT): lung vessel PVAT (light blue), nodule PVAT (pink), pulmonary vein PVAT (peach), and pulmonary artery

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Ethan Yang, P1.16
Radiograph Demonstrating (A) Landmarks for Global Sagittal Alignment Parameters, (B) CrSVA Measurements, and (C) Cranium Angle Measurement
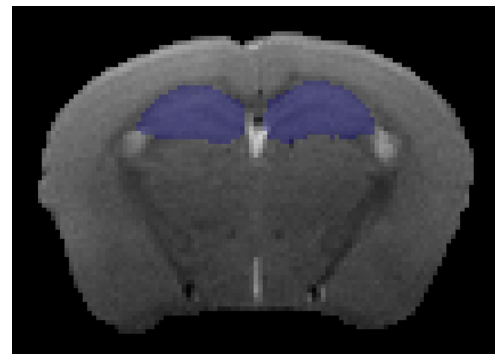
Tyler Wishard, O2.04
Coronal section of an adult mouse brain MRI highlighting the dorsal hippocampus in dark blue

Office of Student Research

Kathryn S. Robinett, M.D.
Professor of Medicine
Associate Dean for Student Research and Education
Assistant Dean for Admissions

Gregory B. Carey, Ph.D.
Associate Professor of Microbiology and Immunology
Associate Dean for Biomedical and Health Profession Pathways and Workforce Development
Assistant Dean for Student Research and Education
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Alpha Omega Alpha Honor Society

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Charlyn Gomez, Medical Student	Aidan Wiley, Medical Student
Mary Hackbarth, MD/PhD Student	Angela Yang, Medical Student

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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 faculty mentors and staff who supported and guided the students in their research.

Our special thanks go to the faculty, research associates, residents, fellows, post-doctoral fellows and other UMB community members who generously gave of their time to serve as judges during this event:

Chinedu Agbakwuru, MBBS
Musa Ajibola, PhD
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Tuesday, November 18 and Wednesday, November 19, 2025
Southern Management Corporation (SMC) Campus Center
See the **Presentation Schedule** for list of individual presentations

Attire: Business Casual

Day 1: Tuesday, November 18

12:10 p.m. – 1:20 p.m.	*Registration, Lunch, and Keynote Address (2nd Floor Lounge, Elm Room A)*
12:25 p.m. – 12:45 p.m.	Opening Remarks

Gregory B. Carey, PhD
Associate Professor of Microbiology and Immunology
Associate Dean for Biomedical and Health Profession Pathways and Workforce Development
Assistant Dean for Student Research and Education
Executive Director of Student Research and Community Outreach
Director of PRISM, UM Scholars, and STAR-PREP Training Programs

Kathryn Robinett, MD
Associate Professor of Medicine
Associate Dean for Student Research and Education
Associate Program Director for the Pulmonary & Critical Care Medicine Fellowship

Anahita Shiva & Ishan K. Vaish
MSRD Co-Chairs
AOA Student Representatives
Alpha Omega Alpha Honor Medical Society Maryland Beta Chapter

12:45 p.m. – 1:15 p.m.	Keynote Address (Elm Room A)

Adam C. Kaufman, MD, PhD
Assistant Professor, Department of Otorhinolaryngology–Head and Neck Surgery

Title: Life in the In-Between

1:15 p.m. – 1:20 p.m.	Brief Procedures

Fiama Romero, MS
Program Manager, OSR

Day 1: Tuesday, November 18 *(continued)*

Time	Event
1:20 p.m. – 1:30 p.m.	*Break*
1:30 p.m. – 4:50 p.m.	***Presentations***
1:30 p.m. – 2:30 p.m.	Oral Presentation Session 1 (Elm Room A) Oral Presentation Session 2 (Elm Room B) Oral Presentation Session 3 (Room 223) Poster Presentation Session 1 (Room 349)
2:30 p.m. – 2:40 p.m.	*Break*
2:40 p.m. – 3:40 p.m.	Oral Presentation Session 4 (Elm Room A) Oral Presentation Session 5 (Elm Room B) Oral Presentation Session 6 (Room 223) Poster Presentation Session 2 (Room 349)
3:40 p.m. – 3:50 p.m.	*Break*
3:50 p.m. – 4:50 p.m.	Oral Presentation Session 7 (Elm Room A) Oral Presentation Session 8 (Elm Room B) Oral Presentation Session 9 (Room 223)

PHOTOGRAPHY AND VIDEOGRAPHY AT THIS EVENT

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Attire: Business Casual

Day 2: Wednesday, November 19

1:00 p.m. – 2:00 p.m.	*Registration (2nd Floor Lounge, Elm Room A)*
1:10 p.m. – 3:20 p.m.	*Presentations*
1:10 p.m. – 2:10 p.m.	Oral Presentation Session 10 (Elm Room A)
	Oral Presentation Session 11 (Elm Room B)
	Oral Presentation Session 12 (Room 223)
	Poster Presentation Session 3 (Room 349)
2:10 p.m. – 2:20 p.m.	*Break*
2:20 p.m. – 3:20 p.m.	Oral Presentation Session 13 (Elm Room A)
	Oral Presentation Session 14 (Elm Room B)
3:25 p.m. – 4:10 p.m.	*Networking Reception (Elm Room A)*
4:10 p.m. – 5:00 p.m.	*Awards Banquet (Elm Room A)*
4:10 p.m. – 4:30 p.m.	Honoring Faculty Mentors: Mentor Recognition Awards
	MSRD Chairs/AOA Student Representatives
4:30 p.m. – 4:50 p.m.	Presentation of Student Awards
	MSRD Chairs/AOA Student Representatives
4:50 p.m. – 5:00 p.m.	Closing Remarks
	Gregory B. Carey, PhD
	Kathryn Robinett, MD

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Presentation Schedule (Ordered by Session and Presentation ID)

Session	ID	Last Name	First Name	Program	Title	Date/Time	Room	Mentor(s)
Oral 1	O1.01	Dulla	Alexander	Independent	Reducing Care Delays During Endovascular Thrombectomy Procedures Using an Anesthesia-Focused Clinical Practice Guideline: a Quality Improvement Project	Tues 11/18 1:30 PM	Elm Rm. A	Megan Anders
Oral 1	O1.02	Wetoska	Nicole	Independent	Pre-Operative Ankle-Brachial Index in Assessing Major Amputation Level and Outcomes in Patients with Peripheral Artery Disease	Tues 11/18 1:30 PM	Elm Rm. A	Khanjan Nagarsheth; Rajabrata Sarkar
Oral 1	O1.03	Mansoor	Shaiza	PRISM	Deep Vein Thrombosis and Thrombus Resolution	Tues 11/18 1:30 PM	Elm Rm. A	Brajesh Lal
Oral 1	O1.04	Siddiqui	Mustafa	PRISM	Evaluation of Platelet Adhesion and Hemodynamic Influences on ECMO Thrombosis: A Comparative Study of Biomaterial Surfaces	Tues 11/18 1:30 PM	Elm Rm. A	Zhongjun Wu; Shigang Wang
Oral 1	O1.05	Leggett Do	Emmeline Aryanne	Independent	Echocardiographic Metrics of Right Sided Venous Congestion are Frequent in Trauma Patients With Hemorrhagic Shock	Tues 11/18 1:30 PM	Elm Rm. A	Sarah Murthi; Evan Lutton
Oral 1	O1.06	Chari	Rohit	Independent	Time to Aortic Occlusion: A 12-Year Analysis of the REBOA Procedure at the Shock Trauma Center	Tues 11/18 1:30 PM	Elm Rm. A	William Teeter
Oral 2	O2.01	Lawrence	Audrey	PRISM	Evaluation of Akt Signaling as a Critical Effector in anti-N-methyl-D-aspartate Receptor Encephalitis	Tues 11/18 1:30 PM	Elm Rm. B	David Benavides
Oral 2	O2.02	Snyder	Kirsten	PRISM	Characterizing Cell-Type Specific Expression of Lactate Dehydrogenase Isoforms A and B in Normal Mouse Brain	Tues 11/18 1:30 PM	Elm Rm. B	J Marc Simard; Alexander Ksendzovsky
Oral 2	O2.03	Nusraty	Sabrina	PRISM	Polysomnographic versus Parent-reported Predictors of Executive Function in Children with Sleep Disordered Breathing	Tues 11/18 1:30 PM	Elm Rm. B	Amal Isaiah
Oral 2	O2.04	Wishard	Tyler	PRISM	Longitudinal Diffusion MRI of Entorhinal-Hippocampal Network Remodeling During Epileptogenesis After Temporal Lobe Contusion	Tues 11/18 1:30 PM	Elm Rm. B	J Marc Simard; Vladimir Gerzanich
Oral 2	O2.05	Nguyen	Thach-Vu	PRISM	Evaluating the Therapeutic Potential of Low-intensity Focused Ultrasound in Attenuating Local Field Potential Ictal Activity and Spontaneous Seizures in a Rat Model of Temporal Lobe Epilepsy	Tues 11/18 1:30 PM	Elm Rm. B	Whitney Parker
Oral 3	O3.01	Summers	Elizabeth	Ortho Summer Research Program	The Impact of Socioeconomic Disadvantage on Outcomes after Surgical Fixation of Distal Femur Fractures	Tues 11/18 1:30 PM	Rm. 223	Robert O'Toole; Gerard Slobogean
Oral 3	O3.02	May Funk	Catherine Karli	Independent	Re-fracture Rate of Pediatric and Adolescent 5th Metacarpal Neck Fractures	Tues 11/18 1:30 PM	Rm. 223	Joshua Abzug
Oral 3	O3.03	Bhandari	Naman	Independent	Impact of Pre-Op Expectations on 2-Year PROs After Partial Meniscectomy	Tues 11/18 1:30 PM	Rm. 223	Sean Meredith
Oral 3	O3.04	Verma	Ankush	Independent	Preoperative Opioid Use and Indication Predict 2-year PROMIS PI in RTSA	Tues 11/18 1:30 PM	Rm. 223	Sean Meredith
Oral 3	O3.05	Diep	David	PRISM	Mobile is the Goal: Validating Functional Outcomes and Return to Baseline Activity with Apple Health Metrics in Patients Undergoing ACL Reconstruction	Tues 11/18 1:30 PM	Rm. 223	Jonathan Packer
Oral 3	O3.06	Przygocki	Tyler	Independent	The Impact of Early Postoperative Pain Interference on Two-Year Outcomes after Hip Arthroscopy	Tues 11/18 1:30 PM	Rm. 223	Sean Meredith

Session	ID	Last Name	First Name	Program	Title	Date/Time	Room	Mentor(s)
Oral 4	O4.01	Przygocki	Tyler	PRISM	Revision Hip Arthroscopy Achieves Similar Two-Year Improvements as Primary Procedures, With Lower Activity and Higher Residual Pain	Tues 11/18 2:40 PM	Elm Rm. A	Sean Meredith; Joseph Blommer
Oral 4	O4.02	Yang	Ethan	Independent	Comparison of Complications and Risk Factors of Orthopedic Gun Shot Wound Fractures Between Different Anatomical Regions – National Trauma Database study.	Tues 11/18 2:40 PM	Elm Rm. A	Meir Marmor
Oral 4	O4.03	Funk May	Karli Catherine	Independent	Factors Surrounding Accessibility to Pediatric Orthopaedic Specialists: Assessing Travel Burden and Barriers to Care	Tues 11/18 2:40 PM	Elm Rm. A	Joshua Abzug
Oral 4	O4.04	Baqai	Hammad	Independent	Complications Associated with Distal Radius Fractures Managed with Closed Reduction and Percutaneous Pinning	Tues 11/18 2:40 PM	Elm Rm. A	Joshua Abzug
Oral 4	O4.05	Polsky Panshin	Daniel Maclean	PRISM	Private Vehicle vs. Ambulance for Pediatric Orthopaedic Transfers: A Retrospective Analysis	Tues 11/18 2:40 PM	Elm Rm. A	Joshua Abzug
Oral 4	O4.06	Funk	Karli	Ortho Summer Research Program	Does Fixation Strategy for Native and Periprosthetic Distal Femur Fractures Influence Discharge Disposition?	Tues 11/18 2:40 PM	Elm Rm. A	Robert O'Toole; Gerard Slobogean
Oral 5	O5.01	Melnyk	Katerina	Independent	When the First Cycle Fails: Understanding Fertility Treatment Discontinuation in Donor Sperm Recipients	Tues 11/18 2:40 PM	Elm Rm. B	Jerrine Morris; Dr. Jonathan Konel
Oral 5	O5.02	McCarragher	Ryan	Independent	Youth-Centered Sexual Health: Understanding Preventive Care Patterns and Choices in STI Testing	Tues 11/18 2:40 PM	Elm Rm. B	Matthew Grant
Oral 5	O5.03	Dickerson	Gabrielle	Independent	Are #Fibroids On Your #FYP? A Content Analysis of Uterine Fibroid Treatment Options on TikTok and the Role of Interventional Radiology	Tues 11/18 2:40 PM	Elm Rm. B	Neil Jain; Keith Horton
Oral 5	O5.04	Jacobs	Lauren	PRISM	Patient Satisfaction with IUD Pain Management Option Checklist	Tues 11/18 2:40 PM	Elm Rm. B	Jessica Lee
Oral 5	O5.05	Ravi	Priyanka	PRISM	An Analysis of Socioeconomic Deprivation and Cancer Trial Enrollment at the University of Maryland's Greenebaum Comprehensive Cancer Center: A Retrospective Cohort Study	Tues 11/18 2:40 PM	Elm Rm. B	Benjamin Powers
Oral 5	O5.06	Panshin	Maclean	UM Scholars/Maryland Department of Health	Strengthening Maryland's Healthcare Workforce: A Comparative Analysis of MLRP Applicants and Awardees	Tues 11/18 2:40 PM	Elm Rm. B	Sara Seitz
Oral 6	O6.01	Muhammed	Salim	USC/CHLA Summer Oncology Research Fellowship (SORF)	Co-stimulatory Displayed Vector Enhances Transduction for Rapid 1-Step CAR T Therapy	Tues 11/18 2:40 PM	Rm. 223	Bingfei Yu; Jing Hu
Oral 6	O6.02	Summers	Elizabeth	Independent	UMMC Experience with Commercially Available Tumor Infiltrating Lymphocyte Therapy for Melanoma	Tues 11/18 2:40 PM	Rm. 223	Julia Terhune
Oral 6	O6.03	Tu	Kevin	AOA Research Fellowship	Microenvironment profiles of 2,400 glioblastomas identify a perinecrotic niche associated with immunotherapy resistance	Tues 11/18 2:40 PM	Rm. 223	Zachary Reitman
Oral 6	O6.04	Huang	Christopher	PRISM	Comparison of Outcomes and Prostate Cancer Diagnosis in Freehand Transperineal vs. Transrectal Prostate Biopsy in the VA Patient Population	Tues 11/18 2:40 PM	Rm. 223	Mohummad Siddiqui
Oral 6	O6.05	Drovetsky	Katya	Independent	Comparison of Urinary Toxicity Profiles in Prostate Cancer Patients Undergoing External Beam Radiation Therapy With High-Dose vs. Low-Dose Brachytherapy Boost	Tues 11/18 2:40 PM	Rm. 223	Jason Molitoris
Oral 6	O6.06	Rajabi Abhari	Delara	Rad Onc/PRISM	Practical Clinical Interventions to Help Improve Cancer Care for Patients Who Experience Food Insecurity	Tues 11/18 2:40 PM	Rm. 223	Melissa Vyfhuis

Presentation Schedule (Ordered by Session and Presentation ID)

Session	ID	Last Name	First Name	Program	Title	Date/Time	Room	Mentor(s)
Oral 7	O7.01	Huang Ada Son	Christopher Nischal Chang Jun	Independent	Gamified Robotic Surgery Simulation for Medical Students: A Randomized Trial	Tues 11/18 3:50 PM	Elm Rm. A	Mohummad Siddiqui; Hanna Jia
Oral 7	O7.02	Davis	Faith	MSTP	Estrogen Regulates Glucose and Insulin Signaling in the Non-Human Primate Placenta	Tues 11/18 3:50 PM	Elm Rm. A	Irina Burd
Oral 7	O7.03	Mastoor	Yusuf	MSTP	Measuring Nitric Oxide to Validate AI-Guided Discovery of Endothelin B Receptor Binding Peptides	Tues 11/18 3:50 PM	Elm Rm. A	Bradley Maron
Oral 7	O7.04	Dickerson	Gabrielle	Independent	Sustainable AI-Supported Workflows: Preserved Diagnostic Accuracy for Pulmonary Embolism Detection with Reduced Contrast CT Pulmonary Angiography	Tues 11/18 3:50 PM	Elm Rm. A	Florence Doo
Oral 7	O7.05	McLuckey	Robert	M4I	Exploring AI-powered cameras to monitor contact precaution compliance	Tues 11/18 3:50 PM	Elm Rm. A	Anthony Harris
Oral 7	O7.06	Schenk	Blayne	Independent	Jewish Ethnic Subgroups and Artificial Intelligence Clinical Decision Support	Tues 11/18 3:50 PM	Elm Rm. A	Rozalina McCoy
Oral 8	O8.01	Naeem	Umailla	Independent	The Reach of State Insulin Cost Caps: Coverage and Limitations	Tues 11/18 3:50 PM	Elm Rm. B	Rozalina McCoy; Renhao Wang
Oral 8	O8.02	Zoghi Sureskumar	Sahar Akash	Independent	Impact of Comprehensive Primary Care on Diabetes Management and Outcomes: A Systematic Review	Tues 11/18 3:50 PM	Elm Rm. B	Rozalina McCoy
Oral 8	O8.03	Singh	Aditi	PRISM	Trends in Weight Management Therapies Among Patients with Obesity and Type 2 Diabetes	Tues 11/18 3:50 PM	Elm Rm. B	Rozalina McCoy
Oral 8	O8.04	Zehra	Anum	Independent	Screening for HbA1c control in the Emergency Department in individuals with T2D	Tues 11/18 3:50 PM	Elm Rm. B	Kashif Munir
Oral 8	O8.05	Zehra	Anum	Research Elective	Comparative Renal Outcomes of Individual SGLT2i Medications in Individuals with Type 2 Diabetes	Tues 11/18 3:50 PM	Elm Rm. B	Rozalina McCoy
Oral 8	O8.06	Kalathiya	Urja	Independent	Cardiovascular Effects of Alogliptin, Linagliptin, Saxagliptin, and Sitagliptin: A Target Trial Emulation of a Comparative Effectiveness Study	Tues 11/18 3:50 PM	Elm Rm. B	Rozalina McCoy
Oral 9	O9.01	Verma	Ankush	Independent	Neurological Outcomes Following Thoracic Decompression Surgery: A Retrospective Cohort Study of 258 Patients	Tues 11/18 3:50 PM	Rm. 223	Steven Ludwig
Oral 9	O9.02	Molavi	Claire	Independent	Identifying Barriers to Biologic Treatment for Severe Asthma	Tues 11/18 3:50 PM	Rm. 223	Margaret Connolly
Oral 9	O9.03	Kolodgie	Nina	Rad Onc	Pulmonary Complications Following Lateral Beam Total Body Irradiation: A Retrospective Analysis of Dose-Dependent Outcomes	Tues 11/18 3:50 PM	Rm. 223	Zaker Rana
Oral 9	O9.04	Jensen	Peter	PRISM	No Association of Child Opportunity Index in Critical Pediatric Respiratory Disease	Tues 11/18 3:50 PM	Rm. 223	Siddhartha Dante
Oral 9	O9.05	Prashant	Manasi	Independent	Novel Variants in MET, BSND, and MYO7A Genes Associated with Nonsyndromic Hearing Loss in Consanguineous Pakistani Families	Tues 11/18 3:50 PM	Rm. 223	Zubair Ahmed; Tehmeena Akhter
Oral 9	O9.06	Lee	Elizabeth	Independent	Socioeconomic and Demographic Trends of Sign Language Communicating Cochlear Implantees	Tues 11/18 3:50 PM	Rm. 223	Adam Kaufman
Oral 10	O10.01	Wegner	Claire	PRISM	Understanding Disparities in Prenatal Diagnosis of Congenital Heart Disease	Wed 11/19 1:10 PM	Elm Rm. A	Alicia Chaves
Oral 10	O10.02	Tieu	Kenneth	PRISM	Leveraging Preeclampsia Screening to Improve Prenatal Detection of Congenital Heart Defects	Wed 11/19 1:10 PM	Elm Rm. A	Shifa Turan

Session	ID	Last Name	First Name	Program	Title	Date/Time	Room	Mentor(s)
Oral 10	O10.03	Yang	Sarah	PRISM	Echocardiographic Findings in Children with Down Syndrome and Obstructive Sleep Apnea	Wed 11/19 1:10 PM	Elm Rm. A	Amal Isaiah
Oral 10	O10.04	Devadiga	Ananya	Independent	Outcomes of Extremely Low Gestational Age Newborns Post Implementation of a Standardized Care Protocol	Wed 11/19 1:10 PM	Elm Rm. A	Sripriya Sundararajan; Erin Schofield
Oral 10	O10.05	Joshi Quackenbush	Sama Jane	Independent	Barriers to Contraceptive Access, Use and Satisfaction	Wed 11/19 1:10 PM	Elm Rm. A	Marie Nakhoul
Oral 10	O10.06	Rajabi Abhari Dickerson	Delara Gabrielle	Independent	Alternative Medicine and Misinformation Presented on TikTok for Uterine Fibroids	Wed 11/19 1:10 PM	Elm Rm. A	Neil Jain; Keith Horton
Oral 11	O11.01	Riaz	Tahreem	Rural-MD Scholars Program	The role of Maryland Primary Care Program (MDPCP) in expanding Self-Management and Support Outreach Services: A comparative analysis of Rural and Non-rural MDPCP Practices	Wed 11/19 1:10 PM	Elm Rm. B	Rozalina McCoy; Kaitlynn Robinson-Ector
Oral 11	O11.02	Ternovskaia	Anastasia	Rural-MD Scholars Program	Trends of Rural and Urban Emergency Department Psychiatric Complaints from 2019-2024: A Multicenter Study	Wed 11/19 1:10 PM	Elm Rm. B	Quincy Tran
Oral 11	O11.03	Tu	Kevin	UMB Provost's Climate Health & Resilience Internship	Health burden and disparities from municipal and medical waste incineration in Baltimore	Wed 11/19 1:10 PM	Elm Rm. B	Christopher Heaney
Oral 11	O11.04	Abdellah	Sarah	Independent	When Flaps Fail: Identifying Predictors of Free Flap Outcomes in Traumatic Limb Reconstruction	Wed 11/19 1:10 PM	Elm Rm. B	Grigorios Lamaris
Oral 11	O11.05	Rabinowitz	Seth	Independent	Intra-Operative Parathyroid Hormone during Parathyroidectomy: Does Age Matter?	Wed 11/19 1:10 PM	Elm Rm. B	Yinin Hu
Oral 11	O11.06	Wing	Justin	Research Elective	Understanding the Decisions Behind Persistently High ED Utilization Among Patients with Substance Use Disorders	Wed 11/19 1:10 PM	Elm Rm. B	Marik Moen; Daniel Gingold
Oral 12	O12.01	Cruess	Cailin	Independent	Management of Temporal Bone Fractures in Patients Surviving Ballistic Injuries	Wed 11/19 1:10 PM	Rm. 223	Natalie Justicz; Adam Kaufman
Oral 12	O12.02	Amatya	Bibhas	Independent	Impact of Hypoalbuminemia on Perioperative Morbidity and Mortality in Spine Surgery: Analysis Using the NSQIP Database	Wed 11/19 1:10 PM	Rm. 223	Abdul Gaith
Oral 12	O12.03	Sureshkumar	Akash	Independent	Epidemiology, Outcomes, and Complications of Gymnast's Wrist	Wed 11/19 1:10 PM	Rm. 223	Joshua Abzug
Oral 12	O12.04	Bristow	Paige	M4I	Time to Patent Bloodstream Infection for Males Versus Females in Controlled Human Malaria Infection at the University of Maryland	Wed 11/19 1:10 PM	Rm. 223	Matthew Laurens
Oral 12	O12.05	Cruess	Cailin	Independent	Safety Profile of Intranasal Nanoemulsion-Adjuvanted Influenza and Bacillus anthracis Vaccines	Wed 11/19 1:10 PM	Rm. 223	Adam Kaufman
Oral 12	O12.06	Cummings	Bryan	American Society for Tropical Medicine and Hygiene (ASTMH)	Transcriptomic Profiling of Severe Plasmodium falciparum Malaria with Prostration in Ugandan Children	Wed 11/19 1:10 PM	Rm. 223	Mark Travassos; Pauline Byakika-Kibwika
Oral 13	O13.01	Yang	Jack	PRISM	Evaluating Serum Tears as a Treatment for Ocular Graft vs. Host Disease after Hematopoietic Stem Cell Transplantation	Wed 11/19 2:20 PM	Elm Rm. A	Sarah Sunshine
Oral 13	O13.02	Kang	Andrew	PRISM	T-cell Expression in Ocular and Systemic Tissue in Response to Systemic JAK 1/2 Inhibitors in a Murine Model of Ocular Graft Versus Host Disease	Wed 11/19 2:20 PM	Elm Rm. A	Sarah Sunshine

Session	ID	Last Name	First Name	Program	Title	Date/Time	Room	Mentor(s)
Oral 13	O13.03	Zhang	Justin	PRISM	Graft-Versus-Host Disease Prophylaxis Effects on Ocular Graft-Versus-Host Disease Incidence Within An Aggregated Health Care Network	Wed 11/19 2:20 PM	Elm Rm. A	Sarah Sunshine; Nancy Hardy
Oral 13	O13.04	Menon	Riva	PRISM	Predicting visual acuity and glaucoma 10 years after unilateral congenital cataract surgery: Results from a Randomized, Multicenter Study	Wed 11/19 2:20 PM	Elm Rm. A	Janet Alexander
Oral 13	O13.06	Inanoglu	Silanur	Independent	Effect of Sociodemographic Risk Factors on Corneal Transplant Complications in the United States	Wed 11/19 2:20 PM	Elm Rm. A	Wuqaas Munir
Oral 14	O14.02	Lu	Anne	Maryland PKD (Polycystic Kidney Disease) Research Program	Genetic and Clinical Characteristics of Intracranial Aneurysms in a Large Cohort of Autosomal Dominant Polycystic Kidney Disease Patients	Wed 11/19 2:20 PM	Elm Rm. B	Terry Watnick
Oral 14	O14.03	Forsberg	Alisa	PRISM	Expression of Growth Differentiation Factor 6 (GDF6) in Acral Melanoma	Wed 11/19 2:20 PM	Elm Rm. B	Thomas Hornyak
Oral 14	O14.04	Wilmer	Joshua	PRISM	Investigating the Functional Role of WNT5A in Prurigo Nodularis	Wed 11/19 2:20 PM	Elm Rm. B	Shawn Kwatra
Oral 14	O14.05	Adams	Danya	MSTP	Low-Intensity Focused Ultrasound for Minimally Invasive Fetal Gene Delivery	Wed 11/19 2:20 PM	Elm Rm. B	Whitney Parker; Jung Soo Suk
Oral 14	O14.06	Holland	Elizabeth	St Jude Pediatric Oncology Education (POE)	Imaging biomarkers predict development of sinusoidal obstruction syndrome of the liver in pediatric hematopoietic cell transplant recipients	Wed 11/19 2:20 PM	Elm Rm. B	Akshay Sharma
Poster 1	P1.01	Zhou	Kelly	Research Elective	Impact of Intravenous Fluid Shortage During Fall 2024 on the Incidence of Acute Kidney Injury in Surgical Cases: A Retrospective Cohort Study	Tues 11/18 1:30 PM	Rm. 349	Megan Anders
Poster 1	P1.02	Desverreau Carter	Etha Victoria	Independent	Association of Gabapentinoids with Persistent Opioid Use in Lower Extremity Amputations	Tues 11/18 1:30 PM	Rm. 349	Jay Karri
Poster 1	P1.03	Deljookorani	Shiva	Foundation for Anesthesia Education and Research (FAER)	Electromyography vs. Laboratory-Built Mechanomyography for Neuromuscular Blockade Monitoring	Tues 11/18 1:30 PM	Rm. 349	Kelly Michaelsen
Poster 1	P1.04	Mohammed	Ivan	Independent	Assessing the Therapeutic and Cytotoxic Effects of High-Dose Retargeted Cytokine Therapy in a Preclinical Lung Cancer Model	Tues 11/18 1:30 PM	Rm. 349	Anirban Banerjee
Poster 1	P1.05	Dunbar	Dakarai	Independent	Feasibility and Potential Clinical Ramifications of Using Bacteriophage Therapy for S. aureus Necrotizing Fasciitis	Tues 11/18 1:30 PM	Rm. 349	James Doub
Poster 1	P1.06	Robinson	Mary Mae	M4I	Antibody Cross-Reactivity among Plasmodium falciparum Strains	Tues 11/18 1:30 PM	Rm. 349	Andrea Berry
Poster 1	P1.07	Saifudin	Reem	Independent	Post Discharge Heart Failure Bridge Clinics: Reductions in Inpatient Utilization Across the Spectrum of Payer Groups	Tues 11/18 1:30 PM	Rm. 349	Gautam Ramani
Poster 1	P1.08	Peng	Xiwei	PRISM	Impact of Intraoperative Autologous Blood Donation in Heart Transplantation on Hemodynamics and Transfusion Requirements: Interim Analysis	Tues 11/18 1:30 PM	Rm. 349	Brittney Williams
Poster 1	P1.09	Nguyen	Andrew	President's Symposium and White Paper	The Impact of Generative AI on Academic Integrity and Learning Environments: A Case Study from a Graduate Research University	Tues 11/18 1:30 PM	Rm. 349	Isabell May
Poster 1	P1.10	McGinnis	Patrick	Independent	Mapping a Decade of Clinical Ethics Consultations	Tues 11/18 1:30 PM	Rm. 349	Henry Silverman

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Poster 1	P1.11	Abdellah	Sarah	Independent	The Impact of the Future Leaders in Neurosurgery Symposium for Underrepresented Students: Results from Four Years of Mentorship	Tues 11/18 1:30 PM	Rm. 349	Rory Goodwin
Poster 1	P1.12	Talwar Wegner Shamsuddin	Reshmi Claire Zain	Independent	Implementation of a Medical School Peer Support Network	Tues 11/18 1:30 PM	Rm. 349	Marissa Flaherty
Poster 1	P1.13	Ada Huang	Nischal Chris	Independent	The Current Landscape of Robotic Surgery Simulation in Medical Student Education: A Scoping Review	Tues 11/18 1:30 PM	Rm. 349	Minhaj Siddiqui
Poster 1	P1.14	Baqai	Hammad	Independent	Interest and Participation in Global Pediatric Hand Surgery: A Survey of the Pediatric Hand Study Group	Tues 11/18 1:30 PM	Rm. 349	Rameez Qudsi
Poster 1	P1.15	Fenn	Jeffrey	M4I	Emerging Clinical Patterns Among Young Adults Living With HIV	Tues 11/18 1:30 PM	Rm. 349	Patrick Ryscavage
Poster 1	P1.16	Yang	Ethan	Independent	Global Sagittal Alignment Parameters in Patients Without Spine Deformity Stratified by Age and Sex	Tues 11/18 1:30 PM	Rm. 349	Samuel Cho
Poster 1	P1.17	Vellala	Sourabh	Independent	Hip Fracture Results in Major Wealth Loss	Tues 11/18 1:30 PM	Rm. 349	Timothy Bhattacharyya
Poster 1	P1.20	Bliss	Emily	Independent	The Impact of Race on Anxiety in Pediatric Inflammatory Bowel Disease	Tues 11/18 1:30 PM	Rm. 349	Runa Watkins
Poster 1	P1.21	Zahid	Manahel	PRISM	Fluorescein Angiography Demonstrates Hemispheric Differences in Vascular Flow Associated with Severe Retinopathy of Prematurity	Tues 11/18 1:30 PM	Rm. 349	Janet Alexander
Poster 1	P1.22	Ahmed	Mariya	Independent	From Gene to Vision Loss: Novel GUCA1A and SETD2 Mutations Underlying Familial Retinitis Pigmentosa and Glaucoma	Tues 11/18 1:30 PM	Rm. 349	Osamah Saeedi
Poster 2	P2.01	Mansoor	Shaiza	Independent	Longitudinal Analysis of Blood Flow Before and After Laser Photocoagulation Treatment for Retinopathy of Prematurity	Tues 11/18 2:40 PM	Rm. 349	Janet Alexander
Poster 2	P2.02	Kim	Yehyun (Abby)	PRISM	Evaluating the Role of Conserved miRNAs Across Species in the Optic Nerve Laminar Region (ONLR) that Promote Retinal Ganglion Cell Survival and Regrowth	Tues 11/18 2:40 PM	Rm. 349	Steven Bernstein
Poster 2	P2.03	Quackenbush	Jane	Independent	Beyond the Operating Room: Long-Term Health Outcomes After Cesarean Hysterectomy for Placenta Accreta Spectrum	Tues 11/18 2:40 PM	Rm. 349	Ozhan Turan
Poster 2	P2.04	Mohamed-Hinds	Rashida	Independent	The Impact of Human Septic Extracellular Vesicles on Endothelial Cell Activation in Human Microvascular Endothelial Cells	Tues 11/18 2:40 PM	Rm. 349	Brittney Williams
Poster 2	P2.05	Veloso	Isabel	M4I	The Continuum of Care in Hospitalized Patients with Opioid or Stimulant Use Disorder and Infectious Complications of Drug Use – Treatment as Usual, Addiction/ID Integrated Clinic (CHOICE-STAR Study) & Effects on Patient Antibiotic Completion and Outpatient Utilization	Tues 11/18 2:40 PM	Rm. 349	Sarah Kattakuzhy
Poster 2	P2.07	Swamykumar	Prateek	Independent	Preoperative Expectations and 2-year Outcomes after Primary ACL Reconstruction	Tues 11/18 2:40 PM	Rm. 349	Jonathan Packer
Poster 2	P2.08	Scherf	Ana	Independent	Proximal Humerus Fractures in the Pediatric and Adolescent Population: Epidemiology, Outcomes, and Complications	Tues 11/18 2:40 PM	Rm. 349	Joshua Abzug

Session	ID	Last Name	First Name	Program	Title	Date/Time	Room	Mentor(s)
Poster 2	P2.09	Kidd	Gerald	Independent	Impact of Obesity on 2-year PROs after Partial Meniscectomy	Tues 11/18 2:40 PM	Rm. 349	Jonathan Packer
Poster 2	P2.10	Malik	Krisha	Independent	Investigating the Impact of Demographics, Socioeconomic Status, and Child Opportunity Index on Slipped Capital Femoral Epiphysis (SCFE) Presentation and Diagnosis	Tues 11/18 2:40 PM	Rm. 349	Joshua Abzug; Alexandra Dunham
Poster 2	P2.11	Sinha	Arnav	Independent	Intraoperative Use of Shear Wave Elastography to Measure Changes in Deltoid Tension During Reverse Shoulder Arthroplasty	Tues 11/18 2:40 PM	Rm. 349	Mohit Gilotra
Poster 2	P2.12	Xia	Clarissa	Independent	Radiographic predictors of pain burden after subarachnoid hemorrhage	Tues 11/18 2:40 PM	Rm. 349	Nicholas Morris; Gunjan Parikh
Poster 2	P2.13	Pandey	Meghna	PRISM	Cortical interneuron development in Polyhydramnios, Megalencephaly, and Symptomatic Epilepsy	Tues 11/18 2:40 PM	Rm. 349	Whitney Parker
Poster 2	P2.14	Das	Prosun	Independent	Inter-Rater Variability in a Method for Identifying Retinal Nerve Fiber Layer Axonal Bundles on Adaptive Optics Retinal Imaging in People With Multiple Sclerosis	Tues 11/18 2:40 PM	Rm. 349	Daniel Harrison
Poster 2	P2.15	Gadagkar	Ruchika	PRISM	What Happens to Pain?: An Observational, Longitudinal Study in Patients with Aneurysmal Subarachnoid Hemorrhage Treated in Neurocritical Care Units (WHOL-PAIN)	Tues 11/18 2:40 PM	Rm. 349	Nicholas Morris
Poster 2	P2.16	Mathai	Matthew	Independent	Proton vs. Photon: Predictors of Cardiac and Pulmonary Toxicities in Locally Advanced Breast Cancer Patients	Tues 11/18 2:40 PM	Rm. 349	Melissa Vyfhuis; Austin Thompson
Poster 2	P2.17	Nguyen	Andrew	AIM-AHEAD	Radiomic Analysis of Perivascular Adipose Tissue Entropy Predicts Lung Cancer Malignancy: A Multi-Compartment CT Imaging Study	Tues 11/18 2:40 PM	Rm. 349	Kathryn Robinett
Poster 2	P2.18	Jordan	Olivia	Rad Onc/PRISM	A Comparative Analysis of Decipher Genomic Classifier and ArteraAI Multi-Modal AI for Risk Stratification and Treatment Optimization in Non-Metastatic Prostate Cancer	Tues 11/18 2:40 PM	Rm. 349	Phuoc Tran; Adeniyi Olabumuyi
Poster 2	P2.19	Escobal	Lei Hugh Dominic	Independent	The Effect of Residing in a Food-Insecure Area on Locally Advanced Cancer Survival	Tues 11/18 2:40 PM	Rm. 349	Melissa Vyfhuis
Poster 2	P2.20	Dulla	Alexander	Independent	Predictive Value of Early Heart Rate Trends for Respiratory Support De-escalation in Pediatric Intensive Care Patients on High-Flow Nasal Cannula	Tues 11/18 2:40 PM	Rm. 349	Siddhartha Dante
Poster 3	P3.02	Vellala	Sourabh	Independent	Outcomes and Technique for Osteochondroma Excision in the Distal Tibiofibular Syndesmosis: A Case Series	Wed 11/19 1:10 PM	Rm. 349	Joshua Abzug
Poster 3	P3.03	Li	Rebecca	PRISM	Investigating Use of IV Lidocaine in Perioperative Pain Control following Colorectal Surgery	Wed 11/19 1:10 PM	Rm. 349	Megan Anders
Poster 3	P3.04	Pugazhendhi	Ashwini	PRISM	Determination of the rate and accuracy of hypertensive disorder diagnosis in pregnant people with opioid use disorder	Wed 11/19 1:10 PM	Rm. 349	Katrina Mark
Poster 3	P3.05	May Funk	Catherine Karli	Independent	Establishing Normative Values for First Webspace Measurements of the Hand in the Pediatric Population	Wed 11/19 1:10 PM	Rm. 349	Joshua Abzug
Poster 3	P3.06	Colliver	Lauren	PRISM	An Observational Study of Physiologic Changes During Prolonged Breath Holds in Bronchoscopic Lung Biopsies	Wed 11/19 1:10 PM	Rm. 349	Megan Anders
Poster 3	P3.07	Emamian	Nikki	PRISM	Retrospective Chart Review of Infant & Mother Dyads seen in Special Parent and Infant Care and Enrichment (SPICE) Clinic	Wed 11/19 1:10 PM	Rm. 349	Matthew Grant

