Second Annual

KAREN ZIER PHD

MEDICAL STUDENT RESEARCH DAY

Program and Abstracts

THURSDAY, MARCH 14, 2019 12:15 – 4PM

STERN AUDITORIUM AND ANNENBERG WEST LOBBY

Icahn School of Medicine at Mount Sinai

TABLE OF CONTENTS

— ***Introduction*** *(pg 5)*

— ***Program and Student Speakers*** *(pg 6–7)*

— ***List of Abstracts*** *(pg 8–40)*

— ***Abstracts*** *(pg 42–201)*

— ***Student Index*** *(pg 202–208)*

— ***Mentor Index*** *(pg 210–214)*

— ***Acknowledgements*** *(pg 216–218)*

INTRODUCTION

Second Annual Karen Zier, PhD
Medical Student Research Day
March 14, 2019

Welcome to the twenty-fourth annual Medical Student Research Day—renamed last year in honor of Karen Zier, PhD, founding director of the Medical Student Research Office. For the first time, we are going digital. Instead of printed posters, students will present on wide screen televisions.

The Icahn School of Medicine at Mount Sinai places great importance on rigorous, mentored scholarship in the education of future physicians. The Medical Student Research Office supports this mission through the Scholarship and Research (SCHOLaR) program, which provides students research curricular training, helps to identify a research mentor and support the development of a rigorous research project in their area of interest. Student scholarship is supported by several programs, including the: Summer Research Investigators Program, the Scholarly Year Program, the Tisch Summer Scholars Program, and PORTAL (Patient-Oriented Research, Training, and Leadership) which offers a combined MD/Masters of Science in Clinical Research. Additional support is available to students participating in research through the Global Health Summer Program, and the Center for Multicultural and Community Affairs (CMCA). The projects presented reflect the intellectual curiosity and critical thinking of our students and are a result of their hard work and the dedication of their faculty mentors.

The medical student research program flourishes because of the enthusiasm of our students, the support of school leadership, and the commitment of dedicated faculty mentors. We are grateful for the support of Dennis Charney, MD, Dean of the Icahn School of Medicine at Mount Sinai, and David Muller,MD, Dean for Medical Education. We would like to send a special thank you to the SCHOLaR Track Advisors for their strong support of medical student scholarship:

—Supinda Bunyavanich, MD
—Kevin Costa, PhD
—Darinka Gadikota-Klumpers, PhD
—Peter Gliatto, MD
—James Iatridis, PhD
—Steven Itzkowitz, MD
—Reena Karani, MD, MHPE
—Erika Landau, MD
—Ann-Gel Palermo, DrPH, MPH
—Perry Sheffield, MD

Thank you to Grace Oluoch and Shannon Bradford, Program Administrators for the Medical Student Research Office, for producing the abstract book, and planning this year's Medical Student Research Day. We would also like to extend a special thank you to Michelle Sainté, Associate Dean for Academic Administration, for her continued support and creativity.

Jenny J. Lin, MD, MPH
Director of SCHOLaR

Keith Sigel, MD, PhD
Director of PORTAL

Mary Rojas, PhD
Director of the Medical Student Research Office

PROGRAM

12:15 – 1:15 pm
Poster Presentations (Session A)
(ANNENBERG WEST LOBBY AND GUGGENHEIM PAVILION ATRIUM AREA)

Lunch (Group B)
(ANNENBERG WEST LOBBY)

1:25 – 2:25 pm
Poster Presentations (Session B)
(ANNENBERG WEST LOBBY AND GUGGENHEIM PAVILION ATRIUM AREA)

Lunch (Group A)
(ANNENBERG WEST LOBBY)

2:50 – 3: 05 pm
Welcome
(STERN AUDITORIUM)

Mary Rojas, PhD
Director of the Medical Student Research Office

Dennis S. Charney, MD
Anne and Joel Ehrenkranz Dean
Icahn School of Medicine at Mount Sinai
President for Academic Affairs
Mount Sinai Health System

David Muller, MD
Dean for Medical Education
Icahn School of Medicine at Mount Sinai

3:10 – 4:15 pm
Student Oral Presentations
(STERN AUDITORIUM)

Sarah MacLean, MS II
Mental Health of Children Held at a United States Immigration Detention Center
MENTORS: CRAIG KATZ, MD

Yash Maniar, MS II
Functional MRI Shows Altered Task-Induced Deactivation of the Default Mode Network in Glioma Patients
MENTOR: ANDREI HOLODNY, MD

Gabriela Hernandez Meza, MS II
Genome-Wide DNA Methylation Profiling Reveals Novel Candidate Epigenetic Gatekeepers in Hepatocarcinogenesis
MENTOR: AUGUSTO VILLANUEVA, MD, PHD

Susheian Kelly, MS IV
A Predictive Nomogram for Small Intestine Neuroendocrine Tumors (NETS)
MENTOR: CELIA DIVINO, MD

Best Poster Recipients and Closing Remarks

Jenny Lin, MD, MPH
Associate Director of SCHOLaR, Medical Student Research

SARAH MACLEAN
"Mental Health of Children Held at a United States Immigration Detention Center"
Abstract #79.
MENTOR: CRAIG KATZ, MD.

YASH MANIAR
"Functional Mri Shows Altered Task-Induced Deactivation of the Default Mode Network In Glioma Patients"
Abstract # 82.
MENTOR: ANDREI HOLODNY, MD.

GABRIELA HERNANDEZ MEZA
"Genome-Wide DNA Methylation Profiling Reveals Novel Candidate Epigenetic Gatekeepers In Hepatocarcinogenesis"
Abstract #53.
MENTOR: AUGUSTO VILLANUEVA, MD, PHD.

SUSHEIAN KELLY
"A Predictive Nomogram For Small Intestine Neuroendocrine Tumors (Nets)"
Abstract #60.
MENTOR: CELIA DIVINO, MD.

SECTION 1:

List of Abstracts

LIST OF ABSTRACTS

1	**IDENTIFYING PATIENT PRIORITIES FOR PRECONCEPTION AND PREGNANCY COUNSELING IN IBD.** Aiya Aboubakr[1], Alexa Riggs[2], Maria Teresa Mella[3], Marla Dubinsky[4]. [1]Medical Education, [2]Medicine, [3]Obstetrics, Gynecology, and Reproductive Science, [4]Pediatrics. [1,2,3,4]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: MARLA DUBINSKY, MD.**
2	**INCREASED RISK OF GLOMERULAR DYSFUNCTION IN CHRONIC MYELOID LEUKEMIA PATIENTS USING DASATINIB.** Benjamin Adegbite[1], Victoria Gutgarts[2], Alecia Muwonge[3], Kirk Campbell[3], Ellin Berman[2], Edgar Jaimes[2], Evren Azeloglu[3]. [1]Medical Education, [2,3]Medicine. [1,3]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Memorial Sloan Kettering Cancer Center NY, NY. **MENTOR: EVREN AZELOGLU, PHD.**
3	**VALIDITY OF A NEW MEASURE OF RESILIENCY PROMOTING BEHAVIORS IN MEDICAL STUDENTS FOLLOWING JAPAN'S 3/11 DISASTER.** Daniel Afonin[1], Ana Rodriguez[1], Yuzo Takeguchi[2], Rie Sakamoto[2], Hiroki Ando[2], Tenshin Otsuka[2], Tomoyuki Jimbo[2], Satoshi Waguri[3], Kanako Taku[4], Craig Katz[5], Robert Yanagisawa[6]. [1,2]Medical Education, [5]Psychiatry. [1,5,6]Icahn School of Medicine at Mount Sinai, New York, NY, [2,3]Fukushima Medical University, Fukushima, Japan, [4]Oakland University, Rochester, MI, USA. **MENTORS: CRAIG KATZ, MD, ROBERT YANAGISAWA, MD.**
4	**BILIRUBIN AS A PREDICTOR FOR PERFORATED APPENDICITIS.** Alexandra Agathis[1], Jeffrey Aalberg[2], Celia Divino[2]. [1]Medical Education, [2]Surgery. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: CELIA DIVINO, MD.**
5	**OPTIMIZING TREATMENT OF DISTAL RADIUS FRACTURES: EFFECTS OF VOLAR TILT AND PLATE POSITION ON FLEXOR POLLICIS LONGUS TENDON CONTACT FORCE.** Amy Ahn[1], Matthew Gluck[2], Josh McGough[2], Michael Hausman[2]. [1]Medical Education, [2]Orthopaedics. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: MICHAEL HAUSMAN, MD.**