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Poster 3	P3.08	Mora	Diego	Maryland PKD (Polycystic Kidney Disease) Research Program	Characterizing the Prevalence of Nephrolithiasis in ADPKD and its Association with Decline in Renal Function	Wed 11/19 1:10 PM	Rm. 349	Stephen Seliger
Poster 3	P3.09	Bosworth	Eugene	PRISM	Investigating the Relationship Between Cortical Inhibition and Cognitive Control in Schizophrenia Using TMS-Measured SICI and Stop-Signal Task	Wed 11/19 1:10 PM	Rm. 349	Stephanie Hare
Poster 3	P3.10	Angelino	Nicholas	Independent	Lupus, Bipolar, or Cancer? A Case Report	Wed 11/19 1:10 PM	Rm. 349	Anthony Harris
Poster 3	P3.11	Amini	Cameron	Independent	The Effect of Social Vulnerability on Selection and Post Liver Transplant Outcomes in Early Liver Transplant for Alcohol-Related Liver Disease	Wed 11/19 1:10 PM	Rm. 349	Kirti Shetty
Poster 3	P3.12	Stuart	Freddy	Independent	Tobacco Use Treatment Among People with a Mental Health Condition in an Underserved Community	Wed 11/19 1:10 PM	Rm. 349	Janaki Deepak
Poster 3	P3.13	Jung	Kevin	Independent	Strategic Methods for Analyzing and Reducing Treatment Costs and Avoidable Resource Expenditure: the SMARTCARE Study.	Wed 11/19 1:10 PM	Rm. 349	Rodney Taylor; Nirav Shah
Poster 3	P3.14	Lindley	Abel	JHU SOM PRS Research Elective	Evaluating Analgesic Requirements Between Nerve-Directed Techniques and Neuroma Excision with Bury-in-Muscle for Painful Neuroma Management	Wed 11/19 1:10 PM	Rm. 349	Ala Elhelali
Poster 3	P3.15	Malick	Riva	Independent	AI-Based Motion Tracking to Evaluate Intraoperative Technique Differences Between Junior and Senior Cataract Surgeons	Wed 11/19 1:10 PM	Rm. 349	Wuqaas Munir
Poster 3	P3.16	Cheraghi	Nora	PRISM	Evaluating the Efficacy of T-Regulatory Cell Specific Interleukin-2 Microparticles for the Treatment of Ocular Graft versus Host Disease in a Mouse Model	Wed 11/19 1:10 PM	Rm. 349	Sarah Sunshine
Poster 3	P3.17	Mathivannan Carter	Luxmi Victoria	Independent	Utilizing Tear Cytokine Changes to Determine the effect of Systemic Therapy on the eyes in patients with ocular GVHD: The Impact of JAK Inhibition	Wed 11/19 1:10 PM	Rm. 349	Sarah Sunshine
Poster 3	P3.18	Murphy	Caitlin	Independent	Predictors of PROMIS Pain Interference After Arthroscopic Partial Meniscectomy	Wed 11/19 1:10 PM	Rm. 349	Jonathan Packer
Poster 3	P3.19	Diep	David	Independent	Predictors of 2-year Functional Outcomes in Arthroscopic Partial Meniscectomy	Wed 11/19 1:10 PM	Rm. 349	Jonathan Packer
Poster 3	P3.20	Tom	Jalen	Independent	Predictors of Physical Function 2 Years After Total Shoulder Arthroplasty	Wed 11/19 1:10 PM	Rm. 349	Sean Meredith
Poster 3	P3.22	Rosen	Joshua	Ortho Summer Research Program	When Outcomes Align: Retrograde Intramedullary Nailing and Lateral Locked Plating Yield Comparable Patient Results for Distal Femur Fracture Repair	Wed 11/19 1:10 PM	Rm. 349	Robert O'Toole; Nathan O'Hara
Poster 3	P3.23	Pullano	Kerry	Independent	Perioperative MRSA Antimicrobial Prophylaxis at UMMC: A QI Study	Wed 11/19 1:10 PM	Rm. 349	Megan Anders
Poster 3	P3.24	Przygocki	Tyler	PRISM	Microinstability Associated with Comparable Functional Outcomes but Greater Two-Year Whole-Body Pain after Hip Arthroscopy	Wed 11/19 1:10 PM	Rm. 349	Sean Meredith; Joseph Blommer

O1.01 Reducing Care Delays During Endovascular Thrombectomy Procedures Using an Anesthesia-Focused Clinical Practice Guideline: a Quality Improvement Project

Presenter: Alexander Dulla, MHA[1]
Mentor: Megan Anders, MD[1]
Other Co-Authors: Michael Phipps, MD[2]; Miranda Gibbons, BS[1]; Chad Schrier, MSN[2]; Yaniv Ergas, CRNA[1]; Dheeraj Gandhi, MBBS, FRCA[3]; Peter Rock, MD[1]
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Emergency endovascular thrombectomy (EVT) for acute ischemic stroke requires timely and efficient clot retrieval, as procedural efficiency is critical for patient outcomes. Variability in anesthesia care practices has been associated with worse outcomes. To reduce variability and promote use of best practices, we implemented a Clinical Practice Guideline (CPG) in 2021 for anesthesia care during EVT. This study evaluates CPG adherence and its potential association with reduction in patient arrival to the interventional radiology (IR) suite to procedure-start time. We conducted a retrospective pre-post implementation study of EVT patients at an urban tertiary/quaternary academic medical center between 2016 and 2024. The pre- and post-CPG groups were compared to examine both specific and composite CPG element adherence. A linear regression evaluated the association between the total number of adhered pre-procedure CPG elements and procedure start time. Among 558 included patients (96 pre-CPG, 462 post-CPG), baseline demographics were similar between groups (p > .05). The average composite number of adhered-to elements increased from 6 [5,6] to 7 [6,7] (p < .001). IR-arrival to procedure-start time decreased from 21 [16, 30] to 17 [14, 20] minutes (p < 0.05). Furthermore, each additional adhered pre-procedure CPG element, regardless of pre- or post-CPG status, correlated with a 1.94-minute reduction in procedure start time (p < .001). The implementation of the anesthesia care-focused CPG improved adherence to best practices and significantly reduced EVT procedure start times. These findings suggest that standardizing anesthesia practices through CPG implementation may enhance procedural efficiency and reduce provider variability.

O1.02 Pre-Operative Ankle-Brachial Index in Assessing Major Amputation Level and Outcomes in Patients with Peripheral Artery Disease

Presenter: Nicole Wetoska[1]
Mentors: Khanjan Nagarsheth, MD, MBA[2]; Rajabrata Sarkar, MD, PhD[2]
Other Co-Authors: Anahita Shiva, BS[1]; Josiah Hardy, BS[1]; Aprill Park, BS[1]; Georges Jreij, MD[2]
[1]University of Maryland School of Medicine, Baltimore, MD
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Ankle-brachial index (ABI) is a non-invasive test used to assess vessel narrowing by comparing pressure in the posterior tibial or dorsalis pedis artery with that of the brachial artery. A low ABI can indicate the presence of PAD and is commonly used in its diagnosis. We propose that this diagnostic tool may have predictive power in the determination of amputation level and postoperative outcomes in patients with PAD. This retrospective cohort study included 97 patients with PAD admitted from 2014-2022 who underwent major lower extremity amputation (MLEA) at UMMC. Patients were stratified into two groups by ABI severity (ABI≤ 0.4= severe PAD (n=45), 0.4<ABI<0.9= less severe (n=52)). Patients with less severe PAD were more likely to present with chronic limb ischemia, claudication, and infection (p=0.013; 0.011; 0.005), whereas those with severe PAD were more likely to have chronic wounds and gangrene as risk factors for amputation (p=0.012; 0.050). Based on multivariable logistic regression, more severe PAD (ABI≤0.4 mmHg) showed an increased odds of receiving an above-knee amputation (p=0.014; OR=2.844) as a primary MLEA surgery. Common comorbidities such as hypertension (p=0.751), diabetes (p=0.768), hyperlipidemia (p=0.885), and ESRD (p=0.776) were not predictors of amputation level. There was no difference in readmission, ipsilateral revision, or mortality at multiple timepoints. In conclusion, pre-operative ABI was predictive of amputation level, but not of postoperative outcomes.

O1.03 Deep Vein Thrombosis and Thrombus Resolution

Presenter: Shaiza Mansoor[1]
Mentor: Brajesh Lal, MD[2]
Other Co-Authors: Georges Jreij, MD[2]; Minerva Carlin[2]
[1]University of Maryland School of Medicine, Baltimore, MD
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Incomplete thrombus resolution after a deep vein thrombosis (DVT) can result in long-term, serious consequences such as post thrombotic syndrome (PTS) and limb-loss. While the standard of care (SOC), anticoagulation therapy, mitigates pulmonary embolism, it does not aid thrombus resolution within veins. In 25-50% of patients, residual thrombus may lead to venous reflux and obstruction, which can cause increased pressure in distal veins and result in PTS. Studies have shown that rapid thrombus resolution decreases the potential of PTS; therefore, we are focusing on increasing thrombus resolution rate. The purpose of this study is to determine if exercise improves outcomes in acute DVT by increasing thrombus resolution via increased venous flow. Patients with acute DVT of the lower extremity in the past 30 days were included in the study. 97 patients were randomized 1:1 to the control group, which received SOC anticoagulation therapy, and the experimental group, which received SOC plus 30 minutes of exercise 3 times a week for 3 months. 3-D duplex ultrasound assessments were performed at baseline and then at follow-up at 1 month, 3 months, 6 months, 1 year, and 2 years. We found there was a greater proportion of participants in the exercise group (84.1%) compared to the control group (73.7%) who experienced over 80% of clot resolution within the first 6 months, indicating that exercise may be a mechanism to increase thrombus resolution in the critical first 6 months after a DVT.

O1.04 Evaluation of Platelet Adhesion and Hemodynamic Influences on ECMO Thrombosis: A Comparative Study of Biomaterial Surfaces

Presenter: Mustafa Siddiqui[1]
Mentors: Zhongjun Jon Wu, PhD[2]; Shigang Wang, MD[2]
[1]University of Maryland School of Medicine, Baltimore, MD
[2]Department of Surgery, University of Maryland School of Medicine, Baltimore, MD

Extracorporeal Membrane Oxygenation (ECMO) is a life-saving intervention for patients with severe cardiac and respiratory failure; however, thrombosis remains a major challenge, leading to device failure and heightened morbidity. Because of direct contact with blood, the materials used in ECMO circuits significantly influence thrombogenicity, yet a comprehensive comparative analysis of commonly used biomaterials under standardized conditions is lacking. The aim of this study was to evaluate platelet adhesion and thrombus formation on the biomaterial surfaces of silicone, polyvinyl chloride (PVC), polycarbonate (PC), polyurethane (PU), polyurethane (PE), polymethylpentene (PMP), and titanium to determine which materials exhibit the lowest thrombogenicity. Utilizing a custom-built thrombosis-on-a-chip model, we used fresh human blood to perform microscopy-based platelet adhesion assays on the surfaces of different biomaterials and under different shear stresses. Platelet adhesion on the biomaterial surface was measured under the fluorescence microscope. The coverage areas of clot formation were analyzed using Fiji ImageJ-based image analysis software and MATLAB-based programming. In addition, computational fluid dynamics (CFD) modeling was used to analyze shear stress distribution on clot formation across the different material surfaces. Preliminary data showed that platelet adhesion significantly decreased with increased shear stress from 500 s-1 to 5000 s-1 after 10 minutes, and the mean sizes of the clot clusters were greater under higher shear stress. Platelet adhesion on PVC was higher than PC at lower shear stress. Polishing titanium alloy (Ti-6Al-4V) displayed better biocompatibility. Other biomaterial assessments are currently in progress. The findings from this study will have help to develop ECMO circuits with improved hemocompatibility, ultimately enhancing patient outcomes.

O1.05 Echocardiographic Metrics of Right Sided Venous Congestion Are Frequent in Trauma Patients with Hemorrhagic Shock

Presenters: Emmeline Leggett[1]; Aryanne Do[1]
Mentors: Sarah B. Murthi, MD, RDCS, FACS[2]; Evan Lutton, MD, PhD[2]; Alexis Salerno, MD, FPD-AEMUS[3]
Other Co-Authors: Sydea Fatima, RCS[2]; William Teeter, MD, MS, FACEP[2]
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Point-of-care ultrasound (POCUS) can assess venous Doppler flow pattern suggesting elevated right atrial pressure in the hepatic (HV), portal (PV), and renal (RV) veins. The Focused Rapid Echocardiogram Evaluation (FREE) includes these Doppler flows and metrics of right-sided venous congestion (RSVC) that have been shown to predict organ injury associated with volume overload. Our study was a retrospective review that analyzed a prospectively collected quality improvement database to determine the utility of assessing RSCV within 24 hours of admission for Traumatic Hemorrhagic Shock (THS) and RSVC prevalence in THS patients. All trauma patients who met criteria for THS were screened. Metrics of RSVC included the inferior vena cava (IVC) diameter > 2.0cm, PV > 30% pulsatility or reversal, HV systolic < diastolic or reversal, RV pulsatility or reversal. LSVC was assessed by the presence of B-lines in six lung fields. Over nine-months, 184 patients were screened and 142 patients met criteria for inclusion. 97 exams were performed with 95 available for analysis. RSVC could be assessed in 92% of patients; the IVC in 75, PV in 80, HV in 75, and RV in 39. 45% had at least one metric of RSVC, and 17% had two or more. Conversely, findings of LSVC were present in only 5.4% of patients. These data support that RSVC can be assessed with POCUS and that it is significantly more prevalent than LSVC at 24-hours following admission and resuscitation for THS. These findings may be an early sign that ongoing volume resuscitation is harmful.

O1.06 Time to Aortic Occlusion: A Twelve-Year Analysis of the REBOA Procedure at the Shock Trauma Center

Presenter: Rohit Chari[1]
Mentor: William Teeter, MD[2, 3]
Other Co-Authors: Vincent Demario, MHS; Kathalyn Urquizo; James Smith; Bradford Burdette; Meagan Watkins, MD; Yvonne Chung, MD; Anna Romagnoli, MD; Thomas Scalea, MD; Shiming Yang, PhD; Peter Hu, PhD[3,4]
[1]University of Maryland School of Medicine, Baltimore, MD
[2] Department of Emergency Medicine and Program in Trauma
[3] National Study Center for Trauma and EMS
[4] Department of Anesthesiology

Resuscitative endovascular balloon occlusion of the aorta (REBOA) is a method of proximal aortic occlusion used for rapid temporary control of non-compressible torso hemorrhage, especially below the diaphragm. This study compares time to aortic occlusion (TAO) in patients undergoing REBOA from 2016-2024, to a published cohort from 2013-2016 to assess improvements in procedural efficiency. This was a retrospective, single-institution review of REBOA from 05/2016 to 11/2024. TAO, time to central femoral access (CFA), and REBOA procedure time were calculated through videographic review. Metrics recorded include open vs. percutaneous CFA cannulation, and ongoing CPR. 130 patients were identified as undergoing REBOA in this period, of which 76 were analyzed. Median TAO (Q1, Q3) was 363 seconds (277, 507). Median time for CFA access was 145 seconds (65, 300). Median TAO post-CFA access was 171 seconds (120, 269). Median time to aortic occlusion in CPR vs hypotensive patients was 395 (334, 532) vs. 335 (250, 462) seconds respectively. Median time for CFA access in CPR vs. hypotensive patients was 204 (111, 374) vs. 98 (37, 233) seconds. Median TAO post-CFA access in CPR vs hypotensive patients is 150 (112, 270) vs. 200 (127, 269) seconds respectively. Time to CFA access and aortic occlusion in this cohort has improved since 2016 and reflects parity with previously published time to open aortic occlusion by resuscitative thoracotomy. Improvements in provider ultrasound skillset, dedicated endovascular equipment, and changes in patient selection all may play a role and should be investigated further.

O2.01 Evaluation of Akt Signaling as a Critical Effector in Anti-N-Methyl-D-Aspartate Receptor Encephalitis

Presenter: Audrey Lawrence[1]
Mentor: David R. Benavides, MD, PhD[1]
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Autoimmune encephalitis (AIE), a rapidly progressive and potentially fatal neurologic condition, remains poorly understood at a molecular level. The development of novel therapeutics necessitates a deeper understanding of disease pathogenesis. The current prevailing theory of the pathogenesis of anti-N-methyl-D-aspartate receptor (anti-NMDAR) encephalitis, the most common subtype of AIE, supports antibody-mediated NMDAR crosslinking and downregulation at synaptic sites. However, this theory fails to explain the full spectrum of clinical phenotypes observed in patients with anti-NMDAR encephalitis. To explore further, our lab is interrogating a novel molecular mechanism that hypothesizes that synaptic deficits relevant to the disease are due to altered activity of protein kinases within dendritic spines. Our preliminary data suggest that protein kinases are altered in primary neurons following human anti-NMDAR antibody exposure, particularly Akt signaling. Here, we sought to further elucidate the effect of pathogenic anti-NMDAR encephalitis antibodies in primary neurons on Akt signaling, a serine/threonine protein kinase pathway that promotes survival and growth. Using subcellular fractionation and Western blotting, we assayed Akt abundance in cytoplasmic fractions of primary neurons following anti-NMDAR and control antibody exposure. We also evaluated the levels of regulatory phosphorylation sites on Akt at pThr308 and pSer473. We found dynamic, time-dependent, regulation of Akt phosphorylation in the cytoplasmic fraction across treatment conditions. However, we did not observe specific changes caused by anti-NMDAR antibodies compared to controls. Together, these data suggest that anti-NMDAR antibody exposure does not regulate Akt signaling in primary neurons via altered Akt levels in the in cytoplasmic fraction. Future studies will explore the dependence of Akt signaling pathway as a critical effector of downstream effects of anti-NMDAR antibodies. These studies will provide insights into the advent of future novel therapeutics in AIE.

O2.02 Characterizing Cell-Type Specific Expression of Lactate Dehydrogenase Isoforms A and B in Normal Mouse Brain

Presenter: Kirsten Snyder
Mentors: Alexander Ksendzovsky, MD, PhD[1]; J Marc Simard, MD, PhD[1]
Co-Authors: Tyler Wishard, PhD[1]; Mitchell Moyer, PhD[1]; Mathew Kreinbrink[1]
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Alterations in energy metabolism in the brain underlie a plethora of neurologic disorders. Epilepsy is a debilitating neurologic condition that is challenging to treat due to a limited understanding of the etiologies underlying symptomatology at a cellular level. Current research demonstrates that cells within epileptogenic tissue exhibit elevated levels of Lactate Dehydrogenase (LDH) isoform A, but not B. LDHA is responsible for enzymatic conversion of pyruvate to lactate while LDHB catalyzes the reverse reaction. This variation in LDHA and LDHB expression between seizure and non-seizure states has led to interest in the differential expression of isoforms in normal, non-epileptic tissue, and where expression is localized throughout a non-epileptic brain, as previous reports demonstrated a lack of the LDHA isoform in neurons. To characterize expression, we used immunofluorescent labeling of normal brains, assessing both LDH isoforms, and co-labeling with cell markers for neurons. Our experiments revealed that cells labeled for LDHA co-expressed the neuronal marker, NeuN, and that the LDHB marker was expressed in cells with neuronal and astrocytic markers. These data suggest that LDHA is expressed primarily in neurons, while LDHB is expressed in both neurons and glia. Additionally, LDHA was expressed throughout the cortex, hippocampus, hypothalamus, and brainstem, while LDHB was primarily expressed in the cortex and brainstem. This finding likely has implications for the role of LDHA versus LDHB in seizure onset. We anticipate that our findings will help further our understanding of the biochemical changes occurring in the epileptic brain, paving the way for more effective therapeutics.

O2.03 Polysomnographic versus Parent-Reported Predictors of Executive Function in Children with Sleep Disordered Breathing

Presenter: Sabrina Nusraty, BS[1]
Mentor: Amal Isaiah, MD, DPhil, MBA[1,2,5,6]
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Objective: To compare polysomnography (PSG) indices with parent-reported questionnaires in predicting executive dysfunction in children with sleep-disordered breathing (SDB).

Study Design: Prospective observational study.

Setting: Tertiary pediatric otolaryngology clinic, January-August 2025.

Methods: Seventy-eight children aged 5-11 years referred for SDB evaluation underwent overnight PSG, caregiver-completed Obstructive Sleep Apnea-18 (OSA-18) and Pediatric Sleep Questionnaire Sleep-Related Breathing Disorder (PSQ-SRBD) scale, and executive function testing. Outcomes included inhibitory control measured by a computerized Go/No-Go (GNG) task (d′ sensitivity) and parent-reported executive dysfunction using the Behavior Rating Inventory of Executive Function, Second Edition (BRIEF-2) Global Executive Composite (GEC). Associations between predictors and outcomes were assessed using Spearman's rank correlations.

Results: The cohort (mean age, 7.8 years) was 53% male and 56% Black. PSG revealed moderate-to-severe obstructive sleep apnea (OSA) (mean apnea–hypopnea index [AHI], 12.7 events/hr; mean oxygen nadir, 86.6%). OSA-18 and PSQ-SRBD scores were significantly correlated with BRIEF-2 GEC (OSA-18 vs. GEC: $\rho = 0.61$, $P < 0.001$; PSQ-SRBD vs. GEC: $\rho = 0.62$, $P < 0.001$). In contrast, no PSG variable, including AHI or oxygen nadir, was significantly associated with BRIEF-2 or GNG outcomes. Neither PSG indices nor questionnaire scores correlated with GNG d′.

Conclusion: Parent-reported symptom burden, but not PSG indices, predicted executive dysfunction in children with SDB. Validated questionnaires such as the OSA-18 and PSQ-SRBD may provide practical, patient-centered tools for identifying children at risk for neurobehavioral morbidity, particularly in settings where PSG access is limited.

O2.04 Longitudinal Diffusion MRI of Entorhinal-Hippocampal Network Remodeling During Epileptogenesis After Temporal Lobe Contusion

Presenter: Tyler James Wishard, PhD[1]
Mentors: Alexander Ksendzovsky, MD, PhD[2]; J Marc Simard, MD, PhD[2]; Vladimir Gerzanich, MD, PhD[2]
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Traumatic brain injury (TBI) that involves the temporal lobe often results in post-traumatic epilepsy (PTE), a clinically heterogenous condition that can be difficult to study in a disease model organism. We used a balloon-assisted controlled cortical compression to produce a focal entorhinal-cortex contusion (tlCont) in mice and asked how network remodeling within the entorhinal-hippocampal system relates to PTE and whether blocking SUR1-TRPM4 with glyburide modifies these changes. Adult C57BL/6J mice (n=6) were randomized to daily glyburide or vehicle for 30 days after tlCont. Serial 9.4T MRI was obtained at baseline, 7, and 28 days; diffusion MRI yielded FA, MD, AD, and RD in the corpus callosum and probabilistic tractography of the perforant pathway. Behavioral testing and continuous video-EEG are ongoing. Baseline regional volumes were comparable and day-28 contusion volumes were similar between groups. Preliminary diffusion findings suggest treatment-related preservation of white-matter microstructure: glyburide was associated with higher FA and lower RD in the corpus callosum, consistent with reduced demyelination/edema, while tractography of the contralateral perforant path at day 7 showed lower FA with glyburide and a trend toward lower RD, potentially reflecting complex early microstructural dynamics after injury. Together, these data indicate that tlCont produces measurable connectomic abnormalities that may be partially mitigated by SUR1-TRPM4 inhibition. Ongoing behavioral and EEG analyses will link imaging signatures to seizure burden and cognition. This tlCont platform enables longitudinal, multimodal assessment of circuitry-level biomarkers and provides a tractable preclinical path to evaluate antiepileptic interventions.

O2.05 Evaluating the Therapeutic Potential of Low-intensity Focused Ultrasound in Attenuating Local Field Potential Ictal Activity and Spontaneous Seizures in a Rat Model of Temporal Lobe Epilepsy

Presenter: Thach-Vu Nguyen[1]
Mentor: Whitney Parker MD, PhD[1]
Other Co-Authors: Sandesh Kamdi, PhD[1,2]; Reana Young-Morrison, BS[1,3]; Meghan Pandey, BS[1]; Danya Adams, BS[1]; Alexandra Seas, BS[1]; David Kolb, BS[1,2]; Adarsha Malla, PhD[1]; Iness Gildish, MS[3]; Tina Wang, MS[1]; Marianna Baybis, MS[1,2]; Joseph Cheer, PhD[3]; Pavlos Anastasiadis, PhD[1]
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Temporal lobe epilepsy (TLE) is a post-traumatic epilepsy affecting 50 million people globally, and 20-30% of patients suffer from treatment refractory seizures. Understanding the mechanism of epileptogenesis, the development of a seizure network following traumatic brain injury, remains an important research goal. The latent period following a traumatic brain insult may be a critical window for intervention to disrupt the development of an epileptic network and prevent spontaneous seizures from developing. Low intensity focused ultrasound (LIFU), a minimally invasive alternative, has shown promise in reducing spontaneous seizures when delivered in the post-latent period of epileptogenesis. However, the therapeutic potential of LIFU in disrupting epileptogenesis when delivered during the latent period has yet to be investigated. In the present study we utilized a well-established rat model of TLE using a unilateral intrahippocampal injection of the excitotoxin kainic acid. After a period of status epilepticus, a subset of animals received LIFU treatment to the site of insult. We observed that animals receiving LIFU intervention demonstrated reduced stereotyped seizure behavior, including forelimb clonus and rearing. Animals were also implanted with a microwire array after kainic acid injection and LIFU intervention to enable live local field potential (LFP) recordings. Preliminarily, LIFU treatment attenuated abnormal electrophysiological features of epilepsy including ictal micro-discharges at the LFP level. Immunostaining of hippocampal subregions has shown a decrease of excitatory glutamatergic neurotransmission as well as mossy fiber sprouting in animals receiving LIFU intervention. These results suggest that LIFU has potential in therapeutic neuromodulation for the disruption of epileptogenesis.

O3.01 The Impact of Socioeconomic Disadvantage on Outcomes after Surgical Fixation of Distal Femur Fractures

Presenter: Elizabeth Summers[1]
Mentors: Robert O'Toole, MD[2]; Gerard Slobogean, MD[3]
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Background: Social determinants of health can have substantial effects on access to quality healthcare and healthcare outcomes. Previous studies highlight disparities across many factors, including increased risk of fracture and discrepancies in follow-up. However, the effect of socioeconomic disadvantage, as measured by the Area Deprivation Index (ADI), on outcomes after surgical fixation of traumatic femur fractures is unknown.

Methods: In this retrospective cohort study, we analyzed the data from adult patients 18 years and older who presented to the R. Adams Cowley Shock Trauma Center for surgical fixation (either a locked lateral plate or retrograde intramedullary nail) of OTA/AO 33A or 33C distal femur fractures between January 1, 2016, and July 1, 2024. ADI was assigned by geocoding each patient's home address and was categorized into four quartiles, with the highest quartile representing the lowest neighborhood disadvantage. The primary outcomes – length of stay, reoperation rates, and discharge disposition – were associated with ADI via multivariable logistic regression.

Results: Among the 589 patients with surgical fixation of a distal femur fracture, the mean length of stay for patients with a locked lateral plate was 6 days and for patients with a retrograde intramedullary nail was 7 days. Between both fixation groups, there was a 14.7% all cause re-operation rate, a 13.4% reoperation rate for malunion, and a 2.9% reoperation rate for infection. The majority of these patients were discharged to subacute rehabilitation facilities (N = 329). The analysis of how ADI is associated with these results is still pending.

O3.02 Re-Fracture Rate of Pediatric and Adolescent 5th Metacarpal Neck Fractures

Presenters: Catherine May; Karli Funk
Mentor: Joshua Abzug, MD[1]
Other Co-Authors: Nansen Kuo, MD[1]; Natasha McKibben, MD[1]
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Fractures of the 5th metacarpal neck, commonly referred to as boxer's fractures, typically occur following direct trauma to a clenched fist. In adults, previous literature suggests that the intentional and aggressive nature of these behaviors (fistfights and punching) leads to a high rate of recurrent fracture at the 5th metacarpal neck, however, there is a paucity of literature within the pediatric and adolescent populations pertaining to the recurrence rate. The purpose of this study is to examine the epidemiology, treatment, and outcomes of 5th metacarpal neck fractures and any recurrent fractures to determine if there are any factors that indicate an increased likelihood of recurrence and to establish a rate of recurrence within the pediatric and adolescent populations.

A retrospective review was performed to identify all pediatric patients aged under 17 years who were treated for a 5th metacarpal neck fracture over a twelve-year period. Data collection included patient demographics, mechanism of injury, course of treatment, return to activity, complications, and fracture recurrence. Associations between patient characteristics and outcomes were explored using univariate and multivariate logistic regression.

Three hundred ninety-seven patients with a median age of 13 years (IQR: 11,15, Range: 1,16 years) were identified. Of these patients, 328 (83%) were male. 158 (42%) patients were injured through intentional or aggressive behaviors including fist fighting or punching. Patients were treated non-operatively (N=353, 89%) with immobilization, or operatively with a closed reduction and percutaneous pinning (N=32, 8.1%) or open reduction and internal fixation (N=12, 3.0%). The average time to return to activity was 37 days (SD: 19 days).

The incidence of refracture in the pediatric and adolescent population was 1.3% (N=5). 80% (N=4) of refractures occurred in male patients and 100% (N=5) occurred through intentional or aggressive behaviors. Following reinjury, the average time to return to activity was 31 days (SD: 7 days). There was no significant association between fracture recurrence and patient and/or injury characteristics.

The refracture rate of 5th metacarpal neck fractures in the pediatric and adolescent population is quite low at 1.3%. The initial fractures and refractures are most commonly seen in males. All patients with recurrent injuries had them caused by intentional or aggressive behaviors. Additional education is warranted to alert children and adolescents and their parents about the potential for refracture with intentional and aggressive behaviors.

O3.03 Impact of Pre-Op Expectations on 2-Year PROs After Partial Meniscectomy

Presenter: Naman Bhandari[1]
Mentors: Sean J. Meredith, MD1; Joeseph Bloomer[1]
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Meniscal injuries, with an incidence of 60 per 100,000, are common knee pathologies, often managed via arthroscopic partial meniscectomy (APM) for unrepairable tears. While APM alleviates pain and improves function, outcomes vary, and contributing factors remain unclear. Patient-reported outcomes (PROs) assess postoperative function and pain, with preoperative expectations increasingly recognized as influencing long-term results. This study aims to evaluate the impact of preoperative expectations on 2-year PROs following APM, an underexplored area in orthopedics. We hypothesize that higher preoperative expectations correlate with improved 2-year outcomes.

Patients who had APM between June 2015 and September 2018 were enrolled in a registry and completed surveys on their condition at the start and after 2 years, using tools like PROMIS, IKDC, and pain scales. Out of 163 patients, 115 (70.6%) were included in the final analysis, which include nonparametric tests and multivariate analysis. Patients generally had high hopes for their outcomes, with over 70% feeling "extremely" or "very likely" to improve. Women and those without previous surgery had higher expectations (p<.05). Better initial activity levels and less body pain after 2 years were linked to higher expectations (rs=.222, p=.020 and rs=-.224, p=.019), but these expectations didn't affect 2-year overall improvements or key recovery goals (all p>.05).

This study shows that while higher preoperative expectations were associated with better baseline activity and reduced 2-year body pain, they did not independently predict 2-year PRO improvements, suggesting the need for further research into multifactorial influences on APM outcomes.

O3.04 Preoperative Opioid Use and Indication Predict 2-Year PROMIS PI in RTSA

Presenter: Ankush Verma[1]
Mentors: Sean J. Meredith, MD[2]
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Reverse total shoulder arthroplasty (RTSA) is increasingly utilized to restore function and reduce pain in patients with shoulder related injuries. Despite its success, factors predicting postoperative pain outcomes remain poorly defined. The Patient-Reported Outcomes Measurement Information System Pain Interference (PROMIS PI) score quantifies how pain affects daily life, offering a measure of recovery. The aim of this study was to evaluate patient characteristics and preoperative PROs predictive of worse PROMIS PI two years after RTSA. We hypothesized that narcotic use, prior ipsilateral shoulder surgery, indication, and higher baseline pain will be associated with worse PROMIS PI at 2-years postoperatively. Patients undergoing RTSA between June 2015 and April 2022 were identified from a prospectively maintained orthopedic registry. Demographics, comorbidities, surgical indication, and baseline PROs, including PROMIS domains and American Shoulder and Elbow Surgeons (ASES) score, were collected and assessed preoperatively and at 2 years postoperatively. Univariate, correlation, and multivariable regression analyses identified predictors of 2-year PROMIS PI and change from baseline. Preoperative narcotic use, legal claim, and higher baseline body pain independently predicted worse 2-year PROMIS PI, with irreparable cuff tears showing poor outcomes. Patients with rotator cuff arthropathy or fracture showed greater improvement, whereas narcotic use and legal claims predicted less improvement in pain interference. Preoperative narcotic use, whole-body pain, legal claims, and irreparable rotator cuff tear indication independently predicted worse pain outcomes following RTSA. Patients with localized shoulder pain or fracture indications experienced greater improvement. Preoperative opioid weaning and psychosocial optimization may improve long-term pain recovery after RTSA.

O3.05 Mobile is the Goal: Validating Functional Outcomes and Return to Baseline Activity with Apple Health Metrics in Patients Undergoing ACL Reconstruction

Presenter: David Diep, BS[1]
Mentors: Jonathan Packer, MD[1]
Other Co-Authors: Joseph Blommer, MD[1]; Brian Shear, MD[1]
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Primary goals of most orthopaedic procedures include improvement in pain, function, and quality of life. Significant improvement in these metrics, as measured by patient-reported outcomes (PROs), has been previously shown after anterior cruciate ligament (ACL) reconstruction. Although PROs can capture patient recovery at discrete postoperative timepoints, surgeons currently lack a comprehensive understanding of a patient's day-to-day postoperative functional recovery. In the current age of technology, wearable health technology has become increasingly common. Perhaps the most widely available health data can be found in the health app on our smartphones. Apple Health data includes various validated mobility measures, including step count, walking distance, and gait imbalance. These metrics can be used alongside PROs to illustrate a more comprehensive understanding of a patient's postoperative recovery. The study aims to evaluate whether gait measurements from Apple Health mobility data correlate with pain, function, and mental health PROs after ACL reconstruction. We hypothesize that Apple Health data, such as step count, distance walked, and gait imbalance, will accurately detect changes in function during the postoperative recovery of ACL reconstruction. Patients were screened and either downloaded the novel application OrthoSteps or exported Apple Health data to secure servers pre-operatively or at follow-up appointments. OrthoSteps facilitates uploading Apple Health data to secure servers throughout a patient's postoperative recovery. Patients then filled out a survey inquiring about their Apple iPhone use and physical health. To date, data collection is still occurring, and there are 86 total patients, 41 patients with 6-month follow-up data, and 31 patients with 1-year follow-up data.