LIST OF ABSTRACTS

6	**CORRELATION BETWEEN NEUROLOGIC CHALLENGE TASK PERFORMANCE AND LESION LOCALIZATION OF SUB-THRESHOLD LESIONS IN MULTIPLE SCLEROSIS PATIENTS WITH EXPANDED DISABILITY STATUS SCORE OF 0.** Ali Antoine[1], James Sumowski[2], Stephen Krieger[2]. [1]Medical Education, [2]Neurology. [1,2]Icahn School of Medicine at Mount Sinai, New York, NY. **MENTORS: JAMES SUMOWSKI, PHD, STEPHEN KRIEGER, MD.**
7	**THEATER AND MEDICINE: INCREASING EMPATHY IN MEDICAL STUDENTS.** Melanie Arnold[1], Erika Landau[2]. [1]Medical Education, [2]Pediatrics. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: ERIKA LANDAU, MD.**
8	**THE EFFECTS OF COPING AND ANXIETY ON PATIENTS UNDERGOING BENIGN INTRACRANIAL WTUMOR RESECTION.** Annie Arrighi-Allisan[1], Raj Shrivastava[2]. [1]Medical Education, [2]Neurosurgery. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: RAJ SHRIVASTAVA, MD**
9	**THE EFFECT OF IMMIGRATION STATUS ON THE SEVERITY OF PTSD SYMPTOMS AMONG LATINO WORLD TRADE CENTER RESPONDERS.** Imaz Athar[1], Alicia Hurtado[2]. [1]Medical Education, [2]Psychiatry. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: ALICIA HURTADO, MD.**
10	**INEFFICIENCY DURING MICROVASCULAR FREE FLAP RECONSTRUCTIVE SURGERY: SUPPLIES AND COMMUNICATION.** Rohini Bahethi[1], Solomon Seckler[1], Katelyn Stepan[2], Mingyang Gray[2], Eliezer Kinberg[2], Samuel Demaria[3], Brett Miles[2]. [1]Medical Education, [2]Otolaryngology, [3]Anesthesiology. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: BRETT A MILES, DDS, MD.**

11

COMPARISON OF LENGTH OF STAY BETWEEN CHILDREN ADMITTED TO AN OBSERVATION UNIT VERSUS INPATIENT UNIT.

Jennifer Bailey[1], C. Anthoney Lim[2], Julie Oh[2], Erick Eiting[3], Ethan Cowan[3], Barbara Barnett[3], Yvette Calderon[3]. [1]Medical Education, [2]Pediatrics, [3]Emergency Medicine. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: C. ANTHONEY LIM, MD.

12

ELEVATED HEMOGLOBIN A1C IS ASSOCIATED WITH PANCREATIC CYSTS IN A HIGH-RISK PANCREATIC SURVEILLANCE PROGRAM.

Ari Bar-Mashiah[1], Anne Aronson[2], Monica Naparst[2], Christopher Dimaio[2], Aimee Lucas[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: AIMEE LUCAS, MD.

13

DETECTION OF URIC ACID CRYSTALS IN THE VASCULATURE OF PATIENTS WITH GOUT USING DUAL-ENERGY COMPUTED TOMOGRAPHY.

Sharon Barazani[1], Weiwei Chi[2], Renata Pyzik[3], Zahi Fayad[3], Yousaf Ali[2], Venkatesh Mani[3]. [1]Medical Education, [2]Medicine, [3]Radiology. [1,2,3]Icahn School of Medicine at Moun1qt Sinai, New York, New York.

MENTOR: VENKATESH MANI, PHD.

14

PHYSIOLOGICAL RESPONSE TO MIFEPRISTONE IN MALE US MILITARY VETERANS WITH POST TRAUMATIC STRESS DISORDER.

Brendan Bechard[1], Xue Li[2], Marcel Bizien[3], Robin Hurley[4], Rachel Yehuda[5], Dewleen Baker[6], Michael Hertzberg[7], Julia Golier[8]. [1]Medical Education, [4,6,7,8]Psychiatry, [5]Neuroscience. [1,5,8]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Hines VA Cooperative Studies Program, [3]Albuquerque VA Cooperative Studies Pharmacy, [4]Wake Forest University School of Medicine, [6]San Diego VA Medical Center, [7]Durham VA Medical Center.

MENTORS: DEWLEEN BAKER, MD, JULIA GOLIER, MD.

15

BIOMARKER MONITORING IN HIGH RISK GVHD PATIENTS.

Kaitlyn Ben-David[1], James Ferrara[2]. [1]Medical Education, [2]Oncological Sciences. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: JAMES FERRARA, MD.