O3.06 The Impact of Early Postoperative Pain Interference on Two-Year Outcomes after Hip Arthroscopy

Presenter: Tyler Przygocki, BS
Mentor: Sean Meredith, MD[1]
Other Co-Authors: Michael McCurdy, MD[1]; Luke Pitsenbarger, MD[1]; Dominic Ventimiglia, MD[1]; Joseph Blommer, MD[1]
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As pain after hip arthroscopy varies widely, the impact of early postoperative pain on long-term outcomes remains unclear. This study examined whether 2-week pain scores predict 2-year patient-reported outcomes (PROs) after hip arthroscopy and compared outcomes between patients with and without early pain improvement. Patients who underwent hip arthroscopy for femoroacetabular impingement and/or labral tear between June 2016 and December 2022 were prospectively enrolled in an orthopaedic registry. Patients completed baseline, 2-week, and 2-year PRO surveys, including six Patient-Reported Outcomes Measurement Information System (PROMIS) domains, numeric pain scales, and activity scales. PROMIS Pain Interference (PI) was used to assess pain, and early improvement was defined by achieving the previously defined minimal clinically important difference, calculated as a change of ±3.1 points from baseline at 2 weeks postoperatively. Of 136 patients, 95 (71%) completed 2-week follow-up and 70 (74%) completed 2-year PROs. At 2 weeks, 31 patients (33%) improved, 27 (28%) were unchanged, and 37 (39%) worsened in PROMIS PI. Early improvement was associated with the absence of prior hip injury (p=.02) and perioperative regional block use (p=.003). Improved early PROMIS PI was associated with worse baseline PROMIS Physical Function (p<.001) and PROMIS PI (p<.001), but better 2-week PROs across most domains. Although early differences were not sustained at 2 years, worse 2-week PROMIS PI correlated with worse 2-year PROMIS PI (p=.02), Fatigue (p=.02), and Anxiety (p=.002). On multivariable analysis, improved 2-week PROMIS PI independently predicted better 2-year PROMIS PI, Marx Activity Rating Scale, and greater improvement in PROMIS PI. Early postoperative PROMIS PI may serve as a useful prognostic indicator for long-term recovery after hip arthroscopy.

O4.01 Revision Hip Arthroscopy Achieves Similar Two-Year Improvements as Primary Procedures, With Lower Activity and Higher Residual Pain

Presenter: Tyler Przygocki, BS[1]
Mentors: Sean Meredith, MD[1]; Joseph Blommer, MD[1]
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As the incidence of hip arthroscopy has increased, revision hip arthroscopy has also grown. Few studies have compared patient-reported outcomes (PROs) between primary and revision hip arthroscopy. This study aimed to compare 2-year PROs between patients undergoing primary versus revision hip arthroscopy. We hypothesized that revision hip arthroscopy would result in worse 2-year pain, function, and mental health outcomes compared to primary procedures. Patients who underwent primary or revision hip arthroscopy for femoracetabular impingement and/or labral tear between October 2015 and December 2022 were identified from a prospective orthopaedic registry. Operative details were collected through retrospective chart review, and PROs were collected at baseline and 2 years postoperatively, including six domains of the Patient-Reported Outcomes Measurement Information System (PROMIS), numeric pain scales (NPS), and activity scores. Of 146 eligible patients, 108 (74%) completed 2-year PROs (98 primary, 10 revision). At 2 years, the revision group reported greater NPS whole-body pain (p=.032) and lower Tegner Activity Subscale (TAS) levels (p=.049). Regression analysis identified revision status as an independent predictor of lower TAS levels at 2 years (p=.05), but no other 2-year PROs and 2-year changes in PROs (p>.05). 2-year rates of achieving the Minimum Clinically Important Difference (MCID) were similar across all PRO domains (p>.05). In conclusion, although revision hip arthroscopy patients experienced greater residual pain and lower postoperative activity levels, both groups achieved similar meaningful improvements in pain and function. Overall, outcomes were comparable across most PRO domains. These findings may help surgeons more effectively manage expectations and counsel patients undergoing revision surgery.

O4.02 Comparison of Complications and Risk Factors of Orthopedic Gun Shot Wound Fractures Between Different Anatomical Regions – National Trauma Database Study

Presenter: Ethan Yang, BA[1]
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Introduction
Gunshot wounds (GSWs) to the musculoskeletal system are an escalating public health concern in the United States, with firearm-related injuries rising annually since 2011. Orthopedic GSW fractures represent a complex subset of trauma requiring multidisciplinary care, surgical intervention, and significant hospital resources. Although prior National Trauma Data Bank (NTDB) studies have examined isolated regions such as the spine or extremities, there is limited national-level data comparing complication profiles across multiple anatomic fracture sites. Understanding how complication risks differ by location is critical for improving trauma triage, surgical planning, and resource allocation. This study aims to evaluate whether complication rates, mortality, and hospital utilization differ among firearm-related fractures involving the tibia, femur, humerus, pelvis, hip, and spine, and to identify patient- and injury-level predictors of poor outcomes.

Methods
A retrospective cohort study was conducted using NTDB data from 2015–2025, including all patients with firearm-related orthopedic fractures. Fractures were categorized into eight anatomical groups: ankle/foot, cervical spine, femur, forearm, lower leg (tibia/fibula), lumbar spine/pelvis, shoulder/humerus, and wrist/hand. Demographic variables (age, sex, race, insurance status), clinical characteristics (Injury Severity Score [ISS], Glasgow Coma Scale [GCS]), and outcomes (complications, mortality, ICU admission, length of stay, ventilator use) were analyzed. Bivariate tests and multivariable Firth logistic regression identified independent predictors of in-hospital complications across all fracture regions.

Results
Overall complication rates were minimal across different anatomical sites, however, cervical spine fractures demonstrated the highest incidence at approximately 12%. Central and high-energy regions, particularly femur, lumbar/pelvis, and S12 fractures, showed numerically higher complication odds compared to distal fractures of the wrist, forearm, or ankle/foot, though most differences did not reach statistical significance. Demographic variables such as sex and race were not associated with complication risk in any region (all $p > 0.05$). The combined multivariable model confirmed that complication risk was primarily associated with overall injury severity rather than anatomical location or demographic factors.

Conclusion
In this national registry-based analysis of firearm-related orthopedic fractures, complication risk differed modestly by anatomical site, with cervical spine fractures exhibiting the highest complication rate (12%). However, after adjustment for confounders, fracture location and demographic factors were not independent predictors of in-hospital complications. These findings suggest that injury severity, rather than fracture site, drives complication risk in orthopedic GSW trauma. Recognizing this pattern can guide clinical triage, surgical planning, and hospital resource optimization for firearm-related injuries.

O4.03 Factors Surrounding Accessibility to Pediatric Orthopaedic Specialists: Assessing Travel Burden and Barriers to Care

Presenters: Karli M. Funk, PT, DPT, MS[1]; Catherine C. May, BS[1]
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Access to specialized healthcare is complex and often influenced by multi-factorial socioeconomic determinants. For patients and families seeking pediatric orthopaedic surgical care, limitations in access to care may serve as a barrier to appropriate and timely care. The purpose of this study is to prospectively examine travel burdens and associated secondary costs affiliated with obtaining pediatric orthopaedic care. A total of 1,136 pediatric patients accompanied by caregivers were seen at an urban/suburban outpatient setting and prospectively surveyed. The survey assessed logistical travel factors to determine the primary reason for selecting our institution. Statistical analysis was performed with descriptive statistics. The leading reason for choosing a particular outpatient location was office location 40.3% (n= 458), followed by appointment availability (32.4%; n= 368). On average, patients traveled 19.7 miles (SD: 19.87 miles) and spent 32 minutes commuting each way (SD: 25 minutes). 94.2% (n=1070) of patients traveled by car while the remainder utilized a bus or medical mobility. Among bus riders, an average of 50 minutes to travel only eight miles was needed. 43.9% (n=499) of patients' families used vacation time to attend appointments, while of 9.68% (n=110) families lost wages, at an average cost of $197. Primary drivers of where families obtain pediatric orthopaedic care include location and appointment availability. However, travel and lost wages for pediatric orthopaedic patients and their families continue to serve as substantial access barriers. Future studies are necessary to examine the utility of telehealth appointments in reducing these disparities and improving access to timely orthopaedic care.

O4.04 Complications Associated with Distal Radius Fractures Managed with Closed Reduction and Percutaneous Pinning

Presenter: Hammad Baqai[1]
Mentor: Joshua Abzug, MD[2]
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Distal radius fractures are the most common fracture in the pediatric population, comprising 20–30% of pediatric fractures. Most pediatric distal radius fractures are managed nonoperatively with immobilization with or without a closed reduction. However, if the fracture is displaced and/or closed reduction cannot be achieved, operative intervention may be warranted. There is limited literature surrounding the complications associated with treatment of distal radius fractures. The purpose of this study is to investigate the outcomes and complications of pediatric distal radius fractures that underwent closed reduction and percutaneous pinning (CRPP). A retrospective review was performed to identify all pediatric and adolescent patients aged 0–17 years who received treatment for a distal radius fracture. There were no specific exclusion criteria except for age. Data collected included patient demographics, injury characteristics and mechanisms, treatment methods, outcomes, and complications. A simple statistical analysis was conducted. A total of **252 patients** (65.9% male, 34.1% female) with a mean age of **10.4 (SD: 3.6) years** were included. The most common mechanism of injury was a **fall (n=155, 63.8%)**, followed by **sports-related trauma (n=68, 28.0%)**. Fractures were characterized as **extraphyseal in 66.7%** (n=168) and **physeal in 33.3%** (n=84) of cases. The average time from injury to evaluation was **5.8 (SD:11.6) days**, and the average time from injury to surgery was **13.1 (SD:19.9) days**. The mean time from evaluation to surgery was **7.3 (SD:16.3) days**, with an average operative duration of **31.4 (SD:30.6) minutes**.

Patients were most commonly immobilized postoperatively in a **long arm cast (n=223, 90.7%)**, followed by splinting (n=18, 7.3%) and short arm casts (n=5, 2.0%). The mean time to pin removal was **32.1 (SD:7.6) days** and mean postoperative immobilization duration was **46.3 (SD:17.4) days**. The average time to return to activity was **80.2 (SD:71.0) days**. Overall, **23 patients (9.6%)** experienced complications following CRPP. The most common complications included **pin site granuloma (n=7, 30.4%)**, **physeal arrest or closure (n=5, 21.7%)**, **pain (n=2, 8.7%)**, and **neuropraxia (n=2, 8.7%)**. There was **no statistically significant association** between complication rate and **fracture type (p= 1.00)**, **type of immobilization (p= 0.91)**, **number of pins used (p= 0.50)**, **time from evaluation to surgery (p =0.77)**, or **length of surgery (p= 0.34)**. However, a significant relationship was observed between **time until pin removal and complication occurrence (p= 0.004)**, and a near-significant trend was noted between **duration of postoperative immobilization and complications (p= 0.055)**. In this large pediatric cohort, distal radius fractures managed operatively with closed reduction and percutaneous pinning demonstrated an overall **complication rate of 9.6%**, lower than previously reported rates in smaller series. Prolonged time to pin removal was significantly associated with increased complications, underscoring the importance of timely hardware removal in this population. These findings suggest that, while CRPP remains a safe and effective treatment for unstable pediatric distal radius fractures, **careful postoperative follow-up and early pin removal may reduce complication risk**.

O4.05 Private Vehicle versus Ambulance for Pediatric Orthopaedic Transfers: A Retrospective Analysis

Presenters: Daniel Polsky; Maclean Panshin
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Background: Interhospital transfers are vital for delivering specialized care to pediatric patients with orthopedic injuries. However, the choice of transport modality (ambulance versus private vehicle) may significantly impact patient outcomes, system efficiency, and costs. While prior studies have explored transport-related outcomes in adult and trauma populations, limited data exist for pediatric orthopaedics.

Methods: This study aims to evaluate and compare the effectiveness, safety, and logistics of ambulance versus private vehicle transfers in pediatric patients referred to a tertiary care orthopedic center. We conducted a retrospective chart review of patients aged 0 17 who received interhospital transfers to the University of Maryland Medical Center between 2012 and 2023. Patients were identified through ICD-9 and ICD-10 codes linked to orthopedic diagnoses. Extracted variables included transport type, timing of transport and triage, pain scores, diagnosis, management, complications, and functional outcomes. Data were de-identified and stored securely per HIPAA standards.

Results (Preliminary): While no differences reached statistical significance, several trends emerged between private vehicle (PV) and ambulance (AMBO) transfers. PV transfers showed longer times to initiation (154.9 ± 80.3 vs. 122.4 ± 87.1 min, $p = 0.56$) but shorter initiation-to-departure intervals (65.1 ± 111.7 vs. 97.6 ± 92.3 min, $p = 0.39$). Overall transfer times were similar (92.5 ± 61.4 vs. 87.2 ± 91.5 min, $p = 0.64$). Upon arrival, PV patients experienced longer delays to both evaluation (122.8 ± 84.4 vs. 60.7 ± 75.6 min, $p = 0.18$) and orthopedic consult (204.9 ± 133.3 vs. 123.6 ± 135.3 min, $p = 0.78$).

Conclusion: The trends suggest that private vehicle transfers may offer comparable or faster total transport but slower in-hospital triage and evaluation. Such differences may reflect family decision-making and discharge coordination in private vehicle cases versus structured ambulance protocols. Recognizing these dynamics could inform triage and transfer guidelines that optimize EMS resource utilization, reserve ambulance transport for higher-acuity cases, and potentially reduce the cost of care for families. Ongoing analysis will further examine pain, treatment differences, and outcomes to clarify the clinical and operational implications of transport mode choice.

O4.06 Does Fixation Strategy for Native and Periprosthetic Distal Femur Fractures Influence Discharge Disposition?

Presenter: Karli M. Funk, PT, DPT, MS[1]
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Distal femur fractures have historically been operatively managed with lateral locked plating. However, advancements in retrograde intramedullary nailing have allowed for viable operative fixation with either method. It remains unclear whether the operative fixation method impacts patient-centered postoperative outcomes. This study assessed whether the fixation method was associated with discharge disposition. This retrospective cohort study included adult patients aged 18 and older with a distal femur fracture that was surgically treated at the study site with a retrograde intramedullary nail or lateral locking plate between January 2016 and July 2024. The primary outcome was discharge disposition, categorized with four ordinal levels: 1) home, with or without services, 2) subacute rehabilitation, which included both skilled nursing facilities and subacute rehabilitation facilities, 3) acute rehabilitation, or 4) in-hospital mortality. Among the 589 eligible patients, 211 were treated with a retrograde intramedullary nail and 378 with a lateral locking plate. No statistically significant difference in discharge disposition was observed (adjusted OR: 1.35; 95% CI: 0.97 to 1.88; P = 0.07). The association of intramedullary nail versus lateral locking plate on discharge to home was not statistically significant after adjusting for early weightbearing (OR, 1.14, 95% CI 0.74–1.76, P = 0.58). Mediation analysis demonstrated no significant indirect effect of fixation type on discharge home through weight-bearing (risk difference –0.6%, 95% CI –2.4% to 0.1%, p = 0.11) and no total effect of fixation type on discharge disposition (–0.7%, 95% CI –7.8% to 7.0%, P = 0.79). Among patients with a distal femur fracture, neither the retrograde intramedullary nail nor the lateral locking plate significantly influenced discharge disposition. These findings indicate that both options for surgical management have similar discharge dispositions, and individual patient factors should be considered when selecting fixation method.

O5.01 When the First Cycle Fails: Understanding Fertility Treatment Discontinuation in Donor Sperm Recipients

Presenter: Katerina Melnyk[1]
Mentors: Jonathan Konel, MD, MHS[2]; Jerrine Morris, MD, MPH[3]
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The use of donor sperm for fertility treatment has increased notably in recent years, particularly among same-sex female couples and unpartnered individuals. This is in part due to an expanded definition of infertility to include individuals without a male partner or with reproductive barriers beyond biological causes. While treatment discontinuation is common across fertility care, little is known about the factors influencing dropout among single or LGBTQ+ donor sperm recipients. As donor sperm use increases, understanding what drives treatment discontinuation is critical to addressing inequities and improving patient retention in fertility care. This retrospective cohort study analyzed donor sperm recipients at a large multi-center private practice between 2009 and 2019. Patients were included if they used donor sperm and their first intrauterine insemination (IUI) cycle was unsuccessful. Treatment discontinuation was defined as failure to return for additional treatment within one year. Variables of interest included insurance coverage status, age, race/ethnicity, and income. Preliminary results indicate individuals with lower estimated income were more likely to discontinue, while older and nulliparous patients were more likely to continue. Black and Hispanic patients were more likely to discontinue treatment and had longer times to return for additional care compared to non-Hispanic White patients. These findings underscore that racial and socioeconomic disparities persist in fertility treatment continuation among donor sperm recipients. Efforts to identify and address the barriers faced by these patients are essential to promoting equitable access and improving outcomes in reproductive care.

O5.02 Youth-Centered Sexual Health: Understanding Preventive Care Patterns and Choices in STI Testing

Presenter: Ryan McCarragher[1]
Mentor: Matthew Grant, MD[1]
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STI incidence is rising in the United States, with Baltimore City rates surging. The disease burden is not equally shared, with youth, MSM, Black, and Latino communities disproportionately affected. A myriad of factors restrict access to sexual health care for these populations in Baltimore, including cost, education, stigma, and geographic location. The "Black Butterfly" region of Baltimore has few testing centers and represents a hotspot for STI transmission. To reach youth and combat these geographic barriers, alternative testing options such as home test kits and mobile van testing have been increasingly offered. The objective of this study was to address the increasing STIs in Baltimore by identifying preferences for various testing options and examining the referral of preventative therapies, such as Pre-exposure Prophylaxis for HIV (PrEP). Participants utilizing walk-in services at the Adolescent and Young Adult Center completed a brief, anonymous survey on patient views, and barriers to accessing reproductive health care resources. Patient responses were stratified by patient-reported demographics. Results suggest participants may not be interested many of the currently offered testing options, preferring walk-in clinics to at-home testing and mobile vans. There was a strong correlation between participants identifying as MSM and previous referral to PrEP, significantly stronger than the number of sexual partners, past STI history, condom use, and type of sexual practice. These findings highlight the need to prioritize expansion of fixed-site testing centers in convenient locations to Baltimore-area youth and highlights potential provider bias in the referral of STI-preventive therapies such as PrEP.

O5.03 Are #Fibroids On Your #FYP? A Content Analysis of Uterine Fibroid Treatment Options on TikTok and the Role of Interventional Radiology

Presenter: Gabrielle Dickerson[1]
Mentors: Neil Jain, DO[2]; Keith Horton, MD[2]
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This cross-sectional content analysis examined TikTok discourse surrounding uterine fibroids (UF) and uterine fibroid embolization (UFE) to assess the visibility and accuracy of information on these topics. The top 50 videos from each of two hashtag sets, general UF (#fibroids, #fibroidawareness, #uterinefibroids, #uterinemyoma, #fibroidremoval) and UFE-specific (#uterinearteryembolization, #uterinefibroidembolization, #UFE), were retrieved over a six-month period. After applying inclusion and exclusion criteria, videos were coded by author type, treatment mentioned, misinformation, and tone, with engagement metrics summarized descriptively and treatment mentions compared using χ^2 analysis. Of 195 videos under general UF hashtags, only 12 (6.1%) mentioned UFE, significantly less than UFE-specific content ($\chi^2 = 50$, $p < 0.001$). Myomectomy was discussed far more frequently (30.8%) than UFE ($\chi^2 = 32$, $p < 0.001$). The majority of general UF content originated from lay users (54.8%), followed by healthcare providers (21.5%, predominantly OB/GYNs) and alternative practitioners (18.5%) who often promoted unsubstantiated causes and remedies. Among 98 UFE-specific videos, 81.6% discussed UFE, primarily authored by lay users (42.9%) and interventional radiologists (13.3%), with lay posts focusing on personal experiences and provider content being educational. Despite its efficacy, UFE remains markedly underrepresented in general TikTok discussions of UF, reflecting limited public awareness and continued underutilization. These findings underscore the need for coordinated outreach between interventional radiologists and gynecologists and the development of accessible, evidence-based educational content to improve visibility of UFE as a treatment option.

O5.04 Patient Satisfaction with IUD Pain Management Option Checklist

Presenter: Lauren Jacobs[1]
Mentor: Jessica Lee, MD, MPH[1]
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Pain during intrauterine device (IUD) placement is a common experience, yet patients are rarely informed of available anesthesia options. This study aimed to evaluate the implementation of an anesthesia options checklist to improve patient satisfaction with analgesic counseling. In this single-arm study, providers were encouraged to counsel patients presenting for IUD placement with a standardized anesthesia options checklist outlining available pain management options. Participants completed an anonymous pre-procedure survey assessing previous IUD experience, pain expectations, mental health, and satisfaction with care. To date, 40 participants have enrolled. The sample represents a wide age range (20–47 years). Most (75%) had previously been pregnant, and 41% had prior IUD placement. Pain expectations and anxiety levels varied, suggesting individualized needs. Satisfaction was measured using a 5-point Likert scale (1 = highest satisfaction, 5= lowest satisfaction). Of the anesthesia options offered, the most commonly selected were ibuprofen (66%), followed by lidocaine gel (56%), lidocaine injection (22%), oral sedation (17%), and moderate sedation (11%). Many patients strongly agreed that the checklist improved their care (1.4 ± 0.7). Across all participants, satisfaction with care providers was high (1.2 ± 0.4). Most rated providers as friendly and felt they had adequate time with them. This study also polled patients' social media exposure. Twenty-eight percent of patients saw content about IUDs on social media before their visit. Enrollment is ongoing to increase the sample size. Preliminary findings suggest that the anesthesia checklist is a simple, acceptable tool that may enhance patient autonomy and satisfaction during their IUD insertion experience.

O5.05 An Analysis of Socioeconomic Deprivation and Cancer Trial Enrollment at the University of Maryland's Greenebaum Comprehensive Cancer Center: A Retrospective Cohort Study

Presenter: Priyanka Ravi, BS[1]
Mentor: Benjamin Powers, MD, MS[1]
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Introduction: Lack of diversity in cancer clinical trials remains a major barrier to equitable treatment advancements. However, most studies have focused on race/ethnicity or gender disparities in cancer trials. Although socioeconomic status has been described as a barrier to cancer clinical trial participation, few studies have assessed it using granular, comprehensive, or normalized measures. Therefore, this study used the Area Deprivation Index (ADI) to assess cancer clinical trial eligibility and enrollment at an NCI-designated Comprehensive Cancer Center.

Methods: Patients approached for cancer clinical trials (2010–2024) were identified from the University of Maryland Greenebaum Cancer Center OnCore database. Inclusion criteria were age ≥18, a cancer diagnosis, and available ADI. The ADI is a validated, publicly available dataset ranking census block groups (1–100), with 100 indicating greatest socioeconomic disadvantage. Descriptive statistics and linear regression were performed using R (v4.4.2).

Results: Patients eligible but not enrolled in a trial comprised 4.0% of the analytic cohort. Non-enrollees were 4.5% of the least deprived and 2.4% of the most deprived cohorts. The analytic cohort included 6858 patients. The median age was 59; 52% were female. By race, 61.2% percent were White, 32.6% African American, and 3.0% Asian. The cohort was 3.0% Hispanic. ADI was associated with 5 variables. The median national ADI of the cohort was 33. By national ADI, the least and most deprived groups comprised 28.3% and 8.5%, respectively. By state ADI, these groups comprised 18.0% and 21.5%.

Conclusion: These results are the first assessment of cancer clinical trial enrollment at an NCI-designated cancer center. The findings suggest inequity in cancer clinical trial enrollment at the national level; however, there is no clinically meaningful difference in enrollment at the state level. Several covariates were associated with ADI and evaluation suggesting that the intersection of socioeconomic status and other demographic factors may impact cancer clinical trial enrollment.

O5.06 Strengthening Maryland's Healthcare Workforce: A Comparative Analysis of Maryland Loan Repayment Program's Applicants and Awardees

Presenter: Maclean Panshin, MPH[1]
Mentor: Sara Seitz, MPH[2]
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Background: Maryland faces persistent healthcare workforce shortages, especially in rural and medically underserved areas. The Maryland Loan Repayment Programs (MLRP), including the Maryland Loan Assistance Repayment Program (MLARP) and the State Loan Repayment Program (SLRP), aim to address this by offering educational loan repayment to physicians, advanced practice registered nurses, physician assistants, and nursing staff who commit to serving high-need communities.

Objective: To analyze and compare demographic and practice characteristics of MLRP applicants and awardees from the 2025 application cycle, with a focus on identifying disparities between those who applied and those who ultimately received awards. Understanding these differences can inform strategies to strengthen equitable access to loan repayment support and improve workforce distribution.

Methods: Applicant and awardee data, including age, gender, race, ethnicity, specialty, and practice site information, were analyzed using descriptive statistics. Comparisons were made to examine differences in demographic representation between applicants and awardees. Special attention was given to groups underrepresented among awardees despite strong application rates.

Results: Preliminary findings indicate that early-career professionals and those in primary care or emergency medicine specialties were more likely to receive awards. The majority of awardees were female, with a notable increase in representation among Black physicians compared to Maryland's physician workforce overall. However, certain demographic groups and specialist applicants experienced lower award rates, reflecting the program's prioritization of primary care. Geographically, most awardees served in Health Professional Shortage Areas (HPSAs) or Medically Underserved Areas/Populations (MUA/Ps), with a concentration around Baltimore City.

Discussion: This analysis highlights how MLRP selection criteria shape award distributions and impact workforce diversity. Identifying disparities between applicants and awardees supports ongoing efforts to refine program design, strengthen equitable recruitment, and ensure that loan repayment incentives effectively address Maryland's most critical healthcare workforce needs.
This research was supported in part by the University of Maryland Scholars Program, an initiative of the University of Maryland: MPowering the State.

O6.01 Co-Stimulatory Displayed Vector Enhances Transduction for Rapid 1-Step CAR T Therapy

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Mentors: Bingfei Yu, PhD[2]; Jing Hu, PhD[2]
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Immunotherapy, particularly CAR T cell therapy, has shown remarkable success in treating hematological malignancies. However, challenges remain including manufacturing limitations due to the complex, time-intensive, and costly production process. To address this, recent work from our lab explored a novel targeted lentiviral platform (ENTER), re-engineered to target T cells via anti-CD3 scFV display, to streamline CAR-T generation. This platform demonstrated successful *in vitro* transduction. Building on this system, we incorporated co-stimulatory molecules– CD80, CD86, 41BBL, or CD58– onto ENTER to further enhance transduction. All co-stimulatory, T cell-directed vectors improved transduction, with CD58- ENTER generating the highest. To examine the role of binding affinity, we compared bispecific (anti-CD2 9.6 + 9.1) and monospecific (anti-CD2 9.6) scFV constructs on ENTER. CD58-ENTER still outperformed both, suggesting that higher binding affinity does not necessarily improve transduction. In conclusion, co-stimulatory-T-cell directed ENTER can enhance transduction and may offer a simple alternative to conventional CAR T manufacturing. Ongoing studies are evaluating anti-tumor efficacy and optimize the balance between transduction efficiency and quality.

O6.02 UMMC Experience with Commercially Available Tumor Infiltrating Lymphocyte Therapy for Melanoma

Presenter: Elizabeth Summers[1]
Mentor: Julia Terhune, MD[2]
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Background: Despite many advances in treatment options, the prognosis for patients with metastatic melanoma who have progressed on first-line systemic therapies remains poor with limited additional treatment options. Lifileucel, a tumor infiltrating lymphocyte (TIL) product, has previously demonstrated durable responses in these patients.

Methods: We performed a retrospective cohort study of patients with stage IIIC/D or IV metastatic melanoma who progressed on treatment with checkpoint inhibitor(s) (if BRAF V600E mutated, after BRAF +/- MEK inhibitor therapy) and were considered for treatment with TIL therapy at the University of Maryland Medical Center. Information pertaining to patient demographics, previous lines of therapy, timing of treatments, response to TIL therapy, and survival were collected.

Results: A total of 11 patients were identified. The majority of patients were female (6 of 11 [54.5%]), with a mean age of 54.8 years. Most of the patients had a diagnosis of stage IV melanoma at the time of evaluation for TIL therapy (10 of 11 [90.9%]). At the present, five of the 11 patients (45.5%) had completed TIL infusion. Among them, partial response was observed in two (40%), stable disease was observed in one (20%), and disease progression was observed in two. Four of the five patients remain alive with disease (80%).

Conclusion: Our early experience with commercial TIL therapy at UMMC demonstrates clinical activity in metastatic melanoma patients with limited treatment options. Further evaluation of this cohort of patients is needed to assess the durability of responses and examine the factors contributing to response to therapy.

O6.03 Microenvironment Profiles of 2,400 Glioblastomas Identify a Perinecrotic Niche Associated with Immunotherapy Resistance

Presenter: Kevin J Tu[1]
Mentor: Zachary Reitman, MD, PhD[2]
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Glioblastoma (GBM) is highly resistant to immunotherapy due to its profoundly immunosuppressive and poorly understood tumor microenvironment (TME). Here, we aimed to comprehensively characterize the TME and identify opportunities for immunostimulation. We first performed pseudobulk analysis on a single-cell RNAseq dataset of 338,564 cells from 109 patients to benchmark 12 deconvolution algorithms, identifying InstaPrism as the most parsimonious and granular model for downstream analysis. Applying this validated method to a meta-cohort of 2,400 clinically annotated glioblastoma samples, we quantified the abundance of 39 distinct functional cell states. We defined tumor subtypes by their dominant malignant cell state (AC-like, MES-like, NPC-like, and OPC-like), finding this state dictates TME composition, interactions, and survival impact. We also identified two cancer-independent ecotypes: an immunosuppressive myeloid-dominant and an immunostimulatory lymphoid-dominant ecotype. Notably, the lymphoid-dominant ecotype had a positive prognostic effect only in mesenchymal (MES-like) phenotype tumors, suggesting this subgroup derives the greatest survival benefit from immunostimulation. To resolve the spatial organization of these findings, we applied spatial transcriptomics to characterize a localized immunosuppressive niche enriched in MES-like dominant tumors. This niche was defined by low expression of immune activation genes, elevated hypoxia and angiogenic signatures, and was significantly associated with mortality and resistance to immunotherapy in patients. Finally, we demonstrate that this niche can be reversed using radiation *in vitro* and in a murine model for glioma, providing a potential biomarker for patient stratification and a strategy to enhance immune responsiveness in GBM.

O6.04 Comparison of Outcomes and Prostate Cancer Diagnosis in Freehand Transperineal vs. Transrectal Prostate Biopsy in the VA Patient Population

Presenter: Christopher Huang[1]
Mentor: Mohummad Minhaj Siddiqui, MD[1]
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Introduction and Objectives: Freehand Transperineal (TP) prostate biopsy has emerged as a viable alternative to Transrectal (TR) that may be associated with lower infectious risk and comparable prostate cancer diagnosis rate, although this relationship is understudied in the veteran population, a uniquely vulnerable group. This research project aims to determine whether freehand TP vs. TR prostate biopsy results in significantly different rates of infectious and non-infectious complications, as well as diagnosis of clinically-significant prostate cancer (CSPCa, Gleason 7+) and prostate cancer in general (PCa, Gleason 6+) in the VA patient population.

Methods: This project utilized chart review to perform an IRB-approved, retrospective cohort study of patients at Baltimore VA Medical Center who underwent at least one prostate biopsy between 2020-2025, examining the rates of various infectious outcomes (fever, UTI, prostatitis, epididymo-orchitis, bacteremia, and sepsis) and non-infectious outcomes (urinary retention, bleeding requiring intervention, vasovagal event, and mortality), as well as diagnosis of CSPCa and PCa associated with TP vs. TR prostate biopsy.

Results: A total of 575 patients were included in the study, for a total of 734 prostate biopsies (361 TP, 373 TR). There was no significant difference in composite infectious complications in TP vs. TR (2.8% vs. 4%, p = 0.35), although there was a significantly higher incidence of prostatitis in TR (0% vs. 1.6%, p = 0.004). Rates of sepsis were found to be similar in TP vs. TR (0.6% vs. 1.1%, p = 0.44). Composite non-infectious complication rates were also found to be similar in TP vs. TR (3.9% vs. 2.4%, p = 0.25). Furthermore, systematic TP was demonstrated to be superior to TR in the detection of both CSPCa (31.8% vs. 24.3%, p = 0.026) and PCa (54.3% vs. 45.1%, p = 0.013).

Conclusions: This study found that systematic TP vs. TR resulted in significantly higher rates of both CSPCa and PCa diagnosis in the high-risk VA population. At the same time, it mostly failed to demonstrate significant differences in infectious and non-infectious outcomes. Further studies are needed to fully examine this relationship.

O6.05 Comparison of Urinary Toxicity Profiles in Prostate Cancer Patients Undergoing External Beam Radiation Therapy with High-Dose vs. Low-Dose Brachytherapy Boost

Presenter: Katya Drovetsky[1]
Mentor: Jason Molitoris, MD, PhD[1]
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Background: External Beam Radiation Therapy (EBRT) is a well-established treatment for prostate cancer that improves progression-free survival. However, its effectiveness is limited by treatment-related toxicity. Brachytherapy, administered as either High-Dose Radiation (HDR) or Low-Dose Radiation (LDR), is often combined with EBRT to enhance cancer control while potentially mitigating toxicity.

Previous studies suggest that EBRT combined with brachytherapy improves treatment outcomes, but its impact on toxicity remains debated. Studies comparing toxicity profiles for patients receiving EBRT in conjunction with HDR or LDR have shown conflicting results. Some reports indicate that when combined with EBRT, LDR is associated with reduced relapse rates and fewer severe adverse events, while others suggest that HDR may lead to more rapid recovery from side effects. When used as monotherapies, HDR has been linked to a lower decline in self-reported Health-Related Quality of Life (HRQoL), particularly in urinary function. However, whether this benefit extends to patients receiving HDR in combination with EBRT remains unclear.

Objective & Hypothesis: This study compares urinary toxicity profiles and HRQoL outcomes in prostate cancer patients receiving EBRT with either HDR or LDR brachytherapy. We hypothesize that when administered alongside EBRT, HDR will be associated with better urinary HRQoL outcomes than LDR.

Methods: In this retrospective study, we analyzed clinical data from electronic medical records of prostate cancer patients with unfavorable intermediate or high risk, who were treated with EBRT + HDR or EBRT + LDR at the University of Maryland Medical Center. Collected variables include patient demographics, disease characteristics, treatment details, toxicity outcomes, and biochemical control measures.

Impact: Clarifying the comparative toxicity and HRQoL outcomes of EBRT + HDR vs. EBRT + LDR will provide valuable insights to inform clinical decision-making and optimize treatment strategies for prostate cancer patients.

O6.06 Practical Clinical Interventions to Help Improve Cancer Care for Patients Who Experience Food Insecurity

Presenter: Delara Rajabi Abhari, MPH[1]
Mentor: Melissa Vyfhuis, MD, PhD[1]
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Patients undergoing definitive chemoradiation (CRT) for head and neck, gastrointestinal, thoracic, or gynecologic malignancies often face nutritional challenges in the months following treatment, which can contribute to long-term health complications and reduced quality of life. Food insecurity and poor dietary intake during this recovery period may go unrecognized, leading to weight loss, diminished functional status, and increased symptom burden. This pilot study aims to proactively identify patients at increased risk for food insecurity 1–3 months post-CRT and provide them with cost-effective nutritional resources alongside individualized dietary education. The primary objectives are to evaluate the feasibility of early intervention and to assess its impact on food security, BMI/weight stability, and overall symptom burden. We hypothesize that we can achieve ≥ 85% retention among enrolled participants and demonstrate improvements in post-treatment nutritional outcomes. We are conducting a small, single-arm, interventional study. Eligible patients are recruited 1–3 months after completing CRT and will receive a structured nutritional support program lasting 6 months. Data will be collected through validated short-form surveys administered at baseline (time of consent), during the intervention period, and post-intervention. Surveys will capture BMI, self-reported symptom burden, and measures of food insecurity. The intervention will consist of regular contact with a dietitian, access to nutritious and affordable food options, and education tailored to each patient's dietary needs and treatment history. This study will inform future strategies to address nutritional insecurity as a critical, modifiable factor in cancer survivorship care.

O7.01 Gamified Robotic Surgery Simulation for Medical Students: A Randomized Trial

Presenters: Christopher Huang[1], Nischal Ada[1]
Mentor: Mohummad Minhaj Siddiqui, MD[1]
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Introduction and Objectives: Robotic surgery (RS) is becoming increasingly prevalent in surgical practice, yet structured training curriculums involving RS simulation remain lacking, particularly for medical students. Prior studies suggest that simulation-based training improves medical student confidence and skill acquisition; however, existing interventions suffer from small sample sizes, lack of objective metrics, and minimal integration of motivational strategies such as gamification. While gamified learning has shown promise in resident training, its role in medical student education is largely underexplored. This study aims to evaluate whether early exposure to RS simulation with gamification elements enhances medical student interest, confidence, understanding, and skill development in fields utilizing RS.

Methods: IRB approval was obtained for this study. We created a curriculum introducing medical students to the field of RS. We then conducted a trial in which students were randomized into either a gamified (team-based tournament format) or non-gamified (individual) cohort. Both groups underwent the same training curriculum, were administered a pre-survey on RS skills/interest/confidence recorded as 1-5 on Likert Scale (1 = Strongly Disagree, 5 = Strongly Agree), and performed a series of simulation exercises using the Da Vinci Skills Simulator.

Results: A total of 74 pre-survey responses were recorded to date. Preliminary survey data suggests that baseline interest in pursuing a surgical career is high (81%), while at the same time confidence in robotic surgical skills is low (9%). Furthermore, students perceive a gap in formal medical education involving RS (73%), are highly motivated to seek out further training (73%), and believe they can develop strong RS skills given proper training (88%). Pre-surveys will be compared to post-surveys once administered.

Conclusions: Medical students value surgical training but feel underprepared for robotics, pointing to a significant curricular gap. Their strong belief in their ability to improve suggests that structured, simulation-based approaches, particularly those incorporating gamification, could help transform interest into confidence and proficiency.

O7.02 Estrogen Regulates Glucose and Insulin Signaling in the Non-Human Primate Placenta

Presenter: Faith Davis[1]
Mentors: Irina Burd, MD, PhD[1]; Jun Lei, MD, PhD[1]; Graham W Abderdeen, PhD[1]
Other Co-Authors: Arya Rahimi[1]; Sahar Khoshravesh, MD[1]; Anguo Liu, MD, PhD[1]; Kristina Witcher, MD, PhD[1]; Jeffery Babischkin, MS[1]; Eugene D Albrecht, PhD[1]; Courtney Townsel, MD[1]
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Normal placental development is essential for nutrient exchange, hormone production, and immune regulation during pregnancy. Estradiol (E2), primarily synthesized by the placenta after nine weeks of gestation, is critical for maintaining these functions. However, its role in regulating placental metabolic signaling, particularly glucose transport and insulin pathway activity, remains incomplete. This study investigated whether E2 regulates placental glucose transport to the fetus using a non-human primate model of pregnancy. Pregnant baboons were assigned to three groups: control (n = 8), letrozole-treated (n = 8; 115 µg/kg/day, gestational days 100–165), and letrozole + E2 benzoate-treated (n = 8). Placentas were collected near term by elective cesarean section. Paraffin-embedded placental tissue sections were analyzed by immunohistochemistry (IHC) for trophoblast marker cytokeratin (CK19 or CK type II), for endothelial marker vimentin, and for glucose transporters (GLUT) 1, GLUT4, and insulin receptor (IRS). Expression was quantified using ImageJ and analyzed by one-way ANOVA followed by Bonferroni post hoc tests. Cytokeratin expression, marking trophoblast integrity, was significantly reduced in the letrozole group ($p < 0.001$) and restored with E2 replacement. Vimentin expression, marking endothelial structure, also significantly decreased in the letrozole group ($p < 0.001$) and was restored with E2 replacement. In controls, insulin-independent GLUT1 was highly and ubiquitously expressed across placental cells, with stronger intensity in endothelial cells. GLUT1 expression decreased with letrozole and increased with E2 replacement ($p < 0.05$). Insulin-dependent GLUT4 was co-expressed with insulin receptors in trophoblasts. Compared with controls, insulin receptor expression significantly decreased in letrozole-treated baboons ($p < 0.001$) and was restored with E2 replacement ($p < 0.01$). E2 depletion decreased cytokeratin, vimentin, GLUT1, and insulin receptor expression, whereas E2 replenishment restored these markers. These findings would suggest that E2 is a modulator of placental structure/function and metabolic signaling, indicating a link with hormonal status during gestation to trophoblast and endothelial integrity, nutrient transport to support fetal growth, and long-term metabolic outcomes.

O7.03 Measuring Nitric Oxide to Validate AI-Guided Discovery of Endothelin B Receptor Binding Peptides

Presenter: Yusuf Mastoor[1]
Mentor: Bradley Maron, MD[1, 2]
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Pulmonary arterial hypertension (PAH) is a chronic and progressive disorder defined by fibroproliferative remodeling of the lung vasculature, eventually leading to right heart failure. Impaired bioavailability of nitric oxide (NO) has been implicated in the pathogenesis of PAH, leading to increased smooth muscle proliferation, perivascular fibrosis, and pulmonary vasoconstriction. Under physiologic conditions, NO production is mediated by endothelial NO synthase (eNOS) which is stimulated by the vasoactive peptide endothelin-1 (ET1) binding to its receptor, ET_B-receptor (ET_BR). In PAH, increased oxidative stress inhibits normal ET_BR-eNOS signal transduction. Previously, our lab has demonstrated that oxidative modification of redox-sensitive cysteinyl thiol residues at positions 402, 403, and 405 on ET_BR inhibit ET1-dependent eNOS upregulation and NO bioavailability. As currently available therapies for PAH do not specifically and potently target the ET_BR, our group is leveraging AI and biophysical methods to predict its 3D structure and identify both existing compounds and novel AI-generated small molecule structures. While computational techniques can identify compounds that strongly bind to the ET_BR, they are unable to determine if binding will agonize, antagonize, or even elicit a physiological response from the receptor. To determine the physiological response of ET_BR signaling in response to the compounds, we utilized a fluorescence assay (2, 3-diaminonaphthalane) to measure NO_2^- production in conditioned media from human pulmonary artery endothelial cells (HPAECs). Stimulation with ET1 or a selective agonist (IRL 1620) for 24 hours led to a 1.6-fold and a 2.4-fold increase in NO_2^- production, respectively. Shorter treatment for 30 minutes with ET1 led to a 2-fold increase in NO_2^- production. To understand how oxidation of the ET_BR, as seen in PAH, influences ET-1-dependent NO production, HPAECs were pre-treated with H_2O_2 and stimulated with ET-1, which showed an attenuation of NO production. The findings from this study have direct translational potential by validating in silico predictions using in cellulo disease models to advance therapeutic development.

O7.04 Sustainable AI-Supported Workflows: Preserved Diagnostic Accuracy for Pulmonary Embolism Detection with Reduced Contrast CT Pulmonary Angiography

Presenter: Gabrielle Dickerson[1]
Mentor: Florence X. Doo, MD, MA[1]
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This multicenter retrospective study investigated the impact of reduced iodinated contrast media (ICM) dosing on the diagnostic performance of an FDA-cleared artificial intelligence (AI) algorithm for pulmonary embolism (PE) detection on CT pulmonary angiography (CTPA), with the goal of supporting sustainable imaging practices. A total of 6,692 CTPA examinations performed across 12 hospitals between November 2021 and June 2022 were analyzed using binary (≤50 mL vs >80 mL), quaternary, and continuous ICM dose models. AI outputs were compared with radiologist interpretations adjudicated by expert review. Among 5,923 examinations included in the binary-dose analysis (5,826 standard-dose and 97 reduced-dose studies), AI diagnostic performance remained stable across contrast doses (sensitivity: 89.6% vs 88.9%, $p = 0.96$; specificity: 98.9% vs 98.9%, $p = 0.97$). Similarly, quaternary and continuous dose modeling demonstrated no significant relationship between ICM volume and diagnostic accuracy ($p = 0.92$ and $p = 0.40$, respectively), and performance was consistent across scanner manufacturers and patient sexes. These findings indicate that AI-assisted PE detection maintains diagnostic accuracy across a range of ICM doses, supporting the safe and environmentally sustainable implementation of reduced-contrast CTPA protocols in AI-enabled clinical workflows.

Contact precaution policies are used to prevent the spread of pathogenic organisms, however, controversy exists regarding the extent to which they should be used. We aimed to test whether AI-powered cameras could monitor aspects of compliance with newly proposed red zone policies, consisting of wearing precautions only when coming close to a patient's bed. Testing in both simulated and real patient care settings yielded exceptional sensitivity and good specificity, indicating potential to monitor adherence to contact precaution policies in future studies.

O7.05 Exploring AI-Powered Cameras to Monitor Contact Precaution Compliance

Presenter: Robert McLuckey[1]
Mentors: Anthony Harris, MD, MPH[1]
[1] Department of Epidemiology & Public Health, University of Maryland School of Medicine

Contact precaution policies are used to prevent the spread of pathogenic organisms, however, controversy exists regarding the extent to which they should be used. We aimed to test whether AI-powered cameras could monitor aspects of compliance
with newly proposed red zone policies, consisting of wearing precautions only when coming close to a patient's bed. Testing in both simulated and real patient care settings yielded exceptional sensitivity and good specificity, indicating potential to monitor adherence to contact precaution policies in future studies.

O7.06 Jewish Ethnic Subgroups and Artificial Intelligence Clinical Decision Support

Presenter: Blayne Schenk[1]
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As artificial intelligence augments clinical decision-making, its risks to Jewish communities remain underexamined. AI accuracy depends on comprehensive data, yet algorithmic bias can worsen disparities among racial, ethnic, socioeconomic, or disability minority groups. There has been no examination of such biases in relation to Jewish communities. Commonly perceived solely as a religious group, the Jewish people also represent at least three ethnicities (Ashkenazi, Sephardi, and Mizrahi), each with unique risk profiles. We provide an overview of these subgroups and summarize their shared, distinct clinical susceptibilities based on a narrative review of both scientific and gray literature sources.

O8.01 The Reach of State Insulin Cost Caps: Coverage and Limitations

Presenter: Umailla Naeem[1]
Mentors: Renhao Wang, PhD, MPH[2]; Alexander O. Everhart, PhD[3]; Pinar Karaca Mandic, PhD[4]; Stacie B. Dusetzina, PhD[5]; Kasia J. Lipska, MD, MHS[6]; Rozalina G. McCoy, MD, MS[7]
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Background: Insulin prices tripled between 2002-2013, with some formulations costing up to $900 per patient per month. Approximately 16.5% of 8 million US adults using insulin report cost-related rationing, leading to increased emergency visits, hospitalizations, and poor glycemic control. In response, 28 states and DC enacted insulin out-of-pocket (OOP) cost caps ranging from $25-$100 per prescription for state-regulated commercial plans. However, self-funded employer plans—covering approximately 60% of workers with employer-sponsored insurance—are federally regulated and exempt from state mandates, fundamentally limiting policy reach.

Methods: We reviewed state insulin OOP cap legislation from 2019-2025, documenting enactment dates, cap amounts, and policy specifications. We estimated the number of commercially insured adults with diabetes using insulin who were protected or unprotected by linking policy data with CDC diabetes prevalence, Census Bureau insurance coverage rates, Kaiser Family Foundation self-funded plan penetration rates, and CDC National Health Interview Survey insulin dependency rates.

Results: By 2025, state OOP caps protected 760,455 commercially insured insulin users. However, 3,024,219 remained unprotected: 1,012,813 in self-funded employer plans within states with caps, and 2,011,376 in 23 states without legislation. State-level protection ranged from 0% to 55.0%. If all states adopted caps, 869,274 additional individuals would gain protection. Federal legislation extending caps to self-funded plans would protect an additional 2 million individuals.

Conclusion: Comprehensive protection against high insulin OOP costs requires federal legislative action to address the regulatory gap for self-funded employer plans and ensure equitable protection regardless of employer plan structure or state of residence.

O8.02 Impact of Comprehensive Primary Care on Diabetes Management and Outcomes: A Systematic Review

Presenters: Sahar Zoghi[1], Akash Sureskumar[1]
Mentor: Rozalina McCoy, MD, MS[2]
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Diabetes prevalence and comorbidities have risen steadily over the past decade. Many care models address single aspects of diabetes management but overlook whole-person needs. Comprehensive Primary Care (CPC) attempts to address these needs by integrating care coordination, chronic disease management, nutrition, telemedicine, and specialty referrals. This systematic review examines whether CPC, compared with standard care, improves diabetes management and secondary outcomes (e.g., blood pressure) in adults with diabetes.

A comprehensive search strategy was used with MEDLINE ALL, EMBASE, and SCOPUS databases without limits on dates, languages, or health outcomes. The search included published qualitative and mixed-methods studies that present qualitative or quantitative results. Articles were double screened through Covidence, and data was extracted independently by two review authors.

Four randomized trials and five cohorts have been analyzed. A multi-condition cohort saw fasting glucose ≥7 mmol/L drop 8.4% (p=0.006) and blood pressure ≥140/90 drop 14.8% (p<0.001); HbA1c ≥6.5% remained ~70% but improved modestly. A referral cohort had a larger HbA1c decline over 18 months (−0.9 vs −0.2; p=0.008). Integrated teams increased the odds of meeting targets for SBP, LDL, and HbA1c targets and raised retinal and foot screening (foot 85.2% vs 77.9% in standard care; p<0.001). Patients receiving CPC showed 114 depression-free days (95% CI 79–149) over 24 months compared to standard care, along with lower outpatient costs (−$594 per patient; 95% CI −$3,241 to $2,053).

CPC models are associated with meaningful improvements in diabetes management and related outcomes compared with standard care. This review highlights CPC's potential to guide health organizations, payors, and regulators in advancing diabetes management and population health through integrated, patient-centered primary care.

O8.03 Trends in Weight Management Therapies Among Patients with Obesity and Type 2 Diabetes

Presenter: Aditi Singh, BS[1]
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Obesity and type 2 diabetes (T2D) are associated with increased risks of cardiovascular disease, kidney complications, and premature mortality. Clinical guidelines recommend the use of glucagon-like peptide-1 receptor agonists (GLP-1RAs) for adults with comorbid T2D and obesity, but utilization of the therapy is limited by high out-of-pocket costs, insurance restrictions, and drug shortages. Older anti-obesity medications (AOMs) remain more accessible and affordable but are less effective and historically underutilized. There is limited contemporary data evaluating real-world use and costs of weight-reducing medications in this high-risk population. In this study, we aim to investigate the natural history of obesity pharmacotherapy among patients with T2D and obesity. A retrospective cohort study was performed using de-identified administrative claims data from the OptumLabs Data Warehouse to evaluate trends in the utilization and costs of GLP-1RAs and older AOMs in 342,739 adults from 2013 to 2024. Patients had a mean age of 59.3 years (SD, 12.0), 58.5% were women, 61.4% were non-Hispanic white, and 40.6% were enrolled in commercial insurance while 59.4% were enrolled in Medicare Advantage plans. Overall, GLP-1 receptor agonists were associated with longer median durations of use compared to older AOMs in both commercially insured 280.0 [IQR 489] vs 121.0 [IQR 245] and Medicare Advantage (246.0 [IQR 347] vs 213.5 [IQR 347] populations. Older AOMs were used very rarely (<1%) by both commercial and MA beneficiaries throughout the study period, while subcutaneous semaglutide was the most utilized incretin therapy. This study will be used to inform future health policy and clinical efforts to optimize obesity pharmacotherapy in patients with T2D.

O8.04 Screening for HbA1c Control in the Emergency Department in Individuals with T2D

Presenter: Anum Zehra[1]
Mentor: Kashif Munir, MD
Other Co-Authors: Burhan Buttar[2]; Yusuf Syed[1]; Terry Yip[3]; Kashif Munir[1]
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50% of individuals with type 2 diabetes (T2D) in the US have hemoglobin a1c >7%. Adherence to regular A1c tesFng in T2D individuals is low. In inner-city populaFons, many people lack a primary care provider (PCP) and seek healthcare in the emergency department (ED). Targeted real-world screening approaches may help idenFfy individuals with uncontrolled diabetes. We hypothesized longer intervals from prior A1c tesFng would be associated with higher levels of uncontrolled T2D. Individuals were assessed for Fme since the last A1c test and other factors (age, PCP usage, etc). All individuals presenFng to the ED who were ≥ 18 years old, had a history of T2D, and had not had an A1c test in 3 months were approached for point-of-care A1c tesFng. Individuals with prediabetes, an unknown history of diabetes, or for whom A1c data was missing were excluded.

Out of 368 paFents with prior T2D, 26 had an A1c within 90 days, 53 declined tesFng, and 58 had unavailable A1c data due to "other" reasons. Out of the 231 individuals analyzed, 168 (72.7%) had an A1c >= 7%. Increased Fme since last A1c (every 3 months) was associated with achievement of glycemic control in univariate analysis (OR 1.04 CI 1.00-1.07, p = 0.044). However, the mulFvariate analysis showed no associaFon. On mulFvariate analysis, increased age was associated with a higher likelihood of a ≥ 12month interval since the last A1c (OR 1.03, CI 1.01-1.05, p=0.015), whereas PCP usage showed a lower likelihood of the last A1c being ≥ 12 months ago (OR 0.28 CI 0.09-0.92, p = 0.35). Targeted real-world A1c screening in an inner-city ED showed a higher-thanaverage prevalence of uncontrolled diabetes. Contrary to our hypothesis, longer duraFon from prior A1c did not correlate with higher A1c levels.

O8.05 Comparative Renal Outcomes of Individual SGLT2i Medications in Individuals with Type 2 Diabetes

Presenter: Anum Zehra[1]
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Although robust data show that sodium-glucose linked transporter 2 inhibitors (SGLT2i) confer improved kidney outcomes, there is limited research regarding inter-class differences. The studies that do exist do not specifically focus on type 2 diabetes (T2D) patients at moderate cardiovascular disease risk – the most common category of risk for T2D patients. This is a retrospective observational study emulating a target trial comparing individual drugs within the SGLT2i class among adults with T2D at moderate cardiovascular risk. We used claims data from OptumLabs® Data Warehouse which includes individuals with a variety of commercial, Medicare Advantage, and traditional Medicare health plans ensuring sufficient formulary design heterogeneity. We identified adults ≥21 years at moderate cardiovascular risk with a pharmacy claim for canagliflozin, dapagliflozin, empagliflozin, or ertugliflozin between January 1, 2014 and December 31, 2021. The primary composite outcome included incident diagnosis codes for chronic kidney disease (CKD) stages 3-5, kidney failure, or KRT. The secondary composite outcome included incident diagnosis CKD stages 3-5, kidney failure, KRT, or all-cause mortality. We identified 135,846 people who first started canagliflozin (N=43,501), dapagliflozin (N=18,400) or empagliflozin (N=73,945). Dapagliflozin and empagliflozin were both associated with lower risk of the primary composite outcome compared to canagliflozin: hazard ratio (HR) 0.91 (95% CI 0.85-0.97) and HR 0.93 (95% CI 0.88-0.97), respectively. Similar results were seen for the secondary composite outcome. However, empagliflozin was associated with higher risk of kidney failure/KRT (HR 1.18; 95% CI 1.01-1.40) and lower risk of death (HR 0.86; 95% CI 0.79-0.93) compared to canagliflozin. There was no difference between dapagliflozin and empagliflozin in primary or secondary outcomes. Sensitivity analyses conducted per the as-treated approach showed consistent results with the intention-to-treat analysis. Our results suggest that empagliflozin and dapagliflozin are more effective in preventing adverse kidney outcomes compared to canagliflozin in T2D patients at moderate cardiovascular risk.

O8.06 Cardiovascular Effects of Alogliptin, Linagliptin, Saxagliptin, and Sitagliptin: A Target Trial Emulation of a Comparative Effectiveness Study

Presenter: Urja Kalathiya[1]
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Aims. To compare medications within the dipeptidyl peptidase-4 (DPP4) inhibitor class with respect to major adverse cardiovascular events (MACE) and hypoglycemia-related acute care utilizations among adults with type 2 diabetes at moderate cardiovascular risk.

Methods. Using claims data of enrollees in commercial, Medicare Advantage, and traditional Medicare plans across the U.S., we identified adults ≥21 years, with type 2 diabetes not requiring insulin and with moderate cardiovascular risk, who initiated alogliptin, linagliptin, saxagliptin, or sitagliptin as monotherapy or add-on therapy between 2014-2021. Random treatment assignment was emulated using propensity scores estimated using the SuperLearner ensemble method and incorporated as inverse probability of treatment weights into Cox models for the outcomes of MACE and hypoglycemia requiring emergency department or hospital use.

Results. The weighted study cohort included 184,660 that were started on alogliptin (N= 2,541), linagliptin (N=42,433), saxagliptin (N= 15,649), and sitagliptin (N=124,038). Saxagliptin did not show significant differences in heart failure hospitalizations when compared to the other study drugs. Rates of stroke, myocardial infarction, and heart failure hospitalizations were low across all groups.

Conclusions. We found no increased risk of heart failure hospitalizations or hypoglycemia with saxagliptin in comparison to the other study drugs.

O9.01 Neurological Outcomes Following Thoracic Decompression Surgery: A Retrospective Cohort Study of 258 Patients

Presenter: Ankush Verma[1]
Mentor: Steven C Ludwig, MD[2]
[1]University of Maryland School of Medicine, Baltimore, MD
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Introduction: Thoracic decompression is indicated for myelopathy, trauma, tumor, and infection, but postoperative neurological decline remains a concern. This study examined the incidence, recovery, and risk factors for new neurological deficits after thoracic decompression.

Methods: A retrospective review of 258 patients who underwent thoracic decompression at a tertiary center (2016–2023) was performed. Indications included degenerative disease (55%), trauma (22%), tumor (14%), and infection (15%). Demographics, ASIA scores, and operative variables were analyzed. New postoperative deficits were tracked longitudinally, with resolution defined as full or meaningful clinical improvement.

Results: Mean age was 63 ± 14 years; 51% were female. Most procedures used a posterior approach (83%), instrumentation (84%), and fusion (69%). New neurological deficits occurred in 71 patients (28%), most generalized weakness (31%), focal motor loss (31%), neuropathic pain (12%), and bowel/bladder dysfunction (9%). Among those with follow-up, 78% recovered fully or partially within an average of 52 days. Persistent deficits were seen in 11 patients (4.3%). These patients more often had bowel/bladder dysfunction and less preoperative chronic back pain. Surgical approach, number of levels, and instrumentation were not associated with persistence. The overall complication rate was 14.3%, most commonly wound infection (6%) and dural tear (5%).

Conclusion: New neurological deficits after thoracic decompression occur in about one-quarter of patients but are usually transient, resolving within two months. Persistent deficits are uncommon and may be predicted by preoperative bowel/bladder dysfunction and absence of chronic back pain. Thoracic decompression remains a neurologically safe procedure with appropriate risk counseling.

O9.02 Identifying Barriers to Biologic Treatment for Severe Asthma

Presenter: Claire Molavi[1]
Mentor: Margaret Connolly, MD[2]
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Asthma is a chronic inflammatory lung disease that disproportionately affects underserved populations for a variety of socioeconomic reasons. Biologic medications ("biologics") are a relatively new treatment for severe asthma that can significantly reduce morbidity and mortality, but they are currently prescribed at very low rates, especially for patients of lower socioeconomic status who need them the most. This study aims to identify the specific, patient-level barriers to accessing biologics for severe asthma treatment.

A cross-sectional qualitative interview study was conducted by recruiting a random sample of patients with severe asthma from the University of Maryland Medical Center to take part in virtual interviews, where we asked a series of open-ended questions regarding their experiences accessing asthma treatment. These interviews were transcribed and analyzed using thematic analysis software (NVivo) to identify the most common themes that patients reported.

The preliminary results of this study show that issues with insurance (including high costs, rapidly changing copays, and refusal to cover name brand medications), insufficient appointment availability and wait times, and inadequate patient education or visit length are the three most frequent factors preventing patients from optimally treating their severe asthma. Data analysis is ongoing, but we hope that the final results of this study will serve as a guide for where to target future interventions to improve severe asthma outcomes.

O9.03 Pulmonary Complications Following Lateral Beam Total Body Irradiation: A Retrospective Analysis of Dose-Dependent Outcomes

Presenter: Nina Kolodgie[1]
Mentor: Zaker Rana, MD[1]
[1]Department of Radiation Oncology, University of Maryland School of Medicine, Baltimore, MD

Hematopoietic stem cell transplantation (HSCT) is a vital treatment option for patients with refractory lymphoma and has demonstrated improvements in overall survival. However, the optimal approach for approach for radiation regimens remains unknown. Recently, the lateral total body irradiation (TBI) technique has been utilized as the preferred alternative to AP/PA methods, offering improved dose uniformity across midline structures and enabling effective organ shielding. In this study, we retrospectively evaluated outcomes and complications in 84 patients who underwent transplantation using the lateral beam TBI approach at a single-institution.

Of the 84 patients who underwent transplantation using the lateral TBI approach, Survival was 84.6% in the high-dose group and 71.8% in the low-dose group. Fisher's exact test showed no statistically significant association between dose and survival (OR = 2.14, 95% CI: 0.41–21.57, p = 0.50), although there is uncertainty due to small sample size.

O9.04 No Association of Child Opportunity Index in Critical Pediatric Respiratory Disease

Presenter: Peter Jensen, MS[1]
Mentor: Siddhartha Dante, MD, MHS[1]
Other Co-Authors: Hannah Goodwin, MD[1]; Alexander Dulla, MHA[1]; Adrian Holloway, MD[1]
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Social determinants of health (SDoH) have been shown to have a significant effect on respiratory health early in a child's life. Despite advancements in management, Pediatric Intensive Care Unit (PICU) admissions are increasing for respiratory diseases. Our goals are to analyze sociodemographic and referring hospital capability association to severity of illness using length of stay (LOS) as the primary outcome. We hypothesized there will be a significant difference in length of stay between children from low SDoH compared to children from high SDoH. A single center retrospective chart review was conducted from 2018-2023 of patients aged 0-5 years admitted to the University of Maryland Medical Center (UMMC) PICU for a primary respiratory admission on high flow nasal cannula. LOS (days) was found to be non-significant between child opportunity index groups (p = 0.267), which was used as a measure of SDoH. LOS was also found to be non-significant for referring hospital capabilities (p = 0.263). The total change of respiratory support was 66.6% decreased and 33.4% remained unchanged or increased within 24 hours of PICU admission. Our preliminary findings suggest that there is no association between SDoH and referring hospital capability with length of stay for pediatric patients admitted with critical respiratory disease requiring HFNC. As our work identified that there is a substantial percentage of children who wean respiratory support in the first 24 hours, we will continue investigating risk factors that may inform triage and treatment.

O9.05 Novel Variants in MET, BSND, and MYO7A Genes Associated with Nonsyndromic Hearing Loss in Consanguineous Pakistani Families

Presenter: Manasi Prashant[1]
Mentors: Zubair M. Ahmed, PhD[1]; Tehmeena Akhter, MPhil[1]
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Nonsyndromic sensorineural hearing loss (NSHL) is genetically heterogeneous condition that accounts for approximately 70% of inherited hearing loss, and autosomal recessive NSHL accounts for around 80% of that group. Consanguineous families provide a unique framework for identifying homozygous pathogenic variants responsible for NSHL.

Whole exome sequencing (WES) was performed on four probands with hereditary hearing loss from unrelated consanguineous Pakistani families. Variants for each patient were prioritized based on rarity (allele frequency <0.01), pathogenicity (CADD scores), and functional and pathway-level relevance using several databases. Primers were designed for the top-ranking variants in each family to proceed with multi-generation Sanger sequencing for all available family member DNA. Sequencing data was used to determine whether candidate variants segregated with known hearing loss phenotypes, and corresponding pedigrees were constructed to confirm autosomal recessive inheritance patterns. From this process, three novel missense variants (*MET* c.2731T>A (p.L911I), *BSND* c.92C>A (p.P31H), and *MYO7A* c.1563C>G, (p.H521E)) and one previously reported variant (*SLC26A4* c.1337A>G, (p.Q446R)) were identified.

These findings expand the mutational spectrum of MET, BSND, MYO7A, and SLC26A4, genes encoding proteins integral to cochlear development, ionic transport, and mechanotransduction. The results underscore the utility of combining genomic and functional annotation frameworks to investigate the molecular basis of hereditary hearing loss. This work contributes to an improved understanding of NSHL, and provides a foundation for future mechanistic and therapeutic investigations in auditory genetics.

O9.06 Socioeconomic and Demographic Trends of Sign Language Communicating Cochlear Implantees

Presenter: Elizabeth Lee, BS[1]*
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Purpose: To examine how the socioeconomic and demographic characteristics of ASL-communicating cochlear implantees (CI) differ from those of the broader CI population.

Methods: In this cross-sectional study we identified 39,111 patients receiving CI between 2015 and 2024 using the Epic Cosmos database. 1,070 (2.7%) of cochlear implantees indicated ASL as their preferred language. Chi-squared, Fisher's exact, and two sample t-tests compared differences between ASL communicators and non-communicators in age, sex, race, ethnicity, insurance, explantation, socioeconomic status (SES)/social vulnerability index (SVI), and urban/rural categories. Univariate and multivariate analyses evaluated the association between these variables and explantation.

Results: Pediatric ASL communicators were significantly older than pediatric non-communicators, while adult ASL users were younger. Female (OR=1.33), Hispanic (OR=2.51), and urban (OR=1.65) patients had increased odds of being ASL-communicating. ASL users were more likely to be in the most vulnerable SES (OR=1.65) and SVI (OR=1.71) group, and undergo explantation (OR=2.65). Multivariate analysis identified ASL (OR=2.69) as the main associated variable with explantation. Ethnicity (OR=0.74), female sex (OR=1.18), and Medicaid (OR=1.25) were additional factors.

Conclusions: Deaf cochlear implantees display socioeconomic and demographic differences compared to the general CI recipient population. Deaf identity may intersect with health considerations, like CI explantation, highlighting the need for culturally informed approaches to patient care.

O10.01 Understanding Disparities in Prenatal Diagnosis of Congenital Heart Disease

Presenter: Claire Wegner[1]
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Early prenatal diagnosis of congenital heart disease (CHD) remains a significant contributor to infant health outcomes. It has been shown that Latino ethnicity and non-English language preference are associated with lower odds of prenatal diagnosis and later gestational age at diagnosis. There is still much to understand about what community and socioeconomic factors affect the likelihood of timely prenatal diagnosis of CHD. This study aims to identify how the prenatal course differs between patients who received a prenatal diagnosis and those who received a late or postnatal diagnosis. We are conducting a retrospective cohort study of infants who underwent cardiac surgery for CHD within 30 days of birth at the University of Maryland Medical Center between 2011 and 2025 (N=214). Data collection includes timing of prenatal care initiation, location and type of provider administering the anatomy ultrasound scan, geographic distance from tertiary care centers, maternal immigration status, and timing of insurance acquisition. Preliminary results show differences by race with 90% of Asian, 81% of Black, 73% of White, and 58% of Other race mothers receiving a prenatal diagnosis. A prenatal diagnosis was made in 77% of non-Hispanic mothers compared to 55% of Hispanic mothers (p=0.006), and 77% of mothers who prefer English language compared to 55% of mothers who prefer non-English language (p=0.008). Further analysis is ongoing and will explore associations with additional maternal factors to better understand barriers to equitable CHD diagnosis.

O10.02 Leveraging Preeclampsia Screening to Improve Prenatal Detection of Congenital Heart Defects

Presenter Name: Kenneth Tieu[1]
Mentor Name: Shifa Turan MD, RDMS[1]
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Both Preeclampsia (PE) and congenital heart disease (CHD) share overlapping embryological origins, developmental pathways, and placental vascular dysgenesis, suggesting a possible association that may be underappreciated in clinical practice. Despite this plausible link, PE is not currently listed among the standard indications for referral for fetal echocardiography, meaning affected pregnancies are not routinely screened for CHD unless other risk factors exist. With recent advances, first-trimester risk prediction models for PE, such as the Fetal Medicine Foundation (FMF) triple test at 11–14 weeks, can now identify pregnancies at elevated risk for PE early in gestation. We aim to test whether high early-onset PE (EOPE) risk is associated with increased prenatal CHD detection and higher burden of other structural anomalies to see if these same risk scores could be leveraged to detect fetuses at increased risk of CHD and other structural anomalies, improving early diagnosis and management. This retrospective cohort study occurred at a tertiary referral center including pregnancies with EOPE screening and comprehensive first-trimester anatomy scans (2019–2024). EOPE risk scores incorporated maternal factors, mean arterial pressure, and uterine-artery pulsatility index; high risk was predefined as ≥1:100. The primary outcome was prenatally diagnosed CHD. Secondary outcomes included central nervous system (CNS), genitourinary (GU), skeletal, and gastrointestinal (GI) anomalies. Findings may inform more comprehensive screening strategies that reflect shared developmental origins and to assess whether incorporating first-trimester PE risk assessment could add value as an indication for targeted fetal echocardiography in the second trimester.

O10.03 Echocardiographic Findings in Children with Down Syndrome and Obstructive Sleep Apnea

Presenter: Sarah Yang[1]
Mentor: Amal Isaiah, MD, PhD, MBA[1,2,3,6,7]
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Objective: To assess the relationship between obstructive sleep apnea (OSA) severity and heart function including pulmonary hypertension (PH) in children with Down Syndrome (DS) within a large cohort.

Methods: This is a retrospective cohort study evaluating a population of 124 Down Syndrome patients aged 0-18 years who were diagnosed with OSA as confirmed by polysomnography (PSG) at the University of Maryland Medical System from Jan 1, 2016 to Dec 01, 2024. OSA severity was assessed utilizing the apnea-hypopnea index (AHI) as obtained from PSG, along with several other PSG variables. The main outcome, PH, was evaluated by select echocardiographically determined markers such as tricuspid regurgitation velocity, right ventricular systolic pressure, and pulmonary valve peak velocity. Linear regression analysis was conducted.

Results: The majority of children were male (70/124, 56.5%), with 37.9% white and 40.3% black. The average age in years was 5.2 (4.3-6.0 CI) and average BMI percentile was 67.5 (62.1-73.0 CI). Congenital heart disease (CHD) was the most prevalent comorbid condition, and of the CHDs, patent foramen ovale was most common. The only statistically significant relationship between PSG variables and echocardiographic markers of PH was between percent total time in N1 sleep and pulmonary valve peak velocity (R2:0.150, P=0.0136). AHI was not a predictor for any of the echocardiographic parameters.

Conclusions: In this first of its kind DS pediatric cohort study analyzing the relationship between OSA severity and PH outcomes, no significant association was identified. Further studies are necessary to elucidate the complex relationship.

O10.04 Outcomes of Extremely Low Gestational Age Newborns Post Implementation of a Standardized Care Protocol

Presenter: Ananya Devadiga[1]
Mentors: Sripriya Sundararajan, MD[1]; Erin Schofield, MD[1]
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The demand for resuscitation of extremely low gestational age newborns (ELGANs) has increased nationwide, with 22⁰ weeks' gestation (GA) now often considered the lower threshold for active intervention. In November 2023, our Level IV NICU at the University of Maryland implemented a multidisciplinary, evidence-based care protocol to standardize management and improve outcomes in this vulnerable population. The objective of this study was to evaluate survival to discharge and major morbidity outcomes in ELGANs (22^0–28^6 weeks GA) following implementation. A retrospective cohort study was conducted on ELGANs born between December 2023 and January 2025. Maternal and neonatal demographics at birth and discharge as well as outcomes were analyzed. Binary outcomes were analyzed using Fisher's exact and Pearson's Chi-squared tests, and continuous variables with the Kruskal–Wallis test. Logistic regression assessed the association between birth weight and survival. Of the 15 infants born between 22^0-23^6 GA, 11 (73%) survived, 8 (53%, p=0.013) had culture proven sepsis, 9 (60%, p=0.003) had ROP requiring treatment with laser ± avastin and 11 (73%, p=0.031) required home oxygen compared to other ELGANs stratified by GA. Each 100 g increase in birth weight conferred 56% higher odds of survival. Each additional week of gestation reduced the odds of necrotizing enterocolitis by 13%, culture-positive sepsis by 28%, and ROP by 35%. Our results show that implementation of a standardized care protocol for ELGAN infants can lead to greater survival rates than nationally published averages and can lead to better growth parameters, especially in the most premature newborns.

O10.05 Barriers to Contraceptive Access, Use and Satisfaction

Presenters: Sama Joshi, Jane Quackenbush
Mentor: Marie Nakhoul, MD
Other Co-Author: Anna Christou

Background: The U.S. has one of the highest rates of unintended pregnancy amongst developed countries. Despite substantial need, access to contraception remains limited by financial, logistical, and informational barriers. This study assesses factors associated with patients' satisfaction with their contraceptive method and their ability to use their preferred method.

Methods: A cross-sectional survey was administered at an academic medical center between 2022-2024. Predictors included age, income, education, race/ethnicity, current contraceptive category, and three composite indices: Barrier Index, where a higher barrier index indicates greater perceived barriers, Counseling Quality score, in which greater values correspond with improved satisfaction, and Knowledge score, where a higher score represents greater understanding of contraceptive options. Primary contraceptive outcomes were (1) dissatisfaction with current method and (2) use of a non-preferred method. Multivariable logistic regression estimated adjusted odds ratios(aORs) for each outcome.