LIST OF ABSTRACTS

16

FITBIT PHYSICAL ACTIVITY MEASURES IN PATIENTS WHO SUFFER FROM SPINAL AILMENTS AND UNDERGO SPINAL SURGERY.

Dennis Bienstock[1], Nicole Zubizarreta[2], Wesley Bronson[3], Saad Chaudhary[3], Andrew Hecht[3], James Iatridis[3]. [1]Medical Education, [2]Population Health Science and Policy, [3]Orthopaedics. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTORS: ANDREW HECHT, MD, JAMES IATRIDIS, PHD.

17

CHARACTERIZATION OF PSA AT DEATH IN PATIENTS WITH METASTATIC CASTRATION RESISTANT PROSTATE CANCER.

Krishna Bikkasani[1], Qian Qin[2], Matthew Galsky[2], Bobby Liaw[2], William Oh[2], Che-kai Tsao[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: CHE-KAI TSAO, MD.

18

THE IMPACT OF SEGREGATED CARE ON MEDICAL EDUCATION AND THE ROLE OF TRAINEES IN ADVOCATING FOR CHANGE.

James Blum[1], Zina Huxley-Reicher[1], Alec Feuerbach[1], George Fox[1], Akila Pai[1], Rachel Wilkinson[1], David Muller[1], Reena Karani[1]. [1]Medical Education. [1]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: REENA KARANI, MD.

19

ASSESSMENT OF LONG-TERM PSYCHOSOCIAL IMPACT OF ANTI-NMDA RECEPTOR ENCEPHALITIS.

Raia Blum[1], Amanda Tomlinson[1], Sylviah Nyamu[2], Churl-Su Kwon[2], Nathalie Jetté[2], Anusha Yeshokumar[2]. [1]Medical Education, [2]Neurology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: ANUSHA YESHOKUMAR, MD.

20

ANTENATAL TESTING FOR WOMEN WITH PREEXISTING MEDICAL CONDITIONS USING ONLY THE ULTRASONOGRAPHIC PORTION OF THE BIOPHYSICAL PROFILE.

Efrat Bruck[1], Kelly Zafman[2], Andrei Rebarber[2], Daniel Saltzman[2], Nathan Fox[2]. [1]Medical Education, [2]Obstetrics, Gynecology, and Reproductive Science. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: NATHAN FOX, MD.

21

CLINICAL CHARACTERIZATION OF BRAIN METASTASES FROM HEAD AND NECK SQUAMOUS CELL CARCINOMAS: A CASE SERIES EXPLORING THE ROLE OF HPV.

Oscar Carrillo[1], Corey Gill[1], Thomas Barrett[3], Melissa Umphlett[4], Mary Fowkes[5], Richard Bakst[6], Brett Miles[7], Joshua Bederson[2], Priscilla Brastianos[8], Raj Shrivastava[2]. [1]Medical Education, [2]Neurosurgery, [3,7]Otolaryngology, [4,5]Pathology, [6]Radiation Oncology. [1,2,5,6,7]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Washington University School of Medicine in St. Louis, [4]Medstar Health, [8]Massachusetts General Hospital.

MENTOR: RAJ SHRIVASTAVA, MD.

22

USE OF EMERGENCY CONTRACEPTION IN NYC SCHOOL-BASED HEALTH CENTERS.

Christina Cary[1], Geetha Fink[2], Britt Lunde[2]. [1]Medical Education, [2]Obstetrics, Gynecology, and Reproductive Science. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: BRITT LUNDE, MD, MPH.

23

THE EFFECTS OF PATERNAL SEIZURE DISORDERS AND ANTI-SEIZURE MEDICATIONS ON OFFSPRING NEURODEVELOPMENTAL OUTCOMES.

Marc Casale[1], Svetlana Faktorovich[2], Bridget Mueller[2], Ji Yeon Yoo[2], Lara Marcuse[2], Madeline Fields[2]. [1]Medical Education, [2]Neurology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: MADELINE FIELDS, MD.

24

CLIMATE CHANGE CURRICULUM INFUSION PROJECT.

Christian Cayon[1], Perry Sheffield[2]. [1]Medical Education, [2]Environmental Medicine & Public Health. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: PERRY SHEFFIELD, MD.