Results: N = 84. Most participants were Black (95%), non-Hispanic (97%), and had annual incomes below $50,000 (80%). The most common contraceptive methods were contraceptive pills (23%) and male condoms (19%). About one-third reported dissatisfaction with their current method (35%) and a mismatch between their preferred and current method (33%). Users of long acting or permanent methods tended to report high satisfaction, at around 80-90%. Barrier Index was the strongest predictor of dissatisfaction (aOR=1.40; 95% CI 1.1–1.8) and preference mismatch (aOR=1.3; 95% CI 1.1–1.6). High-quality counseling was protective against both dissatisfaction (aOR=0.80; 95% CI 0.7–0.95) and method mismatch (aOR=0.85; 95% CI 0.75–0.97).

Conclusions: Structural barriers are associated with reduced satisfaction and limited access to preferred contraceptive methods, while high-quality counseling correlates with improvement in both outcomes. Addressing structural barriers and expanding access to quality clinical support may enhance method satisfaction and support preference-concordant use, with the ultimate goal of improving consistent contraception utilization and health outcomes.

O10.06 Alternative Medicine and Misinformation Presented on TikTok for Uterine Fibroids

Presenter: Delara Rajabi[1]
Mentors: Neil Jain, DO[2]; Keith Horton, MD[2]
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Social media has emerged as a major source of health information, yet platforms like TikTok frequently disseminate misinformation, particularly regarding alternative medicine for uterine fibroids (UF). This study analyzed TikTok discourse to assess the prevalence and accuracy of alternative treatment claims. A cross-sectional content analysis was conducted of 330 TikTok videos retrieved from fibroid-related hashtags (#fibroids, #fibroidawareness, #uterinefibroids, #fibroidremoval, #uterinemyoma, #UFE). Videos were coded by author type, tone, and mention of evidence-based or alternative therapies. Engagement metrics (likes, comments, saves, shares) were summarized descriptively, and misinformation frequency was compared across author types using χ^2 testing. Of 330 videos, 91 (27.6%) promoted alternative medicine approaches, most commonly herbal teas, castor oil packs, and dietary "detoxes." Among these, 78% contained inaccurate or unsubstantiated claims. Lay users produced most of this content (68%), followed by holistic practitioners (17%) and nurses (9%). Only 6% mentioned evidence-based therapies such as uterine fibroid embolization (UFE) or myomectomy. Videos containing misinformation generated higher average engagement (2,340 likes) than evidence-based content (1,210 likes, $p < 0.05$). "Storytime" videos were the most prevalent tone (52%), often emphasizing anecdotal natural cures. These findings demonstrate that misinformation about alternative fibroid treatments is widespread on TikTok and garners substantial engagement. Greater interdisciplinary collaboration between gynecologists, interventional radiologists, and digital health educators is needed to provide accessible, evidence-based education to counteract these trends.

O11.01: The Role of Maryland Primary Care Program (MDPCP) in Expanding Self-Management and Support Outreach Services: A Comparative Analysis of Rural and Non-Rural MDPCP Primary Care Practices.

Presenter: Tahreem Riaz[2,3]
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The global rise in multimorbidity is contributing to a growing burden on healthcare systems and associated costs. Previous studies have shown that self-management and support services delivered through primary care can effectively reduce the overall disease burden and improve patient outcomes. The Maryland Primary care Program (MDPCP) is a statewide effort to improve primary care delivery and was established by the Center for Medicare and Medicaid Innovation (CMMI) and the Maryland Department of Health. One of the key features of MDPCP is the incorporation of self-care management and support into routine primary care to improve its delivery. However, given the varying levels of access to resources and infrastructure, it is important to examine whether there are differences in the implementation of the MDPCP between rural and non-rural practices. This study utilized data from three primary sources which includes CMS Claims and Claim Line Feed (CCLF) data, MDPCP data and Care transformation survey reports, which were used to specify primary care practice structural and process capabilities. The analysis was restricted to data collected at the practice level from April 1, 2020 to September 30, 2023. The results of this study showed that while both rural and non-rural MDPCP practices showed improvement in the self-management activities under the program, rural MDPCP practices experienced a greater increase over time in the types of methods used to prioritize populations for self-management services. MDPCP rural practices also outcompete their non-rural counterparts in terms of implementing self-management activities. The results of this study offer valuable insights into how Medicare and state level interventions such as MDPCP, can enhance access to care management and overall health care within primary care settings.

O11.02 Trends of Rural and Urban Emergency Department Psychiatric Complaints from 2019-2024: A Multicenter Study

Presenter: Anastasia Ternovskaia
Mentor: Quincy Tran, MD, PhD
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The COVID-19 pandemic significantly disrupted healthcare utilization patterns across the United States, including emergency department (ED) visits for psychiatric concerns. While overall ED volumes declined sharply early in the pandemic, findings on psychiatric ED presentations have been inconsistent. Rural communities, which already face structural barriers to behavioral health care, may have experienced distinct changes in ED usage for psychiatric complaints during and after the pandemic.

We conducted a retrospective pre-post observational study of all adult (>18 years) patients who presented with psychiatric complaints and were discharged from 14 EDs within the University of Maryland Medical System between January 1, 2019, and January 1, 2024. The study period is divided into three phases: pre-pandemic (1/1/2019–2/29/2020), pandemic (3/1/2020–12/31/2022), and post-pandemic (1/1/2023–12/31/2023).

We identified 1,209,145 patients that were discharged from EDs from 2019-2024. 275,893 (23%) were pre-pandemic, 680,990 (50%) in the pandemic period, and 252,262 (27%) in the post-pandemic period. During the pandemic, 172,356 (25%) patients were discharged from rural EDs, compared to 102,887 (37%) prepandemic.

We hypothesize that psychiatric presentations to rural EDs decreased during and after the pandemic compared to pre-pandemic levels. Our secondary outcome is to compare psychiatric complaints and discharges between rural EDs and urban EDs in the state of Maryland.

O11.03 Health Burden and Disparities from Municipal and Medical Waste Incineration in Baltimore

Presenter: Kevin J. Tu[1]
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Waste incineration is a major source of hazardous air pollutants, with impacts that often fall disproportionately on marginalized communities. Yet, few studies have quantified the health burdens of waste incinerators, which has hampered efforts to inform effective regulations and community health protections. We sought to address this gap by estimating the health costs of emissions from two waste incinerators in Baltimore, Maryland: the WIN Waste municipal waste incinerator and the Curtis Bay Medical Waste incinerator, the largest of its kind in the United States. Using the U.S. EPA's AERMOD dispersion model, we calculated ground-level concentrations of $PM_{2.5}$, NO_x, SO_2, and CO and linked these estimates to Census tract populations. Health impacts were monetized, and disparities were assessed by comparing modeled mortality to Social Vulnerability Index. In 2024, the WIN Waste facility was associated with $53.8 million in health-related costs across Maryland and Washington, D.C. Community activism and regulatory action have reduced health damages from WIN Waste by approximately 20%, but significant avoidable costs remain. The Curtis Bay facility's burden ranged from $0.58 million to $36.9 million annually, depending on pollution control performance. Frequent visible emissions at Curtis Bay averaging 52.5 minutes of black smoke daily suggest issues with pollution controls. Together, the facilities were responsible for an estimated $60.5-$97.0 million in annual health costs in 2024. Mortality linked to incinerator emissions was significantly associated with socioeconomic vulnerability. Our conservative estimates highlight the need for stricter emissions monitoring, phasing out non-essential incineration, and ongoing cumulative impact assessments.

O11.04 When Flaps Fail: Identifying Predictors of Free Flap Outcomes in Traumatic Limb Reconstruction

Presenter: Sarah A. Abdellah, BS[1]
Mentor: Grigorios A. Lamaris, MD, PhD[2]
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Background: Free flap reconstruction is a critical component of limb salvage for patients with complex traumatic injuries. Microsurgical techniques have allowed for transfer of soft tissue coverage over exposed bone, hardware, and vital structure that would have otherwise necessitate an amputation. Despite these advances, complications in trauma-related free flap reconstruction remain high. Factors such as patient comorbidities, vascular injury, contamination, and delayed timing of reconstruction may contribute to poorer outcomes. However, data identifying which patient and injury characteristics most strongly predict complications and flap failure remain limited. This study aims to evaluate patient, injury, and intraoperative factors associated with outcomes following free flap reconstruction in orthopedic trauma patients.

Objective: To identify patient demographics, comorbidities, injury patterns, and intraoperative variables associated with complications and flap failure in orthopedic trauma patients undergoing free flap reconstruction.

Methods: A retrospective cohort study at a University of Maryland Shock Trauma Center was performed, including all patients who underwent free flap reconstruction following trauma between 2020-2024. Variables collected include age, sex, body-mass index, mechanism of injury, time from injury to flap coverage, recipient-site vascular status, flap type, operative time, presence of infection at presentation, and postoperative antibiotic use. Outcomes assessed include flap-related complications (e.g., infection, vascular compromise, hematoma, partial/total flap loss), need for revision surgery, donor-site morbidity, hospital length of stay, and readmissions. Multivariate logistic regression was used to identify independent predictors of poor outcome.

Conclusions: Preliminary findings suggest that factors such as diabetes mellitus, smoking, poor recipient-site vascular status, delayed reconstruction, and prolonged operative time are associated with increased risk of flap complications. Early recognition of high-risk patients and multidisciplinary planning may enhance flap survival and reduce morbidity in the trauma patient population.

011.05 Intra-Operative Parathyroid Hormone during Parathyroidectomy: Does Age Matter?

Presenter: Seth Rabinowitz[1]
Mentor: Yinin Hu, MD, FACS[1]
Other Co-Author: Stephanie Paz[1]
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Introduction: Parathyroidectomy is a common procedure to treat primary hyperparathyroidism. Adequate gland excision is determined through intraoperative PTH (ioPTH) monitoring, which currently occurs at 5- or 10-minute post-glad excision timepoints. Factors such as GFR and BMI both have a known impact on ioPTH and are thus taken into consideration when interpreting ioPTH values, however age is not. Given age's influence on hormone production and metabolism, this study looks to determine the influence of patient age on ioPTH levels.

Methods: A retrospective study was conducted with patients diagnosed with primary hyperparathyroidism who underwent parathyroidectomy. Surgical success was determined by normalized calcium levels within 6 months post-op. ioPTH values and post-operative calcium labs were collected. ioPTH half-live values were calculated, BMI and GFR values were controlled, and multivariable regression analysis was performed.

Results: The study enrolled 173 patients with an age distribution between 28 and 87. Age cohort sample sizes for 30-40, 50-60, 60-70, 70-80, 80-90 were 1, 10, 17, 39, 62, and 40 respectively. For each 10-year increase in age, ioPTH value increased by 0.358 minutes (p=0.0118).

Discussion: There is a positive association between ioPTH value and patient age. Current surgical decision making for parathyroidectomy does not consider patient age and thus ioPTH values may not reflect proper gland excision within older patient populations. To improve surgical success, surgeons can wait longer after gland excision before taking ioPTH values. We predict 10 minutes would be correct for the effects of age, but future research should investigate this question.

O11.06 Understanding the Decisions Behind Persistently High ED Utilization Among Patients with Substance Use Disorders

Presenter: Justin Wing
Mentors: Marik Moen, PhD, MPH, RN; Daniel B Gingold, MD, MPH; David Gatz, MD
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Patients with persistently high emergency department (ED) utilization (≥10 visits in two consecutive years) represent a complex population. We sought to understand drivers of persistently high ED use among individuals with substance use disorders (SUD) to improve care delivery.

This mixed-methods study examined healthcare utilization and decision-making among patients enrolled in an opioid treatment program with a co-located primary care clinic, situated within one mile of the ED in a Mid-Atlantic academic health system. Quantitative data from health records assessed utilization patterns, comorbidities, and social needs. Semi-structured interviews were conducted with 12 patients and underwent thematic analysis to explore motivations for ED use.

Among 454 patients, 19 met persistently high ED use criteria, with a mean of 23 visits and average $35,677 ED charges per patient. Patients had substantial comorbidity and unmet social needs: 63% had cardiovascular disease; 74% hepatitis C; 84% non-psychotic mental illness; and >50% experienced financial or housing insecurity and social isolation. Qualitative themes, based on semi-structured interviews with 12 participants, included perceived illness severity, convenience, provider interactions, effects of SUD, and unmet social needs. Most patients preferred outpatient care but reported barriers, including limited access and unfamiliarity with services. Although patients described stigma in hospital settings, they viewed the ED as the most logical option for care.

Patients with SUD and persistently high ED utilization often seek emergency care due to perceived need for timely, complex intervention. Despite primary care engagement, intersecting medical, behavioral, and social challenges hinder routine care and influence healthcare-seeking behavior. Findings highlight opportunities to improve services by reducing outpatient barriers, addressing stigma, and targeting social determinants such as social isolation and poverty.

O12.01 Management of Temporal Bone Fractures in Patients Surviving Ballistic Injuries

Presenter: Cailin Cruess
Mentors: Adam C Kaufman, MD, PhD[2]; Natalie S Justicz, MD[2]
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Aims: Temporal bone fractures due to gunshot wounds are uncommon but present unique challenges for management.

Methods: A retrospective chart review was performed of patients with temporal bone fractures due to ballistic injuries from 2018 to 2024.

Results: Sixteen patients with 18 temporal bone fractures were included. Mean age was 30.5 years (SD 9.9). Most were male (10 [62.5%]). The otic capsule was involved in three (19%) patients. Most were intubated at time of initial evaluation (11, [69%]). Seven (39%) patients had HB grade I-II, and three (17%) had HB III-IV. Of four patients with HB grade V-VI, one (25%) recovered to HB I with medical management and two (50%) underwent facial nerve reanimation procedures. External auditory canal injury (3 [19%]) and CSF leak (4 [25%]) were indications for either transcanal or transmastoid repair. Four (25%) patients pursued hearing rehabilitation.

Conclusions: Otolaryngologic sequelae of gunshot wounds to the temporal bone are heterogenous, necessitating individualized management approaches. Despite appropriate intervention, outcomes after complete facial nerve paralysis remain poor. Hearing rehabilitation is often underutilized. Close long-term follow-up is essential to address and optimize delayed complications.

Statements and Declarations

O12.02 Impact of Hypoalbuminemia on Perioperative Morbidity and Mortality in Spine Surgery: Analysis Using the NSQIP Database

Presenter: Bibhas Amatya[1]
Mentor: Abdul Karim Gaith, MD, PhD[2]
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Background: Hypoalbuminemia reflects malnutrition and systemic inflammation and has been identified as a strong predictor of adverse surgical outcomes. However, its impact across the general spine surgery population has not been well characterized.

Objective: To evaluate the association between preoperative albumin level and perioperative outcomes following spine surgery using a national quality database.

Methods: The American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) database (2015–2020) was queried for adult spine surgery cases. Patients were stratified by preoperative albumin level (<3.5 vs ≥3.5 g/dL). Demographic, intraoperative, and postoperative outcomes including complications, mortality, readmission, and discharge disposition were compared using chi-square and multivariable logistic regression analyses.

Results: Among 4,126 patients, 37.2% had hypoalbuminemia. These patients exhibited greater comorbidity burden, higher ASA class, and more physiologic derangement (all $p < 0.001$). Hypoalbuminemia was associated with significantly higher rates of total complications (50.9% vs 38.0%), 30-day mortality (14.6% vs 5.1%), sepsis, surgical-site infection, and thromboembolic events (all $p < 0.05$). Length of stay (13.2 vs 9.2 days), readmission (19.4% vs 14.4%), and non-home discharge (58.6% vs 40.0%) were also worse in the hypoalbuminemic cohort. Increasing severity of hypoalbuminemia corresponded to stepwise increases in morbidity and mortality.

Conclusions: Preoperative hypoalbuminemia is a powerful, independent predictor of postoperative complications, mortality, and prolonged recovery in spine surgery. Routine albumin screening offers a low-cost method for risk stratification and may guide perioperative nutritional optimization.

O12.03 Epidemiology, Outcomes, and Complications of Gymnast's Wrist

Presenter: Akash Sureshkumar[*1]
Mentor: Joshua Abzug, MD[1]
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Background: Gymnast's wrist otherwise known as distal radial physeal stress syndrome (DRPSS), is an overuse injury of the distal radial physis in pediatric gymnasts. Repetitive wrist loading can drive chronic pain and physeal injury with potential growth disturbance. Incidence appears to be rising in youth athletes, raising concern for long-term function.

Objectives: To synthesize epidemiology, clinical and imaging features, management strategies, outcomes, and complications of DRPSS in pediatric gymnasts.

Methods: A comprehensive search of PubMed, Embase, Cochrane Library, and Web of Science was performed to identify studies evaluating gymnast's wrist in athletes with open physes. Search terms included "gymnast wrist," "distal radial physeal stress syndrome," and "distal radius epiphysitis". Data was extracted and synthesized descriptively due to heterogeneity in study design and outcome reporting.

Results: Affected athletes are typically preteen and early-adolescent girls (mean age ~13.1 years) training at high volumes (mean ~17.6 hours/week). Chronic dorsal wrist pain is common (76% across cohorts), although some physeal injuries are asymptomatic. Radiographs frequently show distal radial physeal widening, metaphyseal irregularity, and evolving positive ulnar variance; approximately 43% of wrists demonstrate stress-related changes across studies. First-line treatment is nonoperative such as activity modification, short-term immobilization, and graduated return to sport, with typical return to sport at 3 months, though longer courses may be required. Reported complications include progression of positive ulnar variance and, less commonly, partial physeal arrest; surgery is rarely indicated.

Conclusions: Gymnast's wrist is a clinically significant and often underdiagnosed condition in youth gymnasts. Early recognition, targeted imaging, and load management can restore physeal health and reduce the risk of long-term deformity. Coaches, families, and clinicians should maintain high suspicion in high-volume gymnasts to enable timely intervention.

O12.04 Time to Patent Bloodstream Infection for Males Versus Females in Controlled Human Malaria Infection at the University of Maryland

Presenter: Paige Bristow[1]
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According to the World Health Organization, in 2023, there were an estimated 263 million malaria cases, with 94% occurring in Africa. The University of Maryland, Baltimore, Center for Vaccine Development and Global Health (UMB-CVD) is a major site for controlled human malaria infection (CHMI) studies that serve to advance treatments and to develop effective vaccines. Previous studies have shown biological sex-based differences may play a role in *Plasmodium falciparum* malaria infection and host response. In particular, sex hormones are thought to influence the human immune response, leaving males more vulnerable to greater parasite burden and infection severity. This project investigated if, among participants in CHMI studies at UMB-CVD, unvaccinated males versus females from the infectivity control group experience different time to detectable malaria blood stage infection to better inform the design of the CHMI trials. Data from the UMB-CVD CHMI trials from 1971 to present were reviewed and analyzed. Initial analyses of 42 participants show no difference in time to detectable blood stream infection via PCR; however, a significant difference was found between males and females (10.2 vs 11.2 days, p-value 0.0290) for time to parasite positivity via thick blood smear. Further research will be done to expand the sample size to characterize this relationship. If confirmed, future CHMI studies will need to account for sex differences among participants.

O12.05 Safety Profile of Intranasal Nanoemulsion-Adjuvanted Influenza and Bacillus anthracis Vaccines

Presenter: Cailin Cruess
Mentor: Adam C Kaufman, MD, PhD
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Intranasal vaccination offers a promising strategy for preventing respiratory infections, though there have been prior concerns about neurologic side effects. New nanoemulsion (NE) adjuvants appear to be well tolerated without association with neurotoxicity. Recently, pre-clinical data using nanoemulsion (NE) adjuvants have suggested a strong safety profile and not been associated with neurotoxicity. To evaluate their neurologic safety, we analyze three recent randomized clinical trials utilizing the same NE adjuvant platform. Safety data was analyzed from three randomized, controlled clinical trials of intranasal vaccines formulated with an oil-in-water NE adjuvant (BlueWillow Biologics): two studies of NB-1008, an inactivated influenza vaccine, and one study of BW-1010, an anthrax vaccine candidate. A total of 344 patients across three studies were included. Vaccines with NE adjuvants were well-tolerated. Most adverse events of the vaccines were mild, comprising mild pharyngeal paresthesia, dysgeusia, or nasal symptoms, and reported at similar rates to controls. Our findings support the safety of NE-adjuvanted intranasal vaccines in healthy adults, with no evidence of neurologic complications. These results justify continued development of NE platforms.

Statements and Declarations

O12.06 Transcriptomic Profiling of Severe *Plasmodium falciparum* Malaria with Prostration in Ugandan Children

Presenter: Bryan Cummings
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Despite advances in treatment and prevention, malaria continues to be a significant contributor to pediatric morbidity and mortality worldwide, particularly in sub-Saharan Africa, where *Plasmodium falciparum* predominates. *P. falciparum* is the most virulent human malaria parasite and is responsible for most severe disease manifestations. One such manifestation is prostration (profound weakness), which is one of the most common presentations of severe malarial disease. This study investigated whether the prostration phenotype possesses a unique transcriptomic profile among severe malaria syndromes and if prostration with CNS involvement shares transcriptomic features with cerebral malaria, one of the most lethal disease manifestations. We amplified *P. falciparum* RNA using custom capture probes and then performed RNA-seq on samples from children with severe malaria to compare parasite gene expression of cases of prostration to those without. Additionally, we compared cases of prostration with CNS involvement to those with isolated prostration. Overall, comparisons of cases with prostration to those without yielded no significant gene dysregulation. Similarly, analysis of prostration alone versus that with CNS involvement revealed only one differentially expressed gene, a member of the *phist* multigene family. We have previously linked this family to processes that escalate disease severity, like host cell remodeling and parasite cytoadherence. These findings represent the first effort to define a specific transcriptomic profile of the prostration phenotype and should inform the design of future studies seeking to characterize individual severe malaria phenotypes. Our findings suggest that comparing severe syndromes to uncomplicated malaria, rather than to each other, may better reveal molecular mechanisms of severity.

O13.01 Evaluating Serum Tears as a Treatment for Ocular Graft vs. Host Disease after Hematopoietic Stem Cell Transplantation

Presenter: Jack Yang[1]
Mentor: Sarah Sunshine, MD[1]
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Ocular graft vs. host disease (oGVHD) is a common and debilitating complication characterized by severe inflammatory dry eye disease arising in 40-60% patients who have undergone hematopoietic stem cell transplantation (HSCT). Autologous serum eye drops, also referred to as serum tears, are eye drops prepared from a patient's own blood. Serum tears act as a lacrimal substitute and contain essential proteins and growth factors that facilitate corneal healing and help maintain a healthy ocular surface. While serum tears have shown therapeutic potential in other severe dry eye conditions, their efficacy in treating oGVHD remains understudied. We conducted a retrospective cohort study analyzing patient data from the Stoler Eye Clinic from 2020-2025. We compared oGVHD severity, measured on an 11-point scale by the International oGVHD Consensus Group, between post-HSCT patients with definite oGVHD who were treated with serum tears (n=10) and those who were recommended but never started treatment (n=7). Comparing the change in oGVHD severity from baseline between the two groups at 1, 6, and 12 months after treatment initiation/recommendation, we found that there was a significant decrease in oGVHD severity in the serum tears patients. When breaking down the oGVHD severity score into its parameters, the severity of corneal fluorescein staining and conjunctival injection was reduced the most in patients on serum tears. These findings support the potential effectiveness of serum tears in treating oGVHD and highlight the need for further investigation in larger, controlled studies.

O13.02 T-Cell Expression in Ocular and Systemic Tissue in Response to Systemic JAK 1/2 Inhibitors in a Murine Model of Ocular Graft Versus Host Disease

Presenter: Andrew Kang[1]
Mentor: Sarah B. Sunshine, MD[1]
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Ocular graft versus host disease (oGVHD) arises as a common complication of allogeneic hematopoietic stem cell transplantation (allo-HSCT) affecting roughly 40 to 60% of allo-HSCT recipients. oGVHD causes inflammation, scarring, and dryness of the ocular surface with limited therapies currently available. Ruxolitinib, recently approved for the treatment of chronic GVHD, is a JAK 1/2 inhibitor that downregulates inflammatory cytokines and modulates T-cell activity both of which are thought to be important in ocular damage in oGVHD; however, the precise mechanism in the eyes is poorly understood. Our project aims to characterize T-cell expression in ocular and systemic tissue in an MHC-matched murine model of oGVHD in response to treatment with systemic JAK 1/2 inhibition. All mice received T and B-cell depleted bone marrow transplants, with the disease group receiving donor splenocytes to induce GVHD development. Within this group, mice received JAK 1/2 inhibitor administered via chow or no treatment. We measured the expression of CD3, CD4, and CD8 in spleen, conjunctiva, and lacrimal tissue from the mice using RT-qPCR. The results include a significant decline in the T-cell marker CD8 in oGVHD mice that received JAK inhibitor compared to those that received normal chow, with a marginal decline in CD8 in conjunctiva and lacrimal glands in mice that underwent systemic JAK treatment. These results suggest the importance of T-cell activity in the development of oGVHD and the potential efficacy of JAK 1/2 medications in oGVHD management.

O13.03 Graft-Versus-Host Disease Prophylaxis Effects on Ocular Graft-Versus-Host Disease Incidence Within an Aggregated Health Care Network

Presenter: Justin Zhang, BS[1]
Mentor: Sarah Sunshine, MD[1]
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Graft-versus-host disease (GVHD) is a significant complication following allogeneic hematopoietic stem cell transplant (HSCT). Ocular graft-versus-host disease (oGVHD), a subtype of chronic GVHD, involves immune-mediated damage of ocular surface structures, resulting in severe dry eye symptoms. Prior reports suggest that the incidence of oGVHD can be as high as 60% after HSCT. This study utilized TriNetX, a global federated research network of de-identified electronic health records, to investigate the incidence rate and risk factors for cGVHD and oGVHD. Patients were queried using ICD-10 and CPT codes. The study population consists of patients diagnosed with cGVHD following allo-HSCT between January 2015 and December 2024. Ocular involvement included dry eye syndrome, keratoconjunctivitis sicca, and meibomian gland dysfunction. Chi-squared analyses, Cox proportional hazards models, univariate Cox regressions, and Mann-Kendall analyses were calculated. Of 14,752 total allogeneic HSCT patients, 4,887 (35.1%) had chronic GVHD, and 1,782 had ocular manifestations of GVHD, indicating an overall oGVHD rate of 12.1% following allo-HSCT. Advanced age (hazard ratio [HR], 1.010; 95% confidence interval [CI], 1.008-1.011) and post-transplant cyclophosphamide (HR, 0.806; 95% CI, 0.746-0.871) were statistically associated with chronic GVHD development. Pre-transplant fludarabine conditioning (HR, 0.799; 95% CI, 0.676-0.945) and dry eye syndrome (HR, 2.176; 95% CI, 1.938-2.444) had a significant effect on oGVHD rates. Mann-Kendall tests did not detect any statistical trends in the rates of cGVHD (τ = -0.33; P = 0.45) or oGVHD (τ = -0.2; P = 0.71) from 2015 to 2020. These results emphasize the need for improved diagnostic coding of oGVHD.

O13.04 Predicting Visual Acuity and Glaucoma 10 Years after Unilateral Congenital Cataract Surgery: Results from a Randomized, Multicenter Study

Presenter: Riva Menon[1]
Mentor: Janet Alexander, MD[1]
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Visual outcomes after unilateral congenital cataract surgery often remain poor, despite uncomplicated surgery and adherence to patching. Age at surgery, refractive correction, and patching are the only known, albeit weak, predictors of postoperative visual acuity. Glaucoma is a sight-threatening adverse event after congenital cataract surgery and the most common secondary cause of glaucoma in children. This study evaluates ocular anatomy as a potential predictor of visual acuity and glaucoma risk 10 years after congenital cataract surgery. Improved understanding of these factors may support earlier intervention and guide patient counseling.

This post-hoc secondary analysis of the Infant Aphakia Treatment Study included 114 participants who underwent unilateral congenital cataract surgery between November 2004 and January 2007. Participants were 1-6 months old at surgery. Ocular measurements were obtained from biometry and surgical video footage, and visual acuity was assessed 10 years postoperatively. By study endpoint, 41% of the cohort was diagnosed as glaucoma or glaucoma suspect.

Subjects with glaucoma had an anterior chamber depth (ACD) of 2.76 ± 0.48 mm, compared to 3.08 ± 0.38 mm in those without (mean difference = 0.32 mm, p=0.003). Logistic regression identified shallow ACD as the strongest anatomical predictor of glaucoma (OR 5.8 [1.8, 18.9], p=0.004), outperforming axial length, lens thickness, corneal diameter, and age. In conclusion, shallower ACD at the time of surgery is strongly associated with increased glaucoma risk and may serve as a valuable tool for early risk assessment.

O13.06 Effect of Sociodemographic Risk Factors on Corneal Transplant Complications in the United States

Presenter: Silanur Inanoglu[1]
Mentor: Wuqaas M. Munir, MD[1]
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Despite the significant usage of keratoplasty, also known as corneal transplantation, to restore sight in patients with corneal damage, post-surgical complications such as graft rejection, failure, or infection may occur. The purpose of this study was to assess the risk of corneal transplant complication development in patients with a history of keratoplasty based on several sociodemographic factors including race, ethnicity, and sex between 2000-2024 in the United States. De-identified subject data from U.S. healthcare organizations within the TriNetX database was retrospectively analyzed to determine risk of corneal transplant complication development in cohorts separated by race, ethnicity, and sex. Propensity score matching was conducted to balance cohorts for baseline characteristics and systemic comorbidities.

After matching, Black patients exhibited a significantly increased risk of corneal transplant rejections, but not failures in contrast to White patients (RR, 1.341; 95% CI, (1.206, 1.492)). Native American patients exhibited an increased risk of all corneal transplant complications when compared to White patients (RR, 1.351; 95% CI, (1.021, 1.787)). Patients of Hispanic ethnicity exhibited an increased risk of corneal transplant failures but not rejections in contrast to Non-Hispanic patients (RR, 1.126; 95% CI, (1.017, 1.247)). In contrast, Asian patients were less likely to develop rejections when compared to White patients (RR, 0.688; 95% CI, (0.559, 0.847)). This is the largest study to date on sociodemographic risk factors of transplant complications and highlights racial disparities present in keratoplasty outcomes.

O14.02 Genetic and Clinical Characteristics of Intracranial Aneurysms in a Large Cohort of Autosomal Dominant Polycystic Kidney Disease Patients

Presenter: Anne Lu
Mentor: Terry Watnick, MD
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Autosomal dominant polycystic kidney disease (ADPKD), distinguished by the gradual growth of kidney cysts, is the most common inherited cause of end stage renal disease. Mutations of the *PKD1* and *PKD2* genes typically underlie ADPKD pathogenesis. However, ADPKD symptomologies are not limited to the kidneys. Intracranial aneurysm (ICA) formation is a relatively common and fatal complication associated with ADPKD. Thus, individuals diagnosed with ADPKD should undergo ICA-related screenings especially in the case of a positive family history of this complication. To date, genetic and clinical factors contributing to ICA risk are not fully understood. In this study, we aim to characterize a cohort of 379 ADPKD patients based on quantitative and qualitative ICA descriptors–-total number of ICAs per individual and whether ICAs were unruptured, ruptured, or surgically intervened. Ruptured ICAs and surgically intervened ICAs were grouped together, creating four subcohorts amongst the 379 patients: single aneurysm, unruptured; single aneurysm, ruptured/intervened; multiple aneurysms, unruptured; and multiple aneurysms, ruptured/intervened. For each subcohort, we analyzed based on clinical characteristics, such as age, sex, end stage renal disease diagnosis, hypertension, smoking status, family history, and ICA size. In addition, we looked at the location distribution of ICAs based on brain circulation territory. Finally, we used chi-squared analysis to identify significant correlations between specific clinical characteristics and ICA status. Our comparisons between ICA severity and factors like sex, smoking history, hypertension, and ESRD diagnosis did not yield statistically significant results at this time.

O14.03 Expression of Growth Differentiation Factor 6 (GDF6) in Acral Melanoma

Presenter: Alisa Forsberg[1]
Mentors: Thomas Hornyak, MD, PhD[1,2]; Joungil Choi, PhD[1]
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Acral melanoma (AM) is a distinct clinical subtype of melanoma comprising 2-5% of all melanomas. Unlike cutaneous malignant melanomas (CMMs) which occur on hair-bearing skin, AM arises on the palms, soles, fingers, toes, and nailbeds. Compared to CMM, AM has worse survival rates and a lower level of ultraviolet radiation-induced mutations.

GDF6 was identified as a gene of interest in melanoma because it is amplified in both zebrafish and human melanomas. In CMMs, GDF6 signals through the bone morphogenetic pathway (BMP) and is associated with tumor progression. GDF6 represses the transcription factors MITF and SOX9 and promotes expression of SOX10, a melanoma marker, to maintain melanoma cells in a less-differentiated state.

We tested the hypothesis that GDF6 is also expressed by AM and is correlated with SOX10 expression in these tumors.

In 2/2 CMMs analyzed by GDF6/SOX10 Immunohistochemistry, areas of invasive melanoma cells showed a strong correlation between SOX10 and GDF6 expression, confirming prior findings. 5 AM specimens representing 2 primary lesions and 3 metastatic lesions were studied. 5/5 AM specimens from 4 distinct patients expressed GDF6 to varying degrees; where the highest levels of expression were noted in a metastatic lymph node specimen.

Studying AM tumorigenesis may provide more insight into potential AM therapeutic targets to improve its lower survival rate.

O14.04 Investigating the Functional Role of WNT5A in Prurigo Nodularis

Presenter: Joshua Wilmer[1]
Mentor: Shawn Kwatra, MD[1]
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Prurigo Nodularis (PN) is a chronic inflammatory skin disorder marked by intensely pruritic nodules and an itch-scratch cycle that exacerbates neural sensitization. Affecting approximately 72 per 100,000 individuals in the U.S., disproportionately patients of color, PN has limited FDA-approved therapies. Fibroblasts in lesional PN skin have been shown to adopt a cancer-associated (WNT5A+, POSTN+) phenotype, and patients with this profile may be at higher risk for other fibroblast-driven malignancies. Machine learning analysis of dorsal root ganglia (DRG) identified two itch-specific neuronal clusters with enriched WNT5A signaling, suggesting a potential fibroblast-to-neuron communication axis mediated by WNT5A.

We hypothesize that WNT5A is overexpressed and secreted by PN lesional fibroblasts, driving extracellular matrix remodeling, angiogenesis, and proinflammatory cytokine production. Additionally, we propose that WNT5A enhances peripheral sensory neuron excitability through noncanonical signaling pathways, contributing to chronic itch.

To investigate this, we performed Western blotting on PN lesional fibroblasts and their conditioned media. Intracellular WNT5A was reduced in PN cells, but secreted levels were equal or elevated compared to controls, indicating increased extracellular release. To evaluate functional effects on neurons, mouse DRGs were cultured and labeled with Cal-520 AM, a calcium-sensitive dye. Neurons were stimulated with recombinant WNT5A, capsaicin, or conditioned media from PN fibroblasts. Preliminary imaging showed elevated intracellular calcium changes of neurons after adding patient-derived conditioned media from diseased fibroblasts as compared to healthy controls.

These findings suggest WNT5A contributes to PN pathogenesis via fibroblast activation and sensory neuron sensitization, revealing a potential therapeutic target for chronic itch.

O14.05 Low-Intensity Focused Ultrasound for Minimally Invasive Fetal Gene Delivery

Presenter: Danya A. Adams[1]
Mentor: Whitney Parker, MD, PhD[1]; Jung Soo Suk, PhD[1]
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Treating developmental disorders is challenging as most therapies target disease features after pathogenic networks are formed, limiting efficacy. Although prenatal screenings allow for early detection, few fetal therapies exist and *in utero* gene therapy is invasive with risk of abortion. Thus, effective less-invasive approaches to fetal therapy such as transplacental gene delivery could present a promising alternative. The blood placenta barrier (BPB) serves as a protective interface during fetal development, regulating the exchange of molecules and limiting fetal exposure to xenobiotics from maternal circulation. While the BPB is tightly regulated by syncytiotrophoblasts and a network of transporters, emerging evidence indicates that nanoparticle characteristics such as size, charge, and surface modifications can affect their ability to cross through this barrier. Although previous studies have explored nanoparticle-mediated drug delivery *in utero*, there remains a gap regarding fetal gene delivery across the BPB. Notably, low-intensity focused ultrasound (LIFU) combined with microbubbles (MB) has been shown to transiently increase vascular permeability and enhance nanoparticle-mediated mRNA delivery through the blood brain barrier. Thus, the present study hypothesizes that LIFU-induced MB cavitation will increase placental vascular permeability by transiently disrupting syncytiotrophoblast tight junctions and therefore enabling fluorescent polyethylene glycol (PEG)-coated nanoparticles to traverse the placenta into fetal circulation for targeted gene delivery. Prolonged systemic circulation due to PEGylation and spatially confined permeability will minimize off-target maternal tissue accumulation. To test this, E14 pregnant mice will undergo LIFU guided by MRI localization of the placenta, followed by tail vein cannulation of the nanoparticle-microbubble complex. Parallel experiments using *ex vivo* human placental will employ high-speed video microscopy to track nanoparticle penetration to determine mechanistic barriers to fetal transmission. Initial LIFU treatment in embryonic day 14 pregnant mice demonstrates increased accumulation of red-fluorescent 100nm PEGylated nanoparticles within the fetus compared to untreated controls, supporting the potential of this approach.

O14.06 Imaging Biomarkers Predict Development of Sinusoidal Obstruction Syndrome of the Liver in Pediatric Hematopoietic Cell Transplant Recipients

Presenter: Elizabeth M. Holland[1]
Mentor: Akshay Sharma, MBBS, MSc[2]
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Sinusoidal obstruction syndrome (SOS), also known as veno-occlusive disease (VOD) of the liver, is a potentially life-threatening complication of hematopoietic cell transplantation (HCT). Prompt initiation of SOS-directed treatment is associated with improved survival; hence, early, and preferably noninvasive diagnosis of SOS is necessary. While prior studies have established the role of ultrasound (US) imaging in SOS, there is little consensus on which grayscale and Doppler parameters are associated with the diagnosis of SOS. We performed an exploratory retrospective analysis to identify US imaging parameters associated with the development of SOS in pediatric HCT recipients. Between October 2010 and September 2022, 398 patients received 417 HCTs at our institution. SOS was diagnosed in 70 HCT recipients. The presence of ascites, hepatomegaly, an elevated doppler perfusion index (DPI), and increased gallbladder wall thickness were most frequently associated with the development of SOS. The change in Doppler perfusion index (DPI) was higher among HCT recipients who developed SOS compared to those who did not (P=0.013). Thus, we conclude that DPI is a US based novel biomarker for SOS diagnosis and warrants further evaluation.

P1.01 Impact of Intravenous Fluid Shortage During Fall 2024 on the Incidence of Acute Kidney Injury in Surgical Cases: A Retrospective Cohort Study

Presenter: Kelly Zhou [1]
Mentor: Megan Anders, MD, MS [1]
Other Co-Authors: Miranda Gibbons[1]; Curt Bergstrom, MD[1]; Ashanpreet Grewal, MD[1]
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A national IV fluid shortage in fall 2024 due to Hurricane Helene raised concerns about impacts on fluid administration and postoperative acute kidney injury (AKI). Preliminary data from the Multicenter Perioperative Outcomes Group (MPOG) showed increased AKI rates at our system during this period. We evaluated whether the shortage was associated with changes in intraoperative fluid management and postoperative AKI incidence and severity.

We conducted a retrospective cohort study using MPOG data from multiple system hospitals. Adult surgical cases receiving anesthesia during the 2024 IV fluid shortage (October 1–November 30) were compared to cases from the same period in 2023. The primary outcome was AKI, defined by MPOG criteria as creatinine increase ≥0.3 mg/dL within 48 hours or ≥50% increase within seven days post-anesthesia. Secondary outcomes included creatinine measurements (days 2 and 7), peak creatinine, 30-day mortality, and intraoperative fluid patterns. Temporal trends were analyzed over 17 months. Multivariable logistic regression identified independent AKI predictors.

A total of 1603 cases were analyzed (779 control, 824 shortage period). Unadjusted AKI incidence was found to have increased from 7.6% (n=59) in the control period to 9.6% (n= 79) in the shortage period, though this was not statistically significant (p = 0.178). Crystalloid administration rates decreased (6.4 ± 3.7 vs 5.4 ± 3.1 mL/kg/hr, p < 0.001), PRBC use decreased (15.0% vs 11.5%, p = 0.047), while colloid use increased (7.2% vs 13.6%, p = <0.001). After multivariable adjustment, the shortage period was not independently associated with AKI (adjusted OR 1.28, 95% CI 0.88 - 1.86, p = 0.2). Preoperative creatinine remained the primary predictor of postoperative AKI (adjusted OR 3.14, 95% CI 2.09 - 4.70, p < 0.001).

The national IV fluid shortage in the fall of 2024 altered intraoperative fluid administration practices, while no significant increase in adjusted AKI risk was detected. However, due to power limitations, larger multicenter analyses are needed to detect smaller, clinically meaningful differences.

P1.02 Association of Gabapentinoids with Persistent Opioid Use in Lower Extremity Amputations

Presenters: Ethan Desverreaux; Victoria Carter
Mentor: Jay Karri, MD, MPH[1]
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Introduction: Although gabapentinoids such as gabapentin and pregabalin are frequently prescribed for postoperative pain following lower limb amputation, their association with persistent opioid use remains unclear.This study aimed to determine whether perioperative gabapentinoid exposure is associated with persistent opioid use after major lower extremity amputation.

Methods: We conducted a retrospective cohort analysis using the University of Maryland School of Medicine Peri-operative Data Warehouse, reviewing adults who underwent above or below-knee amputation between 2017 and 2024. Patients lacking complete prescription data or who died before 3-month follow-up were excluded. The primary outcomes were morphine milligram equivalents (MME) at 3 and 6 months postoperatively.

Results: Among 500 included patients, 51% showed persistent opioid use at 3 months and 46% at 6 months. Gabapentinoid use was independently associated with increased risk of persistent opioid use at both 3 months (aRR 1.52, 95% CI 1.12–2.05, p = 0.006) and 6 months (aRR 1.48, 95% CI 1.09–2.00, p = 0.008). Higher preoperative opioid exposure, greater intraoperative fentanyl dose, psychiatric comorbidity, and a diagnosis of opioid use disorder contributed to persistence, whereas use of regional blocks was protective.

Conclusions: Perioperative gabapentinoid exposure was associated with an increased risk of persistent postoperative opioid use following lower extremity amputation. Gabapentinoids did not appear to mitigate long-term opioid dependence, highlighting the importance of cautious prescribing and multimodal pain strategies in high-risk surgical populations.

P1.03 Electromyography vs. Laboratory-Built Mechanomyography for Neuromuscular Blockade Monitoring

Presenter: Shiva Deljookorani[1]
Mentors: Kelly E. Michaelsen, MD, PhD[1]; Zain Wedemeyer, BS[1]
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Quantitative monitoring of neuromuscular blockade is necessary to avoid residual paralysis, which can lead to serious postoperative complications such as hypoxia, airway obstruction, and aspiration. Mechanomyography is the gold standard for neuromuscular monitoring and although it has recently became commercially available, it is still not widely used. Electromyography (EMG)-based devices are FDA-approved and widely used in clinical practice. Our lab has built a modern version mechanomyography and compared it to other electromyography based monitors. We recently modified the mechanical design of the mechanomyography to increase sensitivity and speed of application. This study evaluates agreement between the modified modern mechanomyograph and electromyography.

Nineteen patients were enrolled. Four-hundred-thirty-three train-of-four-ratios, 689 train-of-four-counts, and 73 post-tetanic counts data pairs were collected. The mean (standard deviation) of data per patient were 24 (26), 38 (50), and 4 (6), for train-of-four-ratios, train-of-four counts, post-tetanic counts respectively. Bland Altman analysis revealed a bias of 0.05 and limits of agreement of -0.13 and 0.23.

The modified modern mechanomyograph measured an average train-of-four ratio 0.05 higher than electromyography and measured a train-of-four count above electromyography, 42% of the time, indicating that it is more sensitive than electromyography in evaluating neuromuscular blockade depth. A previous study of the mechanomyograph prior to modification showed closer agreement to electromyography (63% of train-of-four counts were equivalent) suggesting that the modifications to the mechanomyograph increased the sensitivity.

In conclusion, the mechanomyograph provided reliable and reproducible measurements of train-of-four counts and post-tetanic counts. By enabling accurate quantitative neuromuscular monitoring, this MMG platform has the potential to be viable product and alternative to currently used electrmechanographs and assist with widespread intraoperative neuromuscular monitoring.

P1.04 Assessing the Therapeutic and Cytotoxic Effects of High-Dose Retargeted Cytokine Therapy in a Preclinical Lung Cancer Model

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Systemic administration of high dose interleukin-2 (IL-2) improved the tumor immune response due to activation of cytotoxic lymphocytes (CTLs) and was approved by FDA in the early 1990s. However, due to adverse side effects of vascular leakage, pulmonary edema and off-target side effects mainly caused by presence of IL-2Receptor alpha(IL-2Ra) in non-immune cells, it was abandoned and no longer used for immunotherapy. Further IL-2 administration caused expansion of T regulatory cells contributing to a more tolerogenic tumor environment. A novel retargeted form of IL-2 which binds only to IL-2 receptor beta and gamma with IL-2Ra mutation and binds to NKG2D receptor attached by a 36 amino acid linker has been developed by our lab. As NKG2D is only present in NK cells and T cells, our goal was to specifically expand cytotoxic lymphocytes without adverse effects. The goal of this research project is to determine the efficacy of mutant IL-2(Known as OMCPmut.IL-2) as a monotherapy treatment modality in a murine model of Lung cancer and evaluation of cytotoxicity. Forty mice bearing subcutaneous LLC tumors were treated with OMCPmutIL-2 at varying dosing frequencies (1x, 2x, or 3x per week), IL-2 or PBS control. Immune cell profiles (CD3, CD4, CD8, NK, and Tregs) were monitored to assess efficacy and toxicity. Flow cytometric analysis was done to evaluate immune subset changes, with particular focus on increased CD8$^+$ and NK cells and reduced Tregs following cytokine treatment. Our results showed that mice treated with the OMCPmut IL-2 had a greater percentage of NK cells in the tumor microenvironment when compared to IL-2 alone, or saline control groups. The total percentage of Tregs out of CD4 cells in the tumor milieu was also lower in the OMCPmut. IL-2 treated group when compared to IL-2 and control.

P1.05 Feasibility and Potential Clinical Ramifications of Using Bacteriophage Therapy for S. aureus Necrotizing Fasciitis

Presenter: Dakarai Dunbar, BS
Mentor: James Doub, MD
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Staphylococcus aureus necrotizing fasciitis is a rapidly progressive and life-threatening infection that demands urgent surgical and medical treatment. Despite aggressive care, patients often experience high rates of complications and mortality. To improve outcomes, new approaches are needed. This study explored whether *Staphylococcus* bacteriophages—viruses that specifically target bacteria— could help treat *S. aureus* necrotizing fasciitis by both killing bacteria and reducing their virulence. Clinical isolates of *S. aureus* (n = 6) were tested against four different *Staphylococcal* bacteriophages to measure activity. Phages showing growth inhibition for more than 16 hours were further analyzed for changes in bacterial enzyme production and virulence using the *Caenorhabditis elegans* model.

Staphylococcal myoviridae bacteriophages successfully lysed most clinical isolates (83%). After phage exposure, *S. aureus* lost the ability to produce several key enzymes (hemolysin, coagulase, lecithinase) and could no longer ferment mannitol. These same myoviridae phages also caused a significant drop in bacterial virulence (p < 0.05). In contrast, podoviridae phages showed minimal activity and did not alter virulence. These results suggest that combinations of myoviridae bacteriophages could provide broad coverage against *S. aureus* isolates, reducing the need for individualized sensitivity testing. Importantly, myoviridae phages may not only kill *S. aureus* but also weaken it by suppressing virulence factors. Together, these findings highlight bacteriophage therapy as a promising adjunct to reduce the severe morbidity and mortality associated with *S. aureus* necrotizing fasciitis.

P1.06   Antibody Cross-Reactivity among *Plasmodium falciparum Strains*

Presenter: Mary Mae Robinson[1]
Mentor: Andrea Berry, MD, MS, FPIDS[1]
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Malaria persists as a threat to the lives and well-being of children and adults across the planet. Among the efforts aimed towards improving the outcomes of this infection is the development of a vaccine. One of the deadliest malaria-causing parasites is *Plasmodium falciparum*, which has been found to have extensive genetic diversity among strains. While previous studies have focused on the immune response to reference parasite strains, non-reference strains have protein variants with varying amounts of amino acid substitutions on the surface-exposed regions of the proteins. Antibody responses to non-reference protein variants are incompletely understood. Further exploration of immune responses to non-reference strain proteins will inform vaccine development. Through a series of controlled human malaria infections (CHMI) over the course of two years, 8 participants were challenged with the NF54 strain of *P. falciparum* 3 or 4 times. This project aimed to use seroreactivity data from this repetitive CHMI study to create a framework for understanding antibody cross-reactivity to antigen variants. I hypothesized that antigens with similar amino acid sequences will have comparable levels of antibody binding. Antibody reactivity to 288 NF54 proteins and their corresponding variants were measured before and after each malaria infection on peptide microarrays, which contained overlapping linear peptides representing each protein's amino acid sequence. From this seroreactivity data across subjects and infections, 0 to 2 immunodominant epitopes were identified for each NF54 protein. Variant epitopes were defined as the amino acid sequences within each protein variant that aligned to the immunodominant epitopes identified from the NF54 reference protein sequences. The antibody binding signals of the NF54 epitopes were compared to the antibody signals of the variant epitopes, which revealed a positive linear correlation between the NF54:variant epitope amino acid sequence similarity and NF54:variant epitope antibody binding signal. This finding suggests that cross-reactivity among *P. falciparum* strains is attributable to sequence similarities. Future work aims to further investigate and characterize sequence divergence leading to retained antibody cross-reactivity versus not.

P1.07 Post Discharge Heart Failure Bridge Clinics: Reductions in Inpatient Utilization Across the Spectrum of Payer Groups

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Background: Heart failure (HF) is a leading cause of 30-day readmissions (20–25% nationally) and high resource utilization. Interdisciplinary bridge clinics (BCs) improve care continuity, reduce readmissions, and shift utilization from costly inpatient to sustainable outpatient care. While BC benefits are established, it remains unclear if these extend across payer types, including commercial, Medicare, Medicaid, and uninsured populations.

Methods: We conducted a retrospective cohort study of HF patients from five University of Maryland hospitals who attended a BC after HF hospitalization between Jan–Nov 2024. The index event was the first BC visit. Healthcare utilization was assessed with the CRISP Visit Level Pre/Post Analysis tool, evaluating up to 12 months pre- and post-visit. Outcomes included inpatient utilization (IU), observation, ED, and outpatient visits, as well as 30-day readmissions. Subgroups were analyzed by payer type.

Results: System-wide implementation of bridge clinics was associated with a significant 41% reduction in inpatient utilization (p<0.001). Reductions were consistent across all payer groups, with the greatest impact observed in patients with commercial insurance and those who were self-pay/charity. The latter finding is particularly notable, as this high-risk population benefited from additional clinic services, including transportation support, pharmacy access, and counseling. Outpatient utilization increased across most payer types, most prominently among commercially insured patients (+84.9%, p<0.001) and Medicaid MCO patients (+57.6%, p<0.001).

Conclusion: Bridge clinics significantly reduce IU and increase outpatient engagement across payer types and settings, supporting their role as a scalable strategy for post-discharge HF care.

P1.08 Impact of Intraoperative Autologous Blood Donation in Heart Transplantation on Hemodynamics and Transfusion Requirements: Interim Analysis

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Introduction: Blood transfusion is critical in heart transplantation (HTx), but high usage of allogeneic blood products is associated with increased adverse outcomes. Intraoperative autologous blood donation (IABD)—the collection and reinfusion of a patient's own blood during surgery—is associated with reduced allogeneic transfusion requirements in cardiac surgery, yet its role in HTx remains unstudied. Given the hemodynamic instability that can occur during HTx surgery, understanding IABD's impact on intraoperative hemodynamics is essential. This study evaluates associations between IABD use and transfusion needs, hemodynamics, morbidity, and mortality in heart transplant recipients. We hypothesize that IABD use is associated with reduced allogeneic transfusion volumes without significant differences in hemodynamic stability, morbidity, or mortality.

Methods: Adult HTx recipients aged 18–80 years at UMMC from 2014–2024 were identified via Epic records; 97 patients met inclusion criteria. For this interim analysis, 5 IABD-treated patients were age- and sex-matched to 5 controls. Baseline demographics, left ventricular assist device (LVAD) use, anticoagulant use, and prior HTx history were compared. Surgical factors including cardiopulmonary bypass (CPB) and aortic cross-clamp times, and early postoperative metrics such as ICU length of stay and duration of mechanical ventilation were analyzed. Primary outcomes included transfusion volumes, and hemodynamic metrics (mean arterial pressure [MAP] and vasopressor use) measured at three intraoperative timepoints: before, during, and after IABD (with equivalent timepoints in the control group).

Results: Baseline characteristics and cross-clamp times were comparable; CPB time was longer in controls. There were no strokes or 90-day mortalities. New continuous renal replacement therapy rates did not differ (OR = 0.41, 95% CI 0.005–11.8, p = 1). Platelet transfusions were significantly lower in the treatment group (mean 0.2 vs. 1.7 units, p = 0.044), while PRBC and FFP use did not differ significantly. Cryoprecipitate use was too infrequent to analyze. Norepinephrine equivalents were low and similar at all timepoints. MAP trends across three intraoperative timepoints did not differ by group (two-way ANOVA; Timepoint p = 0.152, Group p = 0.429, Interaction p = 0.241).

Conclusion: Preliminary findings suggest IABD use is associated with reduced platelet transfusions without compromising hemodynamics or increasing morbidity in HTx. Analysis of the full cohort is ongoing to validate these results.

P1.09 The Impact of Generative AI on Academic Integrity and Learning Environments: A Case Study from a Graduate Research University

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The rapid integration of Generative Artificial Intelligence (GenAI) creates a complex, urgent challenge for academic health centers (AHCs) operating at the intersection of education and patient care. To address a critical gap in multi-stakeholder empirical data, we conducted a mixed-methods study at a seven-school public academic health center to investigate GenAI perceptions, utilization, and governance. This study combined a campus-wide survey of faculty, staff, and students (n=326) with key informant interviews (n=12) with institutional deans and leadership. Results reveal high adoption rates across all groups (68% of faculty and 53% of students use GenAI, primarily ChatGPT) coexisting with a significant "policy vacuum." This disconnect is most evident in the clash between student perceptions, with 65% believing use "depends on the assignment", and fragmented faculty policies, which are split between "requires disclosure" (56%) and "other" approaches (33%). Open-ended survey themes confirm this gap, identifying "Desire for Faculty/Staff Training" (n=70) and "Need for Clear Policy" (n=64) as the top community concerns. Leadership interviews further confirmed the central institutional challenge is balancing school autonomy with the need for a consistent, equitable AI strategy. These findings demonstrate an urgent need for AHCs to move beyond individual experimentation and implement clear, evidence-informed governance and robust training to responsibly manage GenAI integration.

P1.10 Mapping a Decade of Clinical Ethics Consultations

Presenter: Patrick McGinnis, BS[1]
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The Ethics Consultation Service at the University of Maryland Medical Center supports patients, families, and clinicians in navigating ethical dilemmas, social complexities, and medico-legal consequences in care. Although the service has evolved in tandem with Baltimore's clinical and social landscape, little has been reported about who utilizes these services or the types of issues addressed. This study aimed to characterize the patient population and the predominant ethical themes of consultations conducted over the past decade. Data from all ethics consultations between 2016 and 2025—including patient demographics, ZIP codes, and referring specialties—were extracted from the electronic medical record. Descriptive statistics were generated using Python, and a custom text-sorting algorithm classified consultation themes into major categories recognized in the ethics literature (e.g., capacity, surrogate decision-making, treatment futility, and discharge planning). We reviewed a total of 789 cases. Patients were predominantly male (57.1%, $n = 361$) with a mean age of 51.9 ± 22.7 years (range 37 days–92.4 years). Most were middle-aged, urban, and Black (56.5%), followed by White (32.8%), reflecting the broader institutional population. The majority resided in ZIP codes with median household incomes below $50,000. Ethics consultations most often involved questions of concern focused on decision-making capacity, the identification of the appropriate surrogate, considerations of potentially non-beneficial treatment, and safe discharge planning. These findings highlight the ethics consult service's essential role in supporting Baltimore's most vulnerable patients and families as they confront socially complex ethical questions.

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P1.11 The Impact of the Future Leaders in Neurosurgery Symposium for Underrepresented Students: Results from Four Years of Mentorship

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Background: Women and racial minorities remain significantly underrepresented in neurosurgery, despite national efforts to improve diversity. Pipeline programs can increase exposure and mentorship for underrepresented students, yet longitudinal data on their impact are limited. The Future Leaders in Neurosurgery Symposium for Underrepresented Students (FLNSUS) was established to provide early exposure to neurosurgery, mentorship, and insight into academic and clinical careers.

Objective: To evaluate the impact of FLNSUS on students' attitudes toward neurosurgery, exposure to diverse role models, and academic progression, and to inform program expansion.

Methods: The second annual FLNSUS, held virtually in September 2022, hosted 282 students from five continents. Participants completed pre- and post-symposium surveys, with a subset followed at 6 months. Surveys assessed knowledge of neurosurgery, confidence in pursuing a neurosurgical career, exposure to diverse mentors, and perceptions of mentorship and work-life balance. Free-text responses were analyzed thematically. Data were analyzed using descriptive statistics, chi-square tests, and Wilcoxon signed-rank tests.

Results: Post-symposium survey completion was 54%. Participants were predominantly Black/African American (52.5%) and female (72.5%), representing significantly higher proportions than AAMC 2022 neurosurgery resident data. Students reported increased knowledge of neurosurgery, exposure to diverse role models, and reduced intimidation in approaching the field. Thematic analysis highlighted relatable role models, normalization of struggle, and increased self-efficacy. Longitudinal tracking showed that several attendees matriculated into medical school or advanced degree programs.

Conclusions: FLNSUS demonstrates reproducible impact on underrepresented students, enhancing exposure, mentorship, and self-efficacy in neurosurgery. Expansion to include orthopedic and plastic surgery, with hybrid in-person components, may further extend reach and support diversity across surgical specialties.

P1.12 Implementation of a Medical School Peer Support Network

Presenters: Reshmi Talwar; Claire Wegner; Zain Shamsuddin
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Medical students experience disproportionately high rates of anxiety, depression, and burnout, with an estimated 28% reporting depressive symptoms—significantly higher than the 3.8% global average. Feelings of isolation and uncertainty about where to seek help can further challenge student well-being and academic success. To address this, we developed a Peer Support Network (PSN) at the University of Maryland School of Medicine to connect students seeking support with trained peer mentors who have navigated similar challenges. The PSN was established with a faculty advisor and a cohort of 16 mentors across the second- to fourth-year classes, each selected through a rigorous application process. Mentors completed training through the National Association of Student Personnel Administrators (NASPA) Peer Educator Program and the Question, Persuade, Refer (QPR) Gatekeeper Training, learning skills in active listening, recognizing distress, and directing students to appropriate resources. Since Fall 2023, 30 medical students—primarily first-year students (60%)—have sought peer mentorship for topics ranging from emotional support to academic guidance, with most requesting ongoing sessions (57%). These findings highlight both the need for and benefit of peer mentorship in medical education. The PSN has expanded to include outreach programs such as USMLE preparation workshops and wellness events, with future plans to evaluate its impact on stress, well-being, and academic performance through structured surveys. Overall, one-on-one peer mentorship through a structured program has fostered student well-being by navigating the academic, social, emotional, and mental challenges faced in medical school.

P1.13 The Current Landscape of Robotic Surgery Simulation in Medical Student Education: A Scoping Review

Presenters: Nischal Ada[1]; Chris Huang[1]
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Background: Robotic systems are well integrated into postgraduate training, but there remains a gap in medical students' access to training. This review maps the current evidence on robotic surgery simulation in undergraduate medical education.

Methods: Following PRISMA-ScR and JBI PCC guidelines, four databases (Scopus, Embase, Ovid MEDLINE, and CINAHL) were searched for studies involving hands-on robotic simulation among medical students, with dual independent screening ($\kappa \geq 0.60$) and consensus-based extraction. Fifty studies published between 2012–2024 met inclusion criteria, most being small, single-center, and US/EU-based (N=2,020 students; median 29.5 [16–48.8]).

Results: Baseline task times were similar between robotic and laparoscopic simulators ($p > 0.05$), but robotic systems achieved faster completion with increasing procedural complexity (15.2 vs 22.4 min for trainees; 18.7 vs 27.3 min for students; $p < 0.001$) and during continuous suturing (21.1 vs 33.3 min; $p = 0.001$). Training efficiency varied by curricular design: accelerated programs required fewer repetitions for basic tasks (Peg Board 2 vs 4.6; $p = 0.0004$), while proficiency-based formats sustained superior performance in complex modules (Suture Sponge 6.78 vs 9.63; $p = 0.04$). Experience, visuospatial aptitude, and prior gaming or operative exposure correlated with enhanced motion economy; high-scorers on the Purdue Aptitude Test were 36% faster.

Conclusion: Most studies emphasized psychomotor outcomes and underreported non-technical domains such as confidence, , and engagement. Although robotic simulation consistently improved technical performance over laparoscopy, heterogeneity in study design and proficiency benchmarks limits generalizability. Future work should prioritize standardized proficiency metrics and inclusion of complex and affective outcomes to strengthen robotic training within medical curricula.

P1.14 Interest and Participation in Global Pediatric Hand Surgery: A Survey of the Pediatric Hand Study Group

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Background: There has been a growing interest amongst students, trainees, and surgeons in global surgery over the past decade, but there remains a dearth of literature on international outreach in pediatric hand surgery and no central database of projects. We surveyed the largest collection of pediatric hand surgery providers in North America on global surgery participation to better facilitate future work, and we hypothesize a high rate of interest in this field.

Methods: A 6-question survey was administered at the 2024 Pediatric Hand Study Group (PHSG) meeting to all attendees. There were an estimated 102 attendees based on 115 registrants with 13 absentees. The survey was offered electronically via QR Code and Google Forms, as well as by paper surveys. Data was analyzed with descriptive statistics and world map generated with MapChart.

Results: There were 68 respondents (65%) across professions and levels of training, including 34 (50%) surgeons, 13 (19%) hand and occupational therapists, 11 (16%) trainees, 3 (4%) students, and 6 (8%) other. Regarding global experience, 32 (47%) had participated in international work and 14 (21%) were actively involved in current work. Although 30 (44%) had no experience in global surgery, 31 (46%) of respondents stated a clear desire to participate in the future. Those with experience had collectively worked in 28 countries across 5 continents, with multiple members engaged in Honduras (n=7), Colombia (n=6), Nicaragua (n=5), Haiti (n=4), Peru (n=4), China (n=3), Mexico (n=3), and Nepal (n=3). Common organizations PHSG members have partnered with include Health Volunteers Overseas, Touching Hands / American Foundation for Surgery of the Hand, Silver Service Children's Foundation, Shriners Hospitals, and ReSurge.

Conclusions: Nearly half of those surveyed at the largest North American pediatric hand surgery conference have participated in global pediatric hand surgery work, including surgeons, occupational and hand therapists, trainees, and students. Many respondents are engaged in the same countries, with much potential for internal collaboration amongst members. One-fifth remain actively involved abroad, and almost half of the surveyed body stated interest in participating in future international work. With such high interest in global pediatric hand surgery, we propose an open, searchable database and map of global pediatric hand surgery activity to facilitate collaboration and onboarding of new participants.

P1.15 Emerging Clinical Patterns Among Young Adults Living with HIV

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The introduction of combination antiretroviral therapy (cART) has transformed HIV from a fatal diagnosis to a manageable chronic condition, resulting in a growing population of individuals living into adulthood with HIV and facing new health challenges. Despite effective treatment, people with HIV remain at increased risk for non-AIDS-associated comorbidities. Individuals with perinatally acquired HIV (PHIV) represent a particularly vulnerable group, having been exposed to both HIV and antiretroviral therapy since birth, and may experience distinct patterns of comorbidity compared to those with non-perinatally acquired HIV (NPHIV). This study aims to assess and compare the prevalence and patterns of non-AIDS comorbidities among young adults with PHIV and NPHIV. We conducted a retrospective cohort study using clinical, virologic, and sociodemographic data from medical records. Participants were categorized by HIV acquisition status, and NPHIV participants were age-range-matched and randomly selected. Descriptive statistics characterized the study population, and univariate and multivariate logistic regression models were used to examine associations between clinical predictors and comorbidity outcomes. Multivariate analysis showed PHIV patients had a higher likelihood of hypertension (aOR = 1.87, 95% CI: 1.1-3.2), chronic kidney disease (aOR = 6.95, 95% CI: 1.7-29.7), and a non-significant trend towards a greater likelihood of death (aOR = 7.66, 95% CI: 0.94-65.5). Additionally, PHIV individuals developed hypertension (p=0.004) and chronic kidney disease (p=0.017) at significantly younger ages. These findings demonstrate the need for continued monitoring and clinical management of young adults with PHIV, who may be at elevated risk for certain non-AIDS comorbidities.

P1.16 Global Sagittal Alignment Parameters in Patients Without Spine Deformity Stratified by Age and Sex

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Introductions: Global sagittal alignment parameters based on the cranial sagittal vertical axis have been shown to predict outcomes after spine surgery. Normal values in patients without spine deformity have not been well characterized. It is important to establish reference ranges for global sagittal alignment parameters stratified by age and sex.

Methods: A retrospective cohort study was conducted on consecutive patients undergoing spine imaging with biplanar full-body x-rays at a single institution between November 2022 and July 2024 were reviewed for inclusion in the study. Patients with spinal deformity or prior spine surgeries were excluded. Global sagittal alignment parameters included cranial sagittal vertical axis to the sacrum (CrSVA-S), hip (CrSVA-H), knee (CrSVA-K), and ankle (CrSVA-A) as well as the cranium-hip-sacrum (CrHS), cranium-knee-sacrum (CrKS), and cranium-ankle-sacrum (CrAS) angles. Patients were stratified based on age by decade (<29, 30-39, 40-49, etc.) and sex, and ANOVA testing was used to compare groups. Multivariable logistic regression models were created with age and sex as predictors and each radiographic parameter as the outcome.

Results: In total, 518 patients, 253 (48.8%) male and 265 (51.2%) female, were included. The mean age was 48.4 years. In the multivariable linear regression models, an increase in age by 10 years was associated with a 0.6 cm increase in CrSVA-S ($\beta=0.058$, [0.041, 0.074], $p<0.001$) and a 0.3 cm increase in CrSVA-H ($\beta=0.029$, [0.013, 0.046], $p=0.003$). Interestingly, an increase in age by 10 years was associated with a 0.3 cm decrease in CrSVA-K ($\beta=-0.026$, [-0.043, -0.009], $p=0.002$). We did not find an association between age and CrSVA-A. Male sex was associated with a 1.3 cm greater CrSVA-S ($\beta=1.313$, [0.743, 1.882], $p<0.001$) and a 1.2 cm greater CrSVA-H ($\beta=1.211$, [0.641, 1.781], $p<0.001$) and CrSVA-A ($\beta=1.226$, [0.673, 1.779], $p<0.001$) compared with female sex. CrSVA-K was not significantly associated with sex in our study.

Conclusions: This study establishes reference values for normal global sagittal alignment parameters stratified by age and sex. These results can assist with operative planning for patients with spinal deformity and promote a better understanding of global sagittal alignment.

P1.17 Hip Fractures Result in Major Wealth Loss

Presenter: Sourabh Vellala
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Hip fractures impose a substantial economic burden in the United States, exceeding $6 billion annually, yet their financial impact on individual households remains underexplored. Using data from the longitudinal Health and Retirement Study (HRS), we analyzed adults who sustained a hip fracture between 2000 and 2016 to assess changes in total household wealth from two years before to four years after the fracture. Cases were propensity score–matched to controls by age, sex, race, and baseline wealth, Wilcoxon tests were used due to non-normal data distribution. Median household wealth among fracture cases declined by 50%, from $64,200 to $32,000, whereas controls' wealth remained relatively stable, decreasing slightly from $63,000 to $60,000. Wealth at four years post-fracture was significantly lower than both controls (p = 0.025) and pre-fracture levels (p < 0.001). Losses were primarily driven by reductions in cash accounts and home value, with the middle tertile of initial wealth experiencing the greatest proportional decline. Additionally, individuals without spouses experienced roughly a 28% greater decrease in household wealth compared to those with spouses, highlighting increased vulnerability among single households. Overall, hip fractures result in significant and sustained reductions in household wealth, comparable to the financial toll of major illnesses such as cancer, emphasizing the importance of prevention strategies and supportive policies that address the long-term socioeconomic effects of these injuries.

P1.20 The Impact of Race on Anxiety in Pediatric Inflammatory Bowel Disease

Presenter: Emily Bliss[1]
Mentor: Runa Watkins, MD[1]
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Pediatric Inflammatory Bowel Disease (IBD), including Crohn's disease (CD) and Ulcerative Colitis (UC), is a chronic inflammatory condition of the gastrointestinal tract associated with significant psychosocial burden. Anxiety is a common comorbidity, yet few studies have examined its relationship with race – along with sex, disease severity, and treatment type – in underserved pediatric populations. This observational study assessed anxiety among 12 pediatric IBD patients (ages 11–17) and 10 controls without IBD at the University of Maryland Golisano Children's Hospital. Anxiety symptoms were measured using the Generalized Anxiety Disorder-7 (GAD-7), and chart review provided demographic and clinical data, including disease activity (PUCAI/PCDAI), treatment type, steroid exposure, and duration of diagnosis. IBD participants (mean age 13.7 years; 67% male; 58% White) had a mean GAD-7 score of 4.9 (SD = 3.8), indicating minimal to mild anxiety. Controls (mean age 15.2 years; 40% male; 60% White) had a higher mean GAD-7 score of 8.2 (SD = 6.0), corresponding to mild anxiety. Among IBD patients, anxiety scores were higher in White participants (5.7) than in Black participants (3.8), while among controls, Black participants (8.0) reported slightly lower anxiety than White participants (8.3); however, both differences were not statistically significant. Within this small sample of IBD cases, there was no statistically significant relationship between anxiety and participant's sex, disease activity, treatment, or steroid exposure. A larger sample size is required to achieve statistical power sufficient to evaluate the impact of race on anxiety in pediatric IBD.

P1.21 Fluorescein Angiography Demonstrates Hemispheric Differences in Vascular Flow Associated with Severe Retinopathy of Prematurity

Presenter: Manahel Zahid, BS[1]
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Retinopathy of Prematurity (ROP) is a vasoproliferative condition that arises within the retina and is a leading cause of preventable childhood blindness worldwide. Intravenous fluorescein angiography (IVFA) is an imaging modality used to assess vascular circulation in the retina and provides high sensitivity for diagnosing severity and treatment response. Although IVFA utilization in ROP has been studied, arterial and venous fill on a vessel-by-vessel basis has not been investigated, and little is known about differences in hemispheric vascular fill rates. This study aims to assess the association between vascular fill rates measured by IVFA and clinical severity of ROP.

A retrospective analysis was conducted on neonates with ROP who underwent IVFA imaging using RetCam at UMMC from 2022 to 2024. IVFA imaging collected was analyzed to extract retinal hemispheric vascular filling rates. All temporal and nasal vascular fill values were compiled, respectively. Data collected included clinical ROP and IVFA specific variables.

The mean gestational age (GA) was 24.4 ± 1.5 weeks, and the mean birth weight (BW) was 614 ± 162.3 grams, respectively. A paired t-test demonstrated significantly increased nasal retinal blood flow compared to temporal flow (t= -3.84, p = 0.00019). Greater asymmetry between nasal and temporal flow was significantly associated with lower birth weights ($\rho = -0.31$, p = 0.00014), greater RBC transfusion ($\rho = 0.24$, p = 0.0026), and higher IVH grade ($\rho = 0.28$, p = 0.0006). ROP severity was associated with greater hemispheric retinal flow asymmetry observed for ROP zone (p = 0.017), Stage 3 disease (p = 0.0045), and maximum ROP stage (p = 0.0045). Our findings demonstrate that there is a statistically significant difference between hemispheric retinal blood flow rates that is associated with ROP severity and other clinical variables.

P1.22 From Gene to Vision Loss: Novel GUCA1A and SETD2 Mutations Underlying Familial Retinitis Pigmentosa and Glaucoma

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Inherited ocular disorders such as retinitis pigmentosa (RP) and glaucoma are among the leading causes of irreversible blindness, often influenced by complex genetic factors. This study investigates a multigenerational family with extensive ophthalmic disease to identify potential shared genetic contributors. Eighteen individuals, including six affected members, underwent comprehensive ophthalmic assessment and whole-exome sequencing, with extended family testing used as supplemental data. The proband and his brother exhibited severe early-onset glaucoma, while other siblings demonstrated variable combinations of RP, glaucoma, and surgical cataracts. Following a seven-tiered variant filtration strategy and subsequent Sanger confirmation, two genes—**GUCA1A** and **SETD2**—emerged as the most plausible contributors to disease expression. The **GUCA1A** variant (Arg40Cys) is predicted to disrupt guanylate cyclase–mediated phototransduction, while the **SETD2** variant (Ala848Val) may alter histone methylation and microtubule dynamics, potentially explaining the retinal degeneration observed in male carriers. Other genes initially analyzed (EYS, FZD5, DHDDS, NOTCH2) did not segregate with the disease phenotype. The phenotypic diversity observed among affected individuals likely reflects a combination of gene-gene interactions, sex-specific effects, and environmental modifiers. This family-based genetic analysis expands the known phenotypic spectrum associated with **GUCA1A** and **SETD2**, emphasizing their potential role in combined RP–glaucoma pathogenesis. These findings highlight the value of integrating genomic data with detailed clinical phenotyping to refine diagnostic accuracy and identify novel targets for gene-based therapy in hereditary ocular disease.