25

CORRELATION OF ATHEROSCLEROTIC PLAQUE FEATURES ON DUPLEX ULTRASOUND AND PET/MRI IN PATIENTS WITH CAROTID ARTERY STENOSIS.

Emily Chapman[1], Zahi Fayad[2], Nikolaos Karakatsanis[3], Jesse Weinberger[4], Qing Hao[4]. [1]Medical Education, [2]Radiology, [4]Neurology. [1,2,3,4]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: QING HAO, MD, PHD.

LIST OF ABSTRACTS

26	**EPIGENETIC PRECONDITIONING WITH DECITABINE SENSITIZES GLIOBLASTOMA TO TEMOZOLOMIDE VIA INDUCTION OF MLH1.** Rossana Cheng He[1], Matthew Gallitto[1], Julio Inocencio[2], Robert Sebra[3], Gintaras Deikus[3], Maya Strahl[3], Isaac Wasserman[1], Huaien Wang[4], Yizhou Zhang[4], Raymund Yong[4]. [1]Medical Education, [2,4]Neurosurgery, [3]Genetics and Genomic Sciences. [1,3,4]Icahn School of Medicine at Mount Sinai, New York, NY, [2]Albert Einstein College of Medicine, Bronx, NY. **MENTOR: RAYMUND YONG, MD.**
27	**THE IMPACT OF MUSIC THERAPY ON MOVEMENT DURING RADIATION THERAPY.** Aaron Cheng[1], Eli Furhang[2], Andrew Rossetti[3]. [1]Medical Education, [2,3]Radiation Oncology. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Mount Sinai Union Square, Radiation Oncology, Physics Department, [3]Department of Music Therapy, Mount Sinai Beth Israel Medical Center. **MENTOR: ANDREW ROSSETTI, MMT, MT-BC.**
28	**AUTOMATED MEASUREMENT OF LUMBAR LORDOSIS ON RADIOGRAPHS USING MACHINE LEARNING AND COMPUTER VISION.** Brian Cho[1], Deepak Kaji[2], Jun Kim[2], Li Sun[2], Zoe Cheung[2], Ivan Ye[2], Ray Tang[2], Oscar Carrillo[2], Varun Arvind[2], Aly Valliani[2], Eric Oermann[3], Samuel Cho[2]. [1]Medical Education, [2]Orthopaedics, [3]Neurosurgery. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: SAMUEL CHO, MD.**
29	**VIRTUAL REALITY AS NON-PHARMACOLOGIC ANALGESIA AND PATIENT EDUCATION TOOL.** David Christian[1], Mingyang Gray[2], Sean McKee[2], Alfred Iloreta[2]. [1]Medical Education, [2]Otolaryngology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: ALFRED ILORETA, MD.**
30	**ARCUATE UTERUS AS AN INDEPENDENT RISK FACTOR FOR ADVERSE PREGNANCY OUTCOMES.** Courtney Connolly[1], Rebecca Klahr[1], Melissa Hill[1], Kelly Zafman[1], Andrei Rebarber[2], Nathan Fox[2]. [1]Medical Education, [2]Obstetrics, Gynecology, and Reproductive Science. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: NATHAN FOX, MD.**

31

PREGNANCY OUTCOMES IN VIABLE PREGNANCIES WITH A SEPTATE UTERUS COMPARED TO HYSTEROSCOPIC UTERINE SEPTUM RESECTION.

Courtney Connolly[1], Melissa Hill[1], Rebecca Klahr[1], Kelly Zafman[1], Andrei Rebarber[2], Nathan Fox[2]. [1]Medical Education, [2]Obstetrics, Gynecology, and Reproductive Science. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: NATHAN FOX, MD.

32

EXPERIENCES OF GENDER-BASED VIOLENCE IN WOMEN ASYLUM SEEKERS FROM THE NORTHERN TRIANGLE.

Megan D'Andrea[1], Eileen Wang[1], Elizabeth Singer[2], Kim Baranowski[3]. [1]Medical Education, [2]Emergency Medicine, [3]Psychiatry. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Columbia University, New York, NY.

MENTOR: KIM BARANOWSKI, PHD.

33

BRAIN METASTASES FROM BILIARY TRACT CANCERS: A CASE SERIES AND REVIEW OF THE LITERATURE IN THE GENOMIC ERA.

Megan D'Andrea[1], Corey Gill[1], Raj Shrivastava[2]. [1]Medical Education, [2]Neurosurgery. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: RAJ SHRIVASTAVA