P2.01 Longitudinal Analysis of Blood Flow Before and After Laser Photocoagulation Treatment for Retinopathy of Prematurity

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Retinopathy of prematurity (ROP), the leading cause of childhood blindness worldwide, is a vasoproliferative disorder affecting premature infants characterized by increased retinal blood flow secondary to intravitreal neovascularization. ROP is a progressive disease where early microvascular degeneration can advance to retinal vessel neovascularization, retinal detachment, and ultimately vision loss if left untreated. In recent years, laser speckle contrast imaging (LSCI) has emerged as a novel, non-invasive imaging technique for quantifying retinal blood flow with promising applications in ROP diagnosis. The purpose of this study is to compare total retinal blood flow (TRBF) measured by LSCI before and after laser photocoagulation therapy. 14 eyes from 8 premature infants in the neonatal intensive care unit who required laser photocoagulation treatment were imaged, and data from 6 weeks before and after laser therapy were included in analysis. Results show that prior to laser photocoagulation, participants demonstrated a mean peak TRBF of 8.8 ± 2.1 a.u., which decreased to 7.3 ± 1.4 a.u. following treatment (mean difference = 1.5 a.u., p = 0.04). Quadrant-based analysis revealed the greatest reduction in blood flow in the nasal quadrant (p = 0.02), followed by the superior (p = 0.03), inferior (p = 0.3), and temporal (p = 0.4) quadrants. Peak TRBF also demonstrated a downward trend in the 6 weeks following laser photocoagulation treatment, but the change was not significant (β= -0.3 a.u./week, p=0.2). We conclude that there is a lower TRBF after laser photocoagulation therapy in infants with ROP, as measured by LSCI.

P2.02 Evaluating the Role of Conserved miRNAs Across Species in the Optic Nerve Laminar Region (ONLR) that Promote Retinal Ganglion Cell Survival and Regrowth

Presenter: Yehyun (Abby) Kim[1]
Mentor: Steven Bernstein, MD, PhD[1]
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Neural progenitor cells in the optic nerve head-laminar region (ONLR-NPCs) secrete neuroprotective molecules including growth factors, extracellular vesicle (EV)-associated proteins, and microRNAs (miRNAs) that control inflammation and growth. Previous work in the lab has identified these in rats and nonhuman primates using both proteomic and single cell sequencing (sc-seq).

Preliminary analysis of the miRNAs in human and rat optic nerve heads (ONH) revealed 175 conserved miRNAs that are likely required for normal optic nerve function across species. Focusing on the 70 miRNAs within the top 100 highest expression levels from both human and rat data, they have been evaluated for possible roles in different types of stress responses and protection of the ONH. Literature searches from experimental studies and databases such as miRBase and miRDB were used to evaluate predicted or validated target genes and pathways of each miRNA species. The main role of miRNAs were classified into roughly 5 groups: 1. Inflammation suppression, 2. Myelination enhancement or suppression, 3. Suppression of axonal degeneration, 4. Suppression of oxidative stress, and 5. Caspase3 and other apoptosis/ferroptosis suppression. Next steps will be evaluating the effects of a selection subgroup of these miRNA molecules in vitro, on rat retinal ganglion cells. This work will provide a first look at the ability of individual NPC components to form a new class of treatment for chronic optic nerve-related diseases.

P2.03 Beyond the Operating Room: Long-Term Health Outcomes After Cesarean Hysterectomy for Placenta Accreta Spectrum

Presenter: Jane Quackenbush[1]
Mentor: Ozhan Turan, MD[2]
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Introduction: Placenta accreta spectrum (PAS) is a serious obstetric complication characterized by abnormal placental adherence, often necessitating cesarean hysterectomy (CH). While the effectiveness of CH in cases of severe placental invasion is well established, its long-term impact on health outcomes remains poorly understood. We hypothesize that CH for PAS does not significantly worsen long-term physical or mental health outcomes.

Methods: Patients who underwent CH were identified through the Complex Obstetric Surgery Program at the University of Maryland. They were invited to complete a digital survey, which included the SF-36 (physical and mental health), IES-R (PTSD risk), and postoperative sexual function questions. Responses were compared based on time since surgery: <12 months vs. >12 months. Descriptive, and statistical analyses with Mann-Whitney U and chi-square tests were performed. The study was IRB-exempt (HP-00109470).

Results: Total of 169 PAS patients were identified and contact was attempted. Of those, 20 patients completed the survey. 5 were <12 months and 15 were >12 months post-op. Patients >12 months scored significantly better than <12 months for SF-36 domains of physical functioning and role limitations due to emotional problems and significantly worse for general health ($p<0.05$). Other SF-36 domains analyzed, IES-R, and sexual functioning analysis failed to demonstrate significant difference (See Table).

Conclusions: This data offers evidence that PAS patients suffer short and long-term mental and physical health impacts. Although further prospective study will be needed to quantify the impact, these initial results suggest that PAS patients likely need more intensive postpartum follow-up to address health concerns.

P2.04 The Impact of Human Septic Extracellular Vesicles on Endothelial Cell Activation in Human Microvascular Endothelial Cells

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Background: Sepsis describes a clinical syndrome caused by a maladaptive host response to infection, leading to endothelial cell (EC) injury and dysfunction, platelet dysfunction, and dysregulated thrombin generation, characterized as sepsis-induced coagulopathy. Extracellular vesicles (EVs) are nanosized membrane-bound particles that facilitate intercellular communication through the transport of various cargo, like extracellular RNA, DNA, and proteins. EVs can further mediate immune responses like systemic inflammation, coagulopathy, and endotheliopathy through their cargos. Using a soluble marker of endothelial cell activation like Intercellular Adhesion Molecule-1 (ICAM-1), which has known involvement in leukocyte and platelet recruitment, we hypothesize that plasma EVs help mediate endothelial cell activation in sepsis through their protein cargo and drive endothelial cell injury and coagulation in sepsis-induced coagulopathy.

Methods: This study was approved by the IRB of the University of Maryland (UM) School of Medicine. Sepsis-Induced Coagulopathy scores were calculated to create three groups: 1) healthy patients (HP), 2) septic patients without coagulopathy (SWOC), and 3) septic patients with coagulopathy (SIC). The plasma samples of five subjects from each group were age-matched and combined. EVs from each combined group were isolated via ultracentrifugation. The isolated EVs were resuspended in 150 μL of buffer. EV size and concentration were determined using nanoparticle tracking analysis (NTA). Pilot experimentation was conducted to determine the appropriate EV dose concentration. EVs from the three groups were incubated with HMECs for 24 hours at 37°C at the chosen dose. Supernatant was collected and stored at -80°C until analysis. ICAM-1 expression was measured via ELISA assay in two sets of triplicates.

Results/Conclusions: Comparison between HP and SWOC showed significantly increased ICAM-1 expression at the higher dose 3×10^9 EV/mL vs. the lower dose 1×10^9 EV/mL (HP 0.795 ± 0.177 ng/ml, SWOC 1.241 ng/ml± 0.265 ($p < 0.05$), v HP 0.254 ± 0.005 ng/mL, SWOC 0.537 ± 0.202 ng/mL, ($p = 0.21$)). Using the higher dose, comparison between HP and SIC showed significantly increased ICAM-1 expression (HP 0.419 ± 0.094 ng/ml v SIC 0.610 ± 0.095 ng/ml, $p < 0.05$). Our data demonstrates that septic EVs caused an increase in ICAM-1 expression and may play a role in driving endothelial injury during sepsis-induced coagulopathy. Further molecular characterization and proteomic analysis of EV content will help to clarify the specific role they play in this complex coagulopathy.

P2.05 The Continuum of Care in Hospitalized Patients with Opioid or Stimulant Use Disorder and Infectious Complications of Drug Use – Treatment as Usual, Addiction/ID Integrated Clinic (CHOICE-STAR Study) & Effects on Patient Antibiotic Completion and Outpatient Utilization

Presenter: Isabel Veloso[1]
Mentors: Sarah Kattakuzhy, MD, MPH; Edward Traver, MD[1]
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A serious consequence of the continued rise in injection drug use among Americans is an increase in serious injection-related bacterial and fungal infections (SIRI). Due to the complex nature of treating infections in the setting of comorbid substance use it is imperative to develop comprehensive and effective services to target treatment of patients who use injection drugs and reduce adverse outcomes. The CHOICE-STAR study aims to elucidate how to best reduce infectious disease-related rehospitalization of patients with SIRI by comparing treatment as usual (TAU) to an integrated infectious disease and substance use disorder clinic intervention (IC). The goal of the IC is to increase access to infectious disease and substance use disorder treatment after hospital discharge by providing collocated and coordinated services. Patients are enrolled at the time of hospitalization and randomized to TAU or IC for 6 months, with follow-up assessments on Day 14 and Months 1, 3, 6, 9, and 12 after hospital discharge. The focus of this current sub-analysis is to determine if participation in the IC arm affects rates of antibiotic completion, medication for opioid use disorder (MOUD) uptake, and outpatient provider visits, as analyzed by SAS Fisher exact test. This preliminary analysis will provide insight into the challenges injection drug users face to access care outside the hospital and the benefits of care coordination starting at hospitalization.

P2.07 Preoperative Expectations and 2-year Outcomes after Primary ACL Reconstruction

Presenter: Prateek Swamykumar, BS
Mentors: Michael McCurdy, MD; Jonathan D. Packer, MD
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Introduction: Over the last few decades, a steady rise in ACL reconstruction (ACLR) has been seen, giving increasing importance to identifying factors that may improve outcomes for patients undergoing ACLR. One factor that may influence patient-reported outcomes (PROs) is preoperative expectation of recovery. Specifically, higher expectations have been shown to correlate with better PROs postoperatively; however, there is scarce literature on preoperative expectations and outcomes after ACLR. Therefore, the aim of this study was to investigate the effect of preoperative expectations on 2-year PROs after primary ACLR.

Methods: After Institutional Review Board approval, patients who underwent primary ACLR from July 2015 to May 2018 were identified from a prospectively enrolled registry. PROs were collected via electronic surveys at baseline and 2 years postoperatively. PROs included the Patient-Reported Outcome Measurement Information System (PROMIS), Tegner Activity Scale (TAS), and Surgical Satisfaction Questionnaire (SSQ-8). Expectations were assessed using the Musculoskeletal Outcomes Data Expectations and Management System (MODEMS) preoperative expectations and met expectations domains. Statistical analysis was utilized to identify PROs for which preoperative expectations was a predictor.

Results: There were 184 patients identified, 129 (70.1%) of which completed their 2-year PROs. On bivariate analysis, no patient demographics were associated with preoperative expectations. Higher preoperative expectations were associated with better SSQ-8 at 2-year follow-up. Additionally, higher expectations were associated with greater improvement in PROMIS Pain Interference (PI) and Social Satisfaction. On regression analysis, high preoperative expectations was a predictor of 2-year PROMIS PI, improvement in PI, improvement from pre-injury TAS, and greater met expectations.

Discussion and Conclusion: This study found that preoperative expectations predicted pain and activity after primary ACLR. Additionally, higher preoperative expectations were predictive of greater met expectations. These findings demonstrate the positive impact high preoperative expectations may have on 2-year PROS, aligning with literature on other orthopaedic procedures.

P2.08 Proximal Humerus Fractures in the Pediatric and Adolescent Population: Epidemiology, Outcomes, and Complications

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Proximal humerus fractures account for 2% of all pediatric fractures. Most are managed conservatively, yet decreased remodeling potential in older children shows greater use of surgical intervention. We investigated the epidemiology, treatments, and complications associated with pediatric and adolescent proximal humerus fractures. Retrospective chart review identified all pediatric patients treated for proximal humerus fractures from 2012 to 2025. Descriptive analysis summarized patient demographics, fracture characteristics, and treatments. Comparisons between non-operative and operative groups utilized Wilcoxon rank-sum, chi-square, or Fisher's exact tests.

We identified 223 proximal humerus fractures in 218 patients. Median age at fracture was 10 years [IQR: 7-12]. 56.1% of fractures occurred in males. Falls (62.3%) and sports participation (20.2%) were common mechanisms of injury. 198 fractures (88.8%) were treated non-operatively; 25 fractures (11.2%) were treated operatively.

Median age was 9 years [IQR: 7-12] in non-operative patients and 13 years [IQR: 10-14] in operative patients (p = 0.0002). Among non-operative cases, extraphyseal fractures were more common (66.4% vs. 44.0%, p = 0.0120). Operative cases experienced higher complication rates (58.3% vs. 6.6%, p < .0001). For patients with available return-to-activity (RTA) data (N=186), median RTA time was significantly higher in operative cases (85 [IQR: 75-117] days) compared to non-operative cases (42 [IQR: 28-61] days) (p < .0001).

Most pediatric proximal humerus fractures can be treated non-operatively with low complication rates. Operative intervention leads to longer RTA time and significantly higher complication rates. Further investigation is warranted to determine the true indications for surgical management to improve outcomes and reduce complications.

P2.09 Impact of Obesity on 2-year PROs after Partial Meniscectomy

Presenter: Gerald Kidd[1]
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The impact of obesity on mid-term outcomes after arthroscopic partial meniscectomy (APM) remains unclear. This study aimed to evaluate the effect of obesity on patient-reported outcomes (PROs) two years after APM.

Patients undergoing APM between June 2015 and September 2019 were identified from a prospective orthopedic registry and categorized as obese (BMI $\geq$30 kg/m^2) or non-obese (BMI <30 kg/m^2). PROs, including six Patient Reported Outcomes Measurement Information System (PROMIS) domains, International Knee Documentation Committee (IKDC) scores, numeric pain scales (NPS), Tegner Activity Scale (TAS), and Marx Activity Rating Scale Lower Extremity (MARS LE), were collected at baseline and two years. Bivariate and multivariable analyses assessed differences among groups and predictors of two-year outcomes.

At two-years postoperatively, obese patients reported significantly worse scores for PROMIS Physical Function (PF) (47.0±8.0 vs 53.0±9.6, p=.001), Pain Interference (PI) (54.0±9.9 vs 48.7±9.9, p=.003), Social Satisfaction (49.7±12.0 vs 55.0±11.2, p=.014), IKDC (59.2±21.8 vs 73.3±22.4, p=.001), NPS operative knee (2.7±2.9 vs 1.6±2.2, p=.047), TAS (3.5±2.1 vs 5.3±2.6, p<.001), and MARS LE (14.4±19.2 vs 40.5±29.4, p<.001). Obese patients also demonstrated less 2-year improvement in PROMIS PI, IKDC, and TAS, and were less likely to reach the MCID for PROMIS PF. Obesity independently predicted worse 2-year PROMIS PF and MARS LE scores as well as less improvement in PROMIS PI.

Obesity status predicted worse function, activity, and less improvement in pain two years post-APM. These findings may aid in preoperative patient counseling and expectation management in patients undergoing APM.

P2.10 Investigating the Impact of Demographics, Socioeconomic Status, and Child Opportunity Index on Slipped Capital Femoral Epiphysis (SCFE) Presentation and Diagnosis

Presenter: Krisha Malik[1]
Mentors: Joshua Abzug, MD[1]; Alexandra Dunham, MD[1]
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Slipped capital femoral epiphysis (SCFE) is one of the most common hip disorders in adolescents, with delayed diagnosis associated with more severe slips and worse prognoses. The purpose of this study was to evaluate how social determinants of health, including neighborhood-level opportunity measured by the Child Opportunity Index (COI), impact the timing of SCFE diagnosis and the severity of presentation. A retrospective review was conducted using the University of Maryland Medical System orthopedic database to identify pediatric patients aged 13 months to 17 years diagnosed with SCFE between 2010 and 2024. Patient demographics, zip code (to link with COI), date of symptom onset, slip stability (unstable vs stable), outcomes, time to surgery, and return to activity were recorded. A total of 82 patients met the inclusion criteria. Patients from lower COI categories experienced longer diagnostic delays ($p = .043$) than those from higher COI categories. Longer delays were associated with unstable slips (153.3 vs 107.0 days, $p < .001$). Higher BMI correlated with both lower COI ($p = .03$) and longer diagnostic delays ($p = .02$). Diagnostic delay is strongly associated with slip severity, while lower neighborhood opportunity may contribute to delayed recognition. These findings may help identify at-risk populations and guide interventions to improve timely diagnosis and outcomes in pediatric SCFE.

P2.11 Intraoperative Use of Shear Wave Elastography to Measure Changes in Deltoid Tension During Reverse Shoulder Arthroplasty

Presenter: Arnav Sinha[1]
Mentor: Mohit N. Gilotra, MD[1]
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Proper deltoid tensioning intraoperatively plays a vital role in the stability and biomechanics of reverse shoulder arthroplasty (RSA) and consequent patient outcomes. Current surgical techniques depend on subjective physical examination to test deltoid tension during implantation of prostheses. Further, distalization and lateralization of the prosthesis has varying effects on deltoid tension that remains unclear. Shear wave elastography (SWE) offers a noninvasive means to measure mechanical soft tissue properties and thus become an established objective tool to ensure proper deltoid tensioning for RSA. The aims of this study are to (1) compare deltoid tension values when increasing the amount of distalization or lateralization intraoperatively and (2) to understand the relationship between deltoid tension values preoperatively and after implantation.

To do so, a prospective cohort study was conducted from March 2022 to March 2024 on 12 patients that underwent RSA at the Veterans Affairs Medical Center. SWE measurements of the operative deltoid were obtained preoperatively in the clinic and intraoperatively. Specifically, the intraoperative measurements taken included: prior to deep exposure, a baseline size (BL), lateralized and distalized size (LD), purely lateralized size (PL), and a final components size. Consequently, a statistical analysis was performed to uncover changes in tension values.

There was a statistically significant increase in deltoid tension prior to deep exposure compared to preoperative values with an average increase of 6.1kPa (p = 0.039). Further, there was a significant increase after final component implantation compared to values taken prior to deep exposure with an average change of 11.67kPa (p = 0.001). When trailing components and altering the amount of lateralization and distalization there was a significant increase in the LD group compared to the BL group with an average change of 19.88kPa (p =0.003). Comparison between the BL and PL groups showed an increase in stiffness; however, it was not statistically significant.

In conclusion, distalization and lateralization indicated objective increases in tension, with distalization potentially having a larger effect than pure lateralization. Our work demonstrated SWE may be a valid tool in understanding optimal deltoid tension intraoperatively and can be useful in guiding implant size and the extent of distalization and lateralization required for RSA.

P2.12 Radiographic Predictors of Pain after Subarachnoid Hemorrhage

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Mentors: Nicholas Morris, MD[2]; Gunjan Parikh, MD[2]
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Headache is the most common presentation of aneurysmal-pattern subarachnoid hemorrhage (SAH). Higher ICU pain burden is associated with persistent headache and outpatient opioid use, but predictors are not well understood. We aimed to use radiographic biomarkers from admission head CT to identify predictors of post-SAH ICU pain burden. We performed a retrospective observational study in 143 patients with SAH between 2019-2021. Radiographic variables of interest included Hijdra score (amount of SAH), mGraeb score (amount of intraventricular hemorrhage), and SEBES score (amount of brain edema). The outcome of interest was the ICU pain-burden, defined as area under curve of numeric pain rating score (0-10) and time for the duration of ICU stay. Predictor variables were selected by applying elastic-net regularization and a generalized linear model was refit on the retained variables. Of the 143 patients, the mean (SD) age was 56 (13.4) years, 89 (62%) were female, and the median (IQR) Hunt-Hess score was 3 (2-4). On admission CT, the mean (SD) Hijdra was 16.9 (8.4), the mean (SD) SEBES score was 2.1 (1.5), and the mean (SD) mGraeb score was 5.5 (6.8). Older age (effect (95% CI) = -0.241 (-0.457 - -0.025), $p = .03$) and higher Hunt-Hess (effect (95% CI) = -5.7059 (-8.875 - -2.536), $p < .001$) were significantly associated with lower pain burden. We did not find significant associations between Hijdra, mGraeb, or SEBES imaging scores and pain burden. Further research will aim to expand the cohort and evaluate predictive value of longitudinal changes in radiographic biomarkers.

P2.13 Cortical Interneuron Development in Polyhydramnios, Megalencephaly, and Symptomatic Epilepsy

Presenter: Meghna Pandey[1]
Mentor: Whitney Parker, MD, PhD[1]
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Polyhydramnios, Megalencephaly, and Symptomatic Epilepsy (PMSE) is a rare genetic neurological disorder that results in severe intractable epilepsy, megalencephaly, craniofacial dysmorphism, and global developmental delay. This disorder is caused by a loss-of-function mutation in the LYK5/STRADA gene, which encodes the STRADA protein, a pseudokinase that activates liver kinase B1 (LKB1) toward inhibition of the mechanistic target of rapamycin (mTOR) pathway, in response to low cellular energy levels. The LKB1-mTOR pathway is heavily involved in regulating cytoskeletal dynamics necessary for developmental processes in neurons, including the migration of neural progenitor cells. While STRADA loss has been well characterized in the context of excitatory cortical neuron development, its impact on inhibitory interneurons (INs), which likely contributes to its role in epilepsy, remains largely unexplored. This study investigates the role of STRADA in cortical IN development and lamination by comparing the expression of mature GABAergic INs, including major subtypes, and inhibitory neural progenitors in both mouse models and human tissue. Cortical INs originate in the ganglionic eminence (GE), which develops into mature subcortical regions (basal ganglia, thalamus). We compared expression across cortical and subcortical regions between wildtype (WT), heterozygous (Het) and STRADA knockout (KO) mouse tissue, and between human PMSE patient tissue (female, 7 months old) and age-matched human control tissue. Findings of this investigation will contribute to the development of targeted therapies for PMSE and related disorders.

P2.14 Inter-Rater Variability in a Method for Identifying Retinal Nerve Fiber Layer Axonal Bundles on Adaptive Optics Retinal Imaging in People with Multiple Sclerosis

Presenter: Prosun Das[1]
Mentor: Daniel Harrison, MD[1]
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Introduction: Retinal nerve fiber layer (RNFL) thinning measured by optical coherence tomography (OCT) are associated with higher relapse rates, contrast-enhancing MRI lesion formation, brain atrophy, and worsening of visual and physical disability in multiple sclerosis (MS). However, OCT can have distorted images of the retina due to the cornea and lens. By applying advanced optics (AO) to OCT, transverse resolution has been greatly increased. We have previously used AO-OCT to successfully measure loss of RNFL axonal bundles, but methodology for segmentation and counting are not yet well validated, which will be the focus of this study.

Methods: Two independent reviewers evaluated the AO images of 5 subjects, with up to 6 imaging fields in the retina for each subject. RNFL axonal bundles were individually counted by placing a separate Voxel of Interest for each bundle. Both raters then used an automatic segmentation tool in ITK-SNAP software to fill in the RNFL layer based on the brightness of the layer, which was then manually corrected. Inter-rater reliability metrics were then calculated, including inter-class correlation coefficient (ICC) for bundle counts and.

Results: Rater 1 annotated a median RNFL voxel count of 2,558,989 voxels (1,996,377, 3,464,575), and rater 2 annotated a voxel count of 2,422,711 voxels (1,929,930, 3,348,793). Rater 1 counted a median of 37 (33, 43) axonal bundles, and rater 2 counted 31 (29, 35). With two independent raters, the ICC for the RNFL volume was 0.972, with a 95% confidence interval of 0.93-0.988. The bundle count was 0.521, with 95% confidence interval of 0.119-0.761.

Conclusion: The methodology of RNFL bundle counting and segmentation with AO-OCT is novel and has shown some promise. There was a high ICC between the volumes of the RNFL by two independent raters, but bundle counts did not align as well. This discrepancy may be attributable to human error, and with a recount we expect the value to increase greatly. These early results show that this method is a viable one that will lead to tangible results once the data is fully processed.

P2.15 What Happens to Pain?: An Observational, Longitudinal Study in Patients with Aneurysmal Subarachnoid Hemorrhage Treated in Neurocritical Care Units (WHOL-PAIN)

Presenter: Ruchika Gadagkar[1]
Mentor: Nicholas Morris, MD[1,2,3]
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Long-term follow-up of patients with aneurysmal subarachnoid hemorrhage (SAH) suggests that SAH-related chronic pain is an important contributor to opioid use disorders and reductions in health-related quality of life. A gap exists in understanding how sudden-onset worst headache of life transforms into chronic pain. To address this gap, we performed a multicenter, observational, prospective, survey-based study of pain after SAH to characterize pain after SAH throughout the ICU stay and in outpatient follow-up. We included adult patients with primary aneurysmal and perimesenecephalic pattern SAH with a GCS of 15. We excluded patients with secondary SAH. We have enrolled 42 patients with SAH (mean (SD) age 49 (13) y, 81% women, median (IQR) Hunt-Hess 2 (2-3), median (IQR) modified Fisher score 3 (3-3)). Preliminary analyses suggest that headache is near-ubiquitous immediately after SAH (endorsed by 39/42 (92.9%) of patients post-bleed day (PBD) 0-4) and remains common in outpatient follow-up (endorsed by 10/23 (43.5%) at PBD 90-120). Extremity pain, in contrast, increased from admission to outpatient follow-up (5/42(11.9%) at PBD 0-4 to 7/24(29.2%) at PBD 90-120). While headache was the most bothersome pain location for 35/42 (88%) of patients on admission, 5/23 (22%) of patients identified another pain location as most bothersome at outpatient follow-up. Further characterization of pain and analgesic response may inform more targeted therapeutic approaches. Long-term treatment strategies focused solely on headache may be misdirected in a substantial portion of patients after SAH.

P2.16 Proton vs. Photon: Predictors of Cardiac and Pulmonary Toxicities in Locally Advanced Breast Cancer Patients

Presenter: Matthew Mathai[1]
Mentors: Melissa Vyfhuis, MD, PhD[1]; Austin Thompson, MD[1]
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Breast cancer is one of the most frequently diagnosed malignancies among women in the U.S. Patients with locally advanced breast cancer (LABC) often require comprehensive nodal irradiation (CNI), which increases their risk of radiation-associated cardiopulmonary toxicities. Proton therapy may mitigate these risks by reducing radiation exposure to organs at risk. Our objective was to compare the incidence of cardiopulmonary toxicities in LABC patients treated with proton versus photon radiation therapy (RT). We conducted a retrospective study of 943 LABC patients treated with CNI from March 1, 2016, to December 31, 2023. Differences in demographics, cancer characteristics, and treatments between RT modalities were analyzed using χ^2 or Mann-Whitney U tests. Binary logistic regression with
forward selection identified cardiopulmonary toxicity predictors. With a median follow-up of 26 months, 59% of patients received photon RT (N=557) and 41% received intensity-modulated proton therapy (IMPT) (N=386). IMPT patients were more likely to receive higher total RT doses (median: 60 Gy vs. 58 Gy; p<0.001), though baseline cardiopulmonary comorbidities were similar between groups. Patients treated with photon RT developed more new pulmonary conditions (9.9% vs. 5.4%; p=0.014), while new cardiac conditions were comparable (10.5% vs. 7.3%; p=0.106). On multivariate analysis, photon RT nearly doubled pulmonary toxicity risk (OR: 1.97, 95% CI: 1.15-3.39; p=0.014). Among LABC patients treated with CNI, proton therapy was associated with significantly fewer pulmonary toxicities compared to photon RT, despite higher total radiation doses.

P2.17 Radiomic Analysis of Perivascular Adipose Tissue Entropy Predicts Lung Cancer Malignancy: A Multi-Compartment CT Imaging Study

Presenter: Andrew Nguyen, MS[1,2]
Mentors: Kathryn Robinett, MD[1]; William H. Hsu, PhD[3]
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Current lung nodule malignancy determination requires invasive biopsy or positron emission tomography (PET) imaging. The primary purpose of this study is to develop and validate perivascular adipose tissue (PVAT) radiomic features for non-invasive lung cancer malignancy prediction using computed tomography (CT). We aim to demonstrate that quantitative analysis of PVAT, particularly its entropy, can serve as a reliable biomarker to differentiate benign from malignant lung nodules. This research seeks to address the limitations of current diagnostic approaches by providing a non-invasive, cost-effective, and readily available method for early and accurate malignancy assessment.

The objectives of this study are to: (1) establish an automated pipeline for extracting PVAT radiomic features from four anatomical regions (lung vessels, nodules, pulmonary veins, and arteries), (2) identify discriminative features such as tissue entropy that differentiate malignant from benign nodules, and (3) develop machine learning models for non-invasive malignancy prediction to improve lung cancer diagnosis.

P2.18 A Comparative Analysis of Decipher Genomic Classifier and ArteraAI Multi-Modal AI for Risk Stratification and Treatment Optimization in Non-Metastatic Prostate Cancer

Presenter: Olivia Jordan[1]
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Background and Objectives: Among malignancies affecting men, prostate cancer stands out not only for its high incidence but also for its complex clinical management. Traditional risk assessment uses tumor stage, PSA levels, and Gleason score. Recently, molecular and imaging-based tools like Decipher Genomic Classifier (GC) and Artera Multi-Modal AI (MMAI) have been introduced to improve prognostic accuracy for localized disease. Both are clinically validated and increasingly inform treatment strategies. Specifically, GC guides treatment intensification in unfavorable intermediate-risk (UIR) patients in the NRG GU010 trial, while MMAI has shown utility in predicting short-term androgen deprivation therapy (ST-ADT) sensitivity. Based on this framework, our study focuses on non-metastatic prostate cancer patients treated at the University of Maryland Medical Center who received both tests between May 2024 and June 2025. Our goals are to evaluate the correlation between GC and MMAI risk scores, analyze correlation differences between non-metastatic and oligometastatic disease, and assess variation within UIR patients compared to broader risk groups. We also compare MMAI's ST-ADT treatment recommendations with GC-based reference points employed in the GU010 trial.

Methods: GC scores were generated through RNA profiling. MMAI scores were derived from pathology images combined with clinical data. Statistical analyses included Pearson correlation, cross-tabulation, and diagnostic performance metrics.

Results: By December 2024, 76 patients showed moderate overall correlation between GC and MMAI scores, with stronger correlation in UIR patients. Risk groupings correlated significantly. When using GC as the reference, MMAI demonstrated high specificity but limited sensitivity for ST-ADT classification.

Conclusion: GC and MMAI offer distinct but complementary insights into prostate cancer risk and treatment decision-making.

P2.19 The Effect of Residing in a Food-Insecure Area on Locally Advanced Cancer Survival

Presenter: Lei Hugh Dominic Escobal[2]
Mentor: Melissa Vyfhuis, MD, PhD[1]
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Purpose: Food insecurity (FI) is associated with worse cancer outcomes, but mechanisms remain unclear. This study examined the impact of FI on overall survival (OS) in patients with locally advanced breast cancer (LABC) receiving comprehensive nodal irradiation (CNI) and explored differences in cancer characteristics, treatment, and adherence.

Methods: A retrospective analysis included 939 LABC patients treated with CNI from 2016–2023. Demographic, clinical, and treatment variables were compared using χ^2 and Mann-Whitney U tests. OS was evaluated via Kaplan-Meier and multivariate Cox regression models.

Results: Sixty patients (6.4%) resided in food-insecure areas. FI patients were more likely to be Black, single, and have hypertension, diabetes, hyperlipidemia, higher BMI, smoking history, and poorer ECOG performance (all $p<0.05$). Cancer stage, receptor status, and treatment modalities did not differ. FI patients received higher radiation doses ($p<0.001$) and longer endocrine therapy ($p=0.013$). MVA revealed that endocrine therapy (HR=0.12, $p=0.045$) and longer duration (HR=0.96, $p<0.001$) were associated with improved OS, while diabetes (HR=2.96, $p=0.027$), new pulmonary conditions (HR=9.57, $p<0.001$), and FI (HR=5.52, $p=0.003$) predicted worse OS. Five-year OS was 74.9% for FI vs. 90.2% for non-FI residents ($p=0.005$).

Conclusion: LABC patients residing in food-insecure areas had a 5.5 times higher risk of mortality than those in food-secure areas, regardless of cancer characteristics or treatment modality. Traditional factors such as race, BMI, and comorbidities did not account for survival differences. Prospective studies are planned to determine whether interventions in improving food access can enhance survival in this population.

P2.20 Predictive Value of Early Heart Rate Trends for Respiratory Support De-Escalation in Pediatric Intensive Care Patients on High-Flow Nasal Cannula

Presenter: Alexander Dulla, MHA[1]
Mentor: Siddartha Dante, MD/MH[1]
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Despite advancements in noninvasive respiratory support, such as high-flow nasal cannula (HFNC), Pediatric Intensive Care Unit (PICU) admissions for respiratory illness continue to rise. This study evaluates whether HR trend over the first 6 hours of PICU admission can predict subsequent improvement in respiratory support. A retrospective chart review was conducted at an urban tertiary academic medical center. Patients aged 0-5 years old admitted to the PICU on HFNC between 2018 and 2023 for a primary respiratory indication were included. Demographics, albuterol administration, vital signs, and level of respiratory support were collected. The primary outcome was rapid de-escalation of respiratory support defined as at least 25% decrease in HFNC flow (l/kg/min) or transition from HFNC to either nasal cannula (NC) or room air (RA)] within 24 hours of admission. HR trend (Δbpm/hour) from PICU admission to 6 hours was calculated by trendline slope for each encounter. Among 609 eligible patients, 378 (62.1%) improved respiratory support level in 24 hours. Multivariate regression revealed independent associations between respiratory improvement and a more negative 6-hour HR slope (p = 0.013) and female sex (p = 0.023). Our preliminary model suggests that heart rate decline during the first 6 hours of PICU admission independently predicts subsequent reduction in respiratory support requirement for patients admitted on HFNC. With this, continuous HR monitoring may serve as a simple marker to identify patients likely to rapidly de-escalate, potentially helping individualize respiratory support care and streamline PICU resource utilization.

P3.02 Outcomes and Technique for Osteochondroma Excision in the Distal Tibiofibular

Presenter: Sourabh Vellala
Mentor: Joshua Abzug, MD[1]
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Solitary osteochondromas rarely require surgical excision; however, when present at the distal tibiofibular syndesmosis, a site where these benign tumors are uncommon, they can alter joint kinematics, cause deformity, and lead to pain. This study aimed to describe the treatment approaches and outcomes of patients with solitary osteochondromas involving the ankle. A retrospective chart review identified patients with osteochondromas at the distal tibiofibular syndesmosis, collecting demographic data, treatment modalities, and complications for simple statistical analysis. Three patients, two males and one female, were identified with osteochondromas arising from the distal tibia and involving the syndesmosis. The mean age was 16.34 years (SD: 2.53; range: 13.87–18.93), and the average interval from orthopedic evaluation to surgery was 40.66 days (SD: 43.00; range: 4–88). All patients presented with pain and underwent operative excision. In one case, adequate exposure required transection and reconstruction of the anterior inferior tibiofibular ligament (AiTFL). In the other two cases, an osteotomy of the distal tibia was performed to reflect the AiTFL, followed by osteotomy repair using sutures passed through drill holes. Osteochondromas in this region are exceedingly rare, and due to the close relationship with the AiTFL, surgeons should anticipate the need for either ligament reconstruction or osteotomy to ensure complete tumor excision while preserving ankle stability. Excellent outcomes with minimal complications can be achieved with appropriate surgical management of solitary osteochondromas about the distal tibiofibular syndesmosis.

P3.03 Investigating Use of IV Lidocaine in Perioperative Pain Control following Colorectal Surgery

Presenter: Rebecca S. Li, BS[1]
Mentor: Megan G. Anders, MD, MS[2]
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This study aimed to refine lidocaine infusion practices to reduce opioid consumption in adult patients following colorectal surgery. Opioid-sparing strategies are critical in colorectal surgery to reduce postoperative complications and enhance recovery. Intravenous lidocaine (IVL) has emerged as a potential adjunct for minimizing postoperative opioid use, but current literature provides conflicting evidence regarding IVL effectiveness. We conducted a retrospective cohort study of patients who underwent elective colorectal surgery at UMMC between March 2020 and May 2025. Patients were grouped by IVL duration: no IVL, <12 hours, and ≥12 hours. Postoperative opioid use was measured as total morphine milligram equivalents (MMEs) administered within the first 24 or 48 hours postoperatively. Linear regression models adjusted for age, preoperative opioid use, and procedure type. A total of 862 patients were included. 428 (49.3%) received no IVL, 214 (24.7%) received <12 hours IVL, and 226 (26.0%) received ≥12 hours IVL. The difference between ≥12 hours IVL and no IVL was not statistically significant (p=0.1182), but exceeded the 10 mg threshold for clinical relevance. Adjusted analysis showed a 21.9 mg reduction in the ≥12 hours IVL group compared to no IVL (95% CI: -42.4 to -1.3 mg; p=0.037). Post hoc analysis indicated a minimum detectable difference of 23.2 mg MME at 80% power. Though this study may have been underpowered to detect smaller but clinically meaningful differences, these findings still support incorporating prolonged IVL into multimodal analgesia protocols for colorectal surgery, though larger studies are needed.

P3.04 Determination of the Rate and Accuracy of Hypertensive Disorder Diagnosis in Pregnant People with Opioid Use Disorder

Presenter: Ashwini Pugazhendhi[1]
Mentor: Katrina Mark, MD, FACOG[1]
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Hypertensive Disorders of Pregnancy (HDP) are among the most common complications during pregnancy and postpartum and can occur in up to 10% of pregnancies. HDPs can include chronic hypertension, gestational hypertension, preeclampsia and eclampsia, and are usually diagnosed during prenatal care. Opioid Use Disorder (OUD) can involve the use of heroin, other illicit opioids, or legally prescribed opioids that are diverted or misused. Opioid withdrawal during pregnancy can present with autonomic symptoms, such as hypertension, which may overlap with the clinical features of HDPs and complicate accurate diagnosis and treatment. Management for HDPs typically includes antihypertensives; however, patients experiencing acute opioid withdrawal can benefit from both symptom-based therapy (ie., antihypertensives) and OUD pharmacological therapy. This study aims to assess the accuracy of hypertensive disorder diagnoses in pregnant individuals with OUD. This study will retrospectively determine the frequency, accuracy of diagnosis, and treatment practices for hypertension in pregnant patients with OUD. We will use chart reviews of pregnant patients with an OUD diagnosis admitted to the University of Maryland Medical Center from 2018 to 2024. We hypothesize that individuals with OUD may be more frequently diagnosed with HDPs, which may represent a potential miscategorization of opioid withdrawal symptoms. The findings of this study aim to improve clinical differentiation between HDPs and opioid withdrawal and can help inform future large-scale studies aimed at developing clinical guidelines for diagnosing and treating hypertension in pregnant patients with OUD.

P3.05 Establishing Normative Values for First Webspace Measurements of the Hand in the Pediatric Population

Presenter: Catherine May; Karli Funk
Mentor: Joshua Abzug, MD[1]
Other Co-Authors: Isaac Betaharon, BS[1]; Danielle Hogarth, MD[1]; Casey Codd, BA[1]
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Introduction: Congenital conditions and injuries of the hand are commonly observed in the pediatric population and often go unrecognized if functional limitations are not present. Conditions such as thumb hypoplasia and thumb contractures may be optimally treated prior to the development of functional limitations. The purpose of this study is to establish normal values regarding measurements of the hand's first webspace in the pediatric and adolescent populations.

Methods: A total of 479 hands were measured from 286 unique participants (150 male, 136 female; 1-18 years) recruited from a population of pediatric orthopaedic patients and their siblings. Measurements were taken of each hand of each patient, unless the child presented with a history of an injury to a particular limb and/or had a known congenital upper extremity condition, history of upper extremity surgery, brachial plexus birth palsy, or neurodevelopmental disorder. The measurements included the first webspace depth in centimeters, the first webspace angle in degrees, and the distance from the tip of the thumb to the proximal interphalangeal joint of the index finger in centimeters when the thumb was adducted. Simple statistical means and Pearson's R-squared values were determined using Microsoft Excel.

Results: Mean values of the first webspace measurements were established for ages 2 through 15 (mean age: 8.18 years; SD: 4.13 years), however, too few participants were ages 1 and 16 through 18 to establish mean values. A strong linear relationship was found between age and first webspace depth (R=0.96) as well as age and thumb-index finger PIP distance (R=0.97), indicating both measurements were dependent on age. Average values for first webspace depth ranged from 2.83 cm to 5.60 cm. A moderately strong positive correlation was found between age and first webspace angle (R=0.67) ranging from averages of 55 degrees abduction to 66.9 degrees abduction.

Conclusions: The first webspace depth and distance from the tip of the thumb to the index finger PIP joint increase proportionally with increasing age. First webspace angle showed a moderately strong positive correlation with increasing chronological age as a child develops. To our knowledge, no evidence-based normative values have previously been established throughout childhood for first webspace parameters in normal children. The normative values defined for the pediatric population in this study can be clinically utilized to determine abnormal thumb development, the presence of a first webspace contracture, and/or early identification of the presence of underlying congenital conditions.

P3.06 An Observational Study of Physiologic Changes During Prolonged Breath Holds in Bronchoscopic Lung Biopsies

Presenter: Lauren Colliver[1]
Mentor: Megan Anders, MD, MS[1]
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Image guided bronchoscopic biopsy is a minimally invasive technique performed under general anesthesia to diagnose suspicious lung nodules. Partnership between anesthesia providers and interventional pulmonologists can maximize procedure success. Ventilation protocols that optimize real-time cone beam CT (CBCT) and reduce atelectasis improve diagnostic accuracy of biopsies. A clinical practice guideline modeled after the Lung Navigation Ventilation Protocol (LNVP) published by Bhadra et al. (2022) was introduced at the University of Maryland Medical Center. The clinical practice guideline and LNVP use high positive end expiratory pressure (PEEP) and prolonged apneic breath holds to reduce atelectasis and minimize lesion movement during biopsy. There has been minimal research conducted on the physiologic parameters during prolonged breath holds. We collected intraprocedural data (heart rate, blood pressure, end tidal carbon dioxide, and oxygen saturation) before, during, and after prolonged breath holds to determine the physiologic effects. We also documented smoking status and intraprocedural vasopressor administration to determine the influence of these factors on the observed physiologic parameters. To date, 12 participants have been enrolled. Preliminary results suggest a positive correlation between the length of the breath hold and the end tidal CO_2 immediately after the breath hold. Previous or current smokers appear to have higher end tidal CO_2 after breath holds. Blood pressure increases during and after the breath holds, likely due to the administration of vasopressors before and during breath holds. This study aims to improve understanding of physiologic changes during prolonged breath holds to standardize techniques and protocols for bronchoscopic lung biopsy.

P3.07 Retrospective Chart Review of Infant & Mother Dyads seen in Special Parent and Infant Care and Enrichment (SPICE) Clinic

Presenter: Nikki Emamian[1]
Mentor: Matthew Grant, MD[1]
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The risk of maternal-to-child-transmission (MTCT) of HIV varies based on factors such as timing of maternal diagnosis, access to care, treatment adherence, and sustained viral suppression. At the University of Maryland School of Medicine, pregnant individuals living with HIV are enrolled in case management services through the Special Parent and Infant Enrichment (SPICE) clinic, providing support to enhance adherence, education, advocacy, and emotional support throughout pregnancy and postpartum. We hypothesize that support from the case management program through the SPICE Clinic during pregnancy will impact their viral suppression, and therefore lower risk of MTCT. Secondarily, we anticipate that prenatal case management through the SPICE clinic improves infant appointment adherence as compared to infants born to mothers who are first enrolled in the case management program during the postpartum stage. A retrospective cohort analysis of infant-mother dyads seen at the SPICE Clinic at University of Maryland School of Medicine between January 2015 and December 2024 is currently underway, with an anticipated total enrollment of 350 dyads (total 700 persons). Thus far, encounters have been reviewed between January 2021 to December 2024. Planned next steps include additional data collection, cleaning, and analysis including both descriptive analysis and chi-squared analyses to determine if enrollment during the prenatal period differentially affects maternal viral suppression, and therefore risk stratification in the newborn infant, as well as appointment adherence in the newborn period.

P3.08 Characterizing the Prevalence of Nephrolithiasis in ADPKD and its Association with Decline in Renal Function

Presenter: Diego Mora[1]
Mentor: Stephen Seliger, MD, MS[1]
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Background: Autosomal Dominant Polycystic Kidney Disease (ADPKD) is the most common monogenic cause of end-stage kidney disease, characterized by diffuse bilateral renal cysts resulting from mutations in the PKD1/2 genes. Recent literature suggests history of nephrolithiasis as a potential predictor for increased rate of decline in eGFR, suggesting accelerated disease progression. This study investigated the prevalence of nephrolithiasis in adult patients with ADPKD utilizing the University of Maryland Mid-Atlantic ADPKD cohort.

Methods: Using a combination of medical records, self-reported history of kidney stones, and MRI imaging performed upon patient recruitment, participants were classified as "stone-formers" (SFs) or "non-stone-formers" (NSFs). SFs were subclassified as "symptomatic stone-formers" (SSFs) and "asymptomatic stone formers" (ASFs). Regression analyses were applied to determine whether history of stone formation was associated with a significantly different rate of disease progression as measured by decline in eGFR and increased height-adjusted total kidney volume (htTKV).

Results: Of 317 patients, 228 (71.9%) NSFs, 32 (10.1%) ASFs, and 49 (15.5%) SSFs were identified. When compared to NSFs, SFs were not associated with a significantly different rate of change in eGFR (β = -1.80, 95% CI: -6.20 to 2.61, p = 0.421) or htTKV (β = -3.47, 95% CI: -113.1 to 106.1, p = 0.950) on linear regression.

Conclusion: A history of nephrolithiasis was not associated with significant differences in eGFR or htTKV in this cohort, suggesting that nephrolithiasis may not be an accurate predictor of accelerated CKD progression in persons with ADPKD.

P3.09 Investigating the Relationship Between Cortical Inhibition and Cognitive Control in Schizophrenia Using TMS-Measured SICI and Stop-Signal Task

Presenter: Eugene Bosworth[1]
Mentor: Stephanie Hare, PhD[1]
Other Co-Authors: Robert Buchanan, MD[1]; James Gold, PhD[1]
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Background: Schizophrenia (Sz) is associated with cognitive deficits in working memory, attention, and executive function, which are thought to arise from disruptions in excitatory/inhibitory (E/I) neural balance. Paired-pulse transcranial magnetic stimulation (TMS) is a non-invasive method for assessing cortical inhibition through short-interval intracortical inhibition (SICI). Reduced SICI has been linked to Sz, but its relationship to cognitive control deficits remains unclear.

Objective: This study investigates the relationship between SICI and inhibitory control, measured via the Stop-Signal Task (SST), in individuals with Sz compared to healthy controls (HCs). The goal is to evaluate the potential of SICI as a biomarker for cognitive dysfunction in Sz.

Methods: Single- and paired-pulse TMS was applied over the left motor cortex to elicit motor-evoked potentials (MEPs) in the right first dorsal interosseous (FDI) muscle. SICI was calculated as the ratio of MEP amplitude in paired-pulse versus single-pulse trials, with lower ratios indicating greater inhibition. Inhibitory control was assessed using the SST, with Stop-Signal Reaction Time (SSRT) as the primary outcome.

Results: Preliminary data have been collected from 12 participants with Sz and 7 HCs. Early analyses focus on group comparisons in SSRT and their potential relationship to SICI values. Recruitment is ongoing, with final targets of 46 Sz participants and 24 HCs.

Conclusions: While early findings are promising, additional participants are needed to enable robust statistical comparisons. Preliminary technical challenges in EMG signal quality and amplifier reliability have been resolved, ensuring data integrity for future analyses. This study may help validate SICI as a functional biomarker of cognitive control deficits in Sz and guide the development of E/I-targeted interventions.

P3.10 Lupus, Bipolar, or Cancer? A Case Report

Presenter: Nicholas Angelino[1]
Mentor: Anthony Harris, MD[1]
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48-year-old female with a past medical history of lupus, rheumatoid arthritis, hypertension, and tobacco use who presented due to altered mental status (AMS). The patient was having flight of ideas, distractibility, pressured speaking, visual and auditory hallucinations, and involvement in risky behaviors. The patient had two prior hospitalizations in the prior 3 months where she was noted to have similar AMS. The first hospitalization the AMS was attributed to hyponatremia to 122, and the second admission she was given the diagnosis of bipolar 1 disorder.

On admission at UMMC, the patient received an extensive workup for her AMS. She had a normal sodium level, a normal CSF study, normal brain MRI, a whole CT of chest/abdomen/pelvis that showed no abnormalities, and an autoimmune encephalitis CSF send-out panel that was negative.

The case was challenging because the diagnosis of bipolar 1 disorder is a diagnosis of exclusion: medical causes of mania need to be ruled out. Our psychiatric consultant colleagues were hesitant to diagnose primary onset bipolar 1 disorder in a 48-year-old, as this patient had no previous history of depression or mania. The diagnosis of lupus psychosis is a diagnosis of exclusion as well, and without evidence of any inflammation on CSF studies, our rheumatology consultant colleagues were also hesitant to diagnose lupus psychosis.

This patient was treated with anti-psychotics that did not help. She was discharged from the hospital after a 3 week stay without an answer or improvement in her symptoms.

P3.11 The Effect of Social Vulnerability on Selection and Post Liver Transplant Outcomes in Early Liver Transplant for Alcohol-Related Liver Disease

Presenter: Cameron Amini[1]
Mentor: Kirti Shetty, MD
Other Co-Authors: Brian Tran, BS[2]; Michael Chang, MD[1]; Nehna Abdul Majeed, MD[1]; Cerise Kleb, MD[1]; Prem Minchu, MD[1]; Neha Jakhete, MD[1]
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Higher Social Vulnerability Index (SVI) has been linked to reduced liver transplant (LT) access due to socioeconomic barriers and perceived risk of post transplant treatment non-adherence. Previous studies have shown early liver transplantation (ELT) improves survival in alcohol related liver disease (ALD). This study aimed to evaluate whether SVI affected early LT candidacy and post-LT outcomes. Adult patients with ALD who had less than six months of abstinence and were evaluated for liver transplantation between 2019 and 2024 were included. Demographics, SVI quartiles, LT decisions, and post-LT outcomes were compared. Of 252 evaluated patients, 126 were accepted for LT. Results showed that black patients were disproportionately represented in the highest SVI quartile (p <0.01). LT acceptance rates did not differ across SVI groups. Among transplanted patients, SVI was not associated with one-year mortality or three-year alcohol relapse. Therefore it was seen that increased SVI did not negatively impact ELT access or outcomes, and high SVI should continue to not preclude timely LT consideration for eligible ALD patients.

P3.12 Tobacco Use Treatment Among People with a Mental Health Condition in an Underserved Community

Presenter: Freddy Stuart
Mentor: Janaki Deepak, MBBS, FACP[1]
Other Co-Authors: Ryan Lashgari; Julia Melamed, MSN, RN[1]
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Smoking remains the leading cause of preventable death in the U.S., yet only 8.8% of adults who wanted to quit smoking in 2022 were successful. Although overall tobacco use has declined, tobacco dependence has become more concentrated in marginalized populations, particularly those with mental health conditions (MHCs). These individuals use tobacco at higher rates and experience lower tobacco use treatment (TUT) success compared with the general population. The University of Maryland Medical Center Nicotine Health Clinic (UMMC NHC) examined patient visits to identify trends in TUT outcomes among individuals with at least one MHC.

The retrospective chart review included all UMMC NHC patients seen between August 2019 and October 2024 who had at least one MHC and currently use nicotine products. Patients were either referred to NHC or are established patients with pulmonology-related disorders who are managed for tobacco use disorder (TUD). Initial assessments included demographics, tobacco history, Fagerström Test for Nicotine Dependence (FTND), triggers, withdrawal symptoms, prior TUT attempts, and readiness to change (measured by Action Stages).

The NHC employs an opt-out, patient-centered approach combining medication management and counseling. Treatment typically begins with 1-2 controller agents and a rescue medication, followed by regular contact with a Certified Tobacco Treatment Specialist (CTTS). Outreach occurs two to three times monthly initially, tapering to monthly or as needed with automated engagement through TelASK. A chart review collected data on demographics, TUT medications, compliance, FTND, provider encounters, CTTS interactions, and tobacco use status. From August 2019 to October 2024, UMMC NHC treated 378 patients with at least 1 MHC. The cohort was 53.97% female and 46.03% male. By race, 78.6% identified as Black, 19.6% White, 1.06% Other, and 0.79% Asian. Patients averaged 2.63 encounters with UMMC NHC providers and 12.60 CTTS interactions. FTND scores were high in 23.81% (n=90/378), medium in 39.15% (n=149/378), and low in 31.48% (n=119/378). Among patients who were diagnosed with at least 1 MHC, 17.20% (65/378) quit, 30.95% (117/378) cut down, 22.49% (85/378) were inactive, 23.28% (88/378) had no change, and 6.08% (23/378) relapsed.

UMMC NHC's integrated, patient-centered program addresses both the physical and psychological dependence of nicotine. Through collaboration with the MTC Pulmonary Clinic, providers deliver comprehensive lung health evaluations while simultaneously managing tobacco use disorder. Recognizing that not all patients are ready to quit, the clinic uses an "opt-out" medication management strategy with proactive outreach to address barriers to adherence.

The results from this chart review indicate that patients with MHC achieved lower rates of TUT success, defined as quitting or cutting down, with 17% quitting and 31% cutting down compared with 25.45% and 44.44% in the clinic's general population. These findings align with studies showing that people with MHCs and TUD may have more difficulty with TUT. Further research is warranted to ensure that this population receives evidence-based TUT, and their care teams should be educated on best practices to improve outcomes.

P3.13 Strategic Methods for Analyzing and Reducing Treatment Costs and Avoidable Resource Expenditure: the SMARTCare Study

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Potentially avoidable utilization remains a major source of cost and inefficiency in U.S. health care. Readmissions, unplanned emergency visits, and duplicative testing often result from preventable gaps in discharge communication and follow-up coordination. The **SMARTCARE (Strategic Methods for Analyzing and Reducing Treatment Costs and Avoidable Resource Expenditure)** study aims to identify and mitigate these inefficiencies through a multidisciplinary, human-centered quality-improvement framework spanning both the Otolaryngology and Pulmonary services at the University of Maryland Medical Center. SMARTCARE employs a mixed-methods design combining retrospective review of clinical and administrative data with patient and provider surveys evaluating perceptions of post-discharge care, symptom management, and access barriers. Eligibility criteria and survey instruments were developed for both ENT and Pulmonary arms to allow cross-service comparison of behavioral and operational drivers of resource use. Data are being analyzed to identify high-impact failure points—such as medication errors, unclear discharge instructions, and delayed follow-up—that predict preventable readmissions. Concurrently, iterative design sessions are generating prototype interventions targeting these issues, including standardized discharge checklists, structured early follow-up outreach, and feedback-driven provider education. This study demonstrates the feasibility of integrating data analytics, behavioral-science methods, and clinician-driven innovation to reduce avoidable utilization, improve patient experience, and enhance value-based care across diverse clinical domains.

P3.14 Evaluating Analgesic Requirements Between Nerve-Directed Techniques and Neuroma Excision with Bury-in-Muscle for Painful Neuroma Management

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Introduction: Nerve-directed surgical techniques, including targeted muscle reinnervation (TMR) and regenerative peripheral nerve interfaces (RPNI), aim to reduce painful neuroma formation. However, direct comparisons with traditional neuroma excision with bury-in-muscle (BIM) remain limited. This multi-institutional study aims to compare postoperative analgesic prescription patterns and complication rates following TMR, RPNI, and BIM for the management of painful neuromas.

Methods: Adults (≥18 years) who underwent TMR, RPNI, or BIM for the management of painful neuromas between January 1, 2016, and July 1, 2025, were identified using the TriNetX Global Network. Patients were stratified by opioid and non-opioid analgesic use across acute (0–30d), subacute (31–90d), and chronic (91–180d) intervals. Measured postoperative outcomes included complication, reoperation, and neuroma recurrence rates. Propensity score matching (PSM) (1:1, caliper >1.0) adjusted for demographics and baseline analgesic use. Effect sizes were estimated using risk differences (RD) and risk ratios (RR) with 95% confidence intervals (CI). Standardized mean differences assessed covariate balance between groups. Categorical variables were compared using the Chi square test. Significance was set at $p < 0.05$.

Results: Of 1,536 patients with painful neuromas, 247 underwent TMR, 285 underwent RPNI, and 1,004 underwent BIM. Following PSM, no consistent differences were observed in analgesic prescription at all postoperative intervals. Compared to BIM, RPNI patients experienced greater acute wound complications [RD of 6.81% (95% CI: 2.62% to 11.0%), $p < 0.01$]. TMR demonstrated lower one-year reoperation rates compared to RPNI (RR = 0.42, $p < 0.01$) and lower one-year neuroma recurrence rates compared to RPNI (RR = 0.23, $p < 0.001$) and BIM (RR = 0.19, $p < 0.001$).

Conclusions: Nerve-directed techniques did not consistently reduce postoperative analgesic requirements compared to traditional BIM. RPNI showed increased early postoperative challenges, while TMR demonstrated improved long-term surgical durability. These findings challenge the prevailing assumption that nerve-directed techniques offer consistent superior pain control and clinical efficacy, highlighting the need for prospective, comparative studies to clarify optimal procedure selection for painful neuroma management.

P3.15 AI-Based Motion Tracking to Evaluate Intraoperative Technique Differences Between Junior and Senior Cataract Surgeons

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Cataract surgery requires precise instrument control to ensure optimal patient outcomes. Traditional surgical skill evaluation relies on assessment rubrics or measures such as operative time and complication rates, lacking objective metrics to assess intraoperative technique. This study utilizes artificial intelligence (AI) motion-tracking to objectively quantify differences in surgical technique between junior and senior surgeons. De-identified one-minute retrospective video segments of cataract surgeries performed by PGY-3 and PGY-4 residents were analyzed, focusing on the irrigation and aspiration (I/A) step. Using SAMURAI AI software, bounding box coordinates of the I/A instrument's tip and base were tracked to generate quantitative measures of movement and total instrument displacement in pixels. AI analysis determined an average movement of 13164.6 pixels in PGY-3 videos and 21816.5 pixels in PGY-4 videos. A two-sample t-test assuming unequal variances ($\alpha = 0.05$), yielded a p-value of 4.3×10^{-6}, demonstrating a statistically significant difference in movement between junior and and senior ophthalmologic surgeons. Furthermore, PGY-3's had an average of 15.4 stoppages, and PGY-4's had an average of 14.9 stoppages, which was not statistically significant. Total seconds of stoppage was 35.9 seconds for PGY-3's and 21.5 seconds for PGY-4's, which was statistically significant with a p-value of 6.133×10^{-8}. Average stop duration for PGY-3's was 2.4 seconds and 1.4 seconds for PGY-4's, which was statistically significant with a p-value of 1.1×10^{-4}. This study lays the groundwork for AI-driven quantification of surgical skills to enhance training and provide objective evaluation.

P3.16 Evaluating the Efficacy of T-Regulatory Cell Specific Interleukin-2 Microparticles for the Treatment of Ocular Graft versus Host Disease in a Mouse Model

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Ocular graft-versus-host disease (oGVHD) affects ~50% of allogeneic stem cell transplant recipients when the donor immune cells attack the host's eye tissue, resulting in debilitating chronic complications. In recent years, Regulatory T cells (Tregs) have been widely investigated for their role in suppressing autoimmune responses. Interleukin-2 (IL-2) is critical for Treg-cell development, expansion, and activity. The goal of this study is to evaluate the efficacy of IL-2 microparticles for the treatment of oGVHD in a murine model. All mice underwent total body irradiation followed by repletion with bone marrow +/- splenocyte transplants, and bilateral subconjunctival injections every two weeks for a total of three treatments. The treatment group (n=5) received IL-2 microparticles and rapamycin. To preferentially activate Treg cells and avoid effector T-cell stimulation, the IL-2 microparticles were conjugated with F5111, an antibody targeting CD25+ proteins highly expressed on Tregs. The sham group (n=5) received blank microparticles and rapamycin, the diseased control group (n=5) received sucrose, and the healthy control group (n=5) received sucrose. The mice were monitored weekly for phenotypic changes consistent with disease progression to determine ocular and systemic GvHD severity scores. The treatment group consistently exhibited a slower progression of disease and lower systemic GVHD and ocular GVHD severity score compared to the sham and diseased control group; however, statistically significant results supporting this are not available. On day 47, the mice were sacrificed, and the ocular surface tissue was collected to evaluate lymphocyte infiltration with immunohistochemistry and quantify gene expression with RT-qPCR.

P3.17 Utilizing Tear Cytokine Changes to Determine the effect of Systemic Therapy on the Eyes in Patients with Ocular GVHD: The Impact of JAK Inhibition

Presenters: Victoria Carter; Luxmi Mathivannan
Mentor: Sarah Brem Sunshine, MD[1]
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Graft-versus-host disease (GVHD) is a severe complication following hematopoietic stem cell transplantation (HSCT). Among patients who develop GVHD, up to 60% also suffer from ocular GVHD (oGVHD). This is a form of chronic GVHD that occurs when the HSCT donor's cells attack the recipient's eye tissues, leading to debilitating ocular surface disease from inflammation and resulting in corneal damage. While several therapies have recently received FDA approval for the treatment of chronic GVHD, their ocular impact remains unclear. This study explores whether Janus kinase (JAK) inhibitors like Ruxolitinib can effectively target oGVHD by modulating cytokine-driven inflammation. Tear samples (n=40) were collected from 28 patients classified into four groups: [1] HSCT recipients with oGVHD who were on JAK inhibitors (n=9), [2] HSCT recipients with oGVHD who were not on JAK inhibitors (n=16), [3] HSCT recipients without oGVHD (n=9), and [4] No HSCT controls (n=6). The proteomic analysis software OLINK was used to measure 45 inflammatory proteins. Statistical comparisons were then conducted using t-tests in R. 22 cytokines exhibited statistically significant differences with respect to both oGVHD and JAK treatment status. Cytokine expression was found to increase significantly between the controls and the definite oGVHD groups in AREG, CD80, CXCL1, FASLG, GZMB, IL1A, IL1RN, IL4R, KRT18, LIF, TNFRSF4, TNFRSF9, TNFSF14, and TREM1. Conversely, cytokine expression was found to decrease significantly between the controls and the definite oGVHD groups in IL17D and IL20. These results support our assertion that patients' tears can be used to show an effect on the ocular surface and serve as a potential future biomarker for therapeutic efficacy both in the eyes and systemically.

P3.18 Predictors of PROMIS Pain Interference After Arthroscopic Partial Meniscectomy

Presenter: Caitlin Murphy
Mentor: Jonathan D. Packer, MD[1]
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Relieving pain and improving function are key goals of arthroscopic partial meniscectomy (APM). Patient-Reported Outcomes Measurement Information System Pain Interference (PROMIS PI) measures how pain impacts patients' daily lives. The purpose of this study was to identify predictors of 2-year PROMIS PI and improvement following APM. We hypothesized that obesity, cartilage damage, and preoperative narcotic use would be associated with worse PROMIS PI 2 years after APM. Participants undergoing APM were prospectively enrolled in an orthopaedic registry and were included after completing baseline and 2-year postoperative surveys. Patient demographics, injury details, operative details, and multiple Patient-Reported Outcomes (PROs) were collected. Statistical analysis was performed to assess factors associated with and predictive of 2-year PROMIS PI or improvement. 118/171 patients (69%) completed 2-year PROs and were included for analysis. No preoperative narcotic use (p=.002) and no prior ipsilateral surgery (p=.017) were associated with better PROMIS PI at 2 years, while isolated medial APM (p=.001, p<.001) and no contralateral compartment damage (p=.005, p=.017) were associated with better 2-year PROMIS PI and greater 2-year improvement in PROMIS PI. When assessing PROs relationships, better 2-year PROMIS PI scores were associated with better baseline PRO scores across multiple domains. On multivariable regression, APM in both compartments and obesity predicted worse 2-year PROMIS PI and less 2-year improvement in PROMIS PI. Understanding factors associated with persistent pain after APM may aid surgeons to better counsel patients and manage expectations.

P3.19 Predictors of 2-year Functional Outcomes in Arthroscopic Partial Meniscectomy

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Mentor: Jonathan Packer, MD[1]
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Arthroscopic partial meniscectomy (APM) has been the gold standard method to treat meniscal tears that are not amenable to repair and unresponsive to non-operative management. Patients may experience variable functional recovery and patient-reported outcomes (PROs) have become key indicators of patient postoperative success. With primary goals of improvement in function and pain, there is a need to develop predictors of who will benefit the most from this procedure and identify factors associated with worse functional outcomes. This study aimed to identify factors associated with and predictive of two-year function and improvement in function as measured by Patient-Reported Outcome Measurement Information System (PROMIS) Physical Function (PF) and International Knee Documentation Committee Subjective Knee Evaluation Form (IKDC) after APM. We hypothesized that smoking status, cartilage damage, and obesity will predict worse 2-year functional outcomes following APM. Patients undergoing APM from June 2015 to September 2018 were identified from a prospectively enrolled orthopaedic registry. PROs were assessed at baseline and 2 years postoperatively including six domains from PROMIS, IKDC, numeric pain scales (NPS), Tegner Activity Scale (TAS), and the Marx Activity Rating Scale of the lower extremity (MARS LE). Multivariable regression analysis identified independent predictors of 2-year PROMIS PF and IKDC outcomes. Absence of cartilage damage in the contralateral compartment, higher baseline MARS LE score, and no preoperative narcotic use predicted of better 2-year PROMIS PF and IKDC scores following APM. These findings can help surgeons to refine patient selection, optimize preoperative counseling, and guide expectations for functional outcomes in individuals undergoing APM.

P3.20 Predictors of Physical Function 2 Years After Total Shoulder Arthroplasty

Presenter: Jalen Tom, BS[1]
Mentor: Sean Meredith, MD[1]
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The incidence of total shoulder arthroplasty (TSA), including anatomic (ATSA) and reverse (RTSA) techniques, has risen substantially in recent years and is expected to continue growing. As this surgical volume grows, it is critical to identify predictors of long-term outcomes. The purpose of this study was to evaluate predictors of patient-reported outcomes two years after TSA. We hypothesized that preoperative opioid use, prior ipsilateral surgery, and RTSA would be associated with inferior outcomes. Patients undergoing TSA between 2015 and 2022 were prospectively enrolled in an institutional registry. Demographics and clinical history were collected at baseline. Patient-reported outcomes (PROs) including PROMIS Physical Function (PF), PROMIS Pain Interference (PI), and American Shoulder and Elbow Surgeons (ASES) scores were recorded preoperatively and at two years. Correlation and multivariate regression analyses identified associations and independent predictors of two-year outcomes. Of 189 eligible patients, 154 (81.5%) completed two-year follow-up (100 RTSA, 54 ATSA). ATSA predicted greater 2-year ASES and improvement in ASES compared with RTSA. Female sex, higher BMI, and preoperative opioid use independently predicted worse PROMIS PF, while preoperative opioid use and higher comorbidity burden predicted lower ASES. Prior ipsilateral shoulder surgery predicted less PROMIS PF improvement. Baseline function, pain, and psychosocial status were strongly correlated with two-year outcomes. ATSA patients demonstrated greater outcome and improvement in ASES at two years compared with RTSA. Female sex, higher BMI, preoperative opioid use, and prior surgery on the same shoulder independently predicted worse function. These findings highlight the importance of individualized preoperative counseling and risk stratification.

Thoracic decompression is indicated for myelopathy, trauma, tumor, and infection, but postoperative neurological decline remains a concern. This study examined the incidence, recovery, and risk factors for new neurological deficits after thoracic decompression. A retrospective review of 258 patients who underwent thoracic decompression at a tertiary center (2016–2023) was performed. Indications included degenerative disease (55%), trauma (22%), tumor (14%), and infection (15%). Demographics, ASIA scores, and operative variables were analyzed. New postoperative deficits were tracked longitudinally, with resolution defined as full or meaningful clinical improvement. Mean age was 63 ± 14 years; 51% were female. Most procedures used a posterior approach (83%), instrumentation (84%), and fusion (69%). New neurological deficits occurred in 71 patients (28%), most generalized weakness (31%), focal motor loss (31%), neuropathic pain (12%), and bowel/bladder dysfunction (9%). Among those with follow-up, 78% recovered fully or partially within an average of 52 days. Persistent deficits were seen in 11 patients (4.3%). These patients more often had bowel/bladder dysfunction and less preoperative chronic back pain. Surgical approach, number of levels, and instrumentation were not associated with persistence. The overall complication rate was 14.3%, most commonly wound infection (6%) and dural tear (5%). New neurological deficits after thoracic decompression occur in about one-quarter of patients but are usually transient, resolving within two months. Persistent deficits are uncommon and may be predicted by preoperative bowel/bladder dysfunction and absence of chronic back pain. Thoracic decompression remains a neurologically safe procedure with appropriate risk counseling.

P3.22 When Outcomes Align: Retrograde Intramedullary Nailing and Lateral Locked Plating Yield Comparable Patient Results for Distal Femur Fracture Repair

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Surgical fixation is the standard of care for distal femur fracture repair, commonly performed using either retrograde intramedullary nailing (rIMN) or lateral locked plating (LLP). While prior studies have focused primarily on radiographic outcomes, patient-centered metrics might provide valuable insight into the overall quality and effectiveness of these techniques.

This retrospective cohort study aimed to evaluate the association between implant choice and patient-centered outcomes, specifically, hospital length of stay and reoperation due to surgical site infection, nonunion, or malunion.
This study included a total of 589 adult patients who underwent either rIMN (n=211) or LLP (n=378) for native or periprosthetic distal femur fractures (OTA/AO 33A1.1–33C3.3) between 2016 and 2024. Demographic data, injury characteristics, fracture classification, and post-surgical weight-bearing prescriptions were recorded. Exclusion criteria included OTA/AO 33B fractures, pathologic or bilateral fractures, patients with existing cephalomedullary nails, and fractures managed with dual construct fixation.

Length of stay was calculated as total hospital days from admission to discharge. Reoperations were defined as those for nonunion, malunion, or deep infection. Associations between fixation method and outcomes were analyzed using both unadjusted and adjusted models controlling for weight-bearing status, AO classification, presence of periprosthetic fracture, age, and sex. No statistically significant differences were observed in length of stay or one-year reoperation rates due to surgical site infection, nonunion, or malunion.

While multiple factors influence fixation selection, these findings suggest that duration of hospital stay and reoperation rates are comparable, regardless of implant choice, for distal femur fracture repair.

P3.23 Perioperative MRSA Antimicrobial Prophylaxis at UMMC: A QI Study

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Surgical site infections (SSIs) are a major cause of healthcare-associated infections (HAIs) and are linked to prolonged hospital stays, higher readmission rates, increased need for re-operation and mortality. Although evidence-based guidelines have been developed in an effort to lower the incidence of SSIs, adherence to these guidelines remains variable across the US despite these well-known consequences. This study evaluated whether surgical patients with methicillin-resistant *Staphylococcus aureus* (MRSA) received appropriate perioperative antimicrobial prophylaxis with vancomycin and cefazolin at the University of Maryland Medical Center (UMMC). Using deidentified retrospective data from January 2022 to June 2025, descriptive statistics and data visualization in R assessed antibiotic administration, timing, and trends in overall adherence to guidelines across surgical services. Results demonstrated that in the first 6 months of 2025, only 6.6% of all MRSA patients received both antimicrobials prior to a surgical procedure in which the combination prophylaxis was indicated. Specifically, 6.4% of non-cardiac surgery cases received the combination compared to 7.1% of cardiac surgery cases. On average, the antimicrobials were administered within the recommended 60-minute pre-incision window (mean of 13.6 minutes and 11.2 minutes for vancomycin and cefazolin respectively); however, 1.6% of vancomycin and 2.5% of cefazolin doses occurred after initial incision. Trends over the past three years demonstrated that delivery of the combination of medications was greatest in the year 2023 at 10%. These findings highlight significant opportunities for improvement in the adherence to antimicrobial prophylaxis guidelines by providers across UMMC surgical services.

P3.24 Microinstability Associated with Comparable Functional Outcomes but Greater Two-Year Whole-Body Pain after Hip Arthroscopy

Presenter: Tyler Przygocki, BS[1]
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Microinstability is a less common but increasingly recognized indication for hip arthroscopy. Outcomes in this population remain less well characterized, and it is unclear whether these patients achieve similar functional recovery and pain relief as those with more common indications. This study compared 2-year patient-reported outcomes (PROs) between patients undergoing hip arthroscopy for indications including microinstability versus femoroacetabular impingement (FAI) and/or labral tear. Patients who underwent hip arthroscopy for FAI, labral tear, and/or microinstability between October 2015 and May 2023 were identified from a prospective orthopaedic registry. Operative details were collected via retrospective chart review, and PROs were assessed at baseline and 2 years postoperatively, including six domains of the Patient-Reported Outcomes Measurement Information System (PROMIS), numeric pain scales (NPS), activity scales (Tegner and Marx), and a satisfaction questionnaire. Of 151 eligible patients, 111 (73.5%) completed 2-year PROs (100 FAI/labral tear, 11 microinstability). At 2 years, microinstability patients reported greater whole-body pain compared to the FAI/labral tear group (NPS, p=.046). Regression analysis identified microinstability (p=.014), preoperative opioid use (p=.001), and higher BMI (p=.006) as independent predictors of elevated 2-year whole-body pain. All other PROs, 2-year changes in PROs, and rates of achieving the Minimal Clinically Important Difference (MCID) were similar between groups (p>.05). In conclusion, hip arthroscopy provides meaningful functional improvements and high patient satisfaction in both FAI/labral tear and microinstability patients; however, microinstability is associated with greater residual whole-body pain, which may inform preoperative counseling and postoperative management for this population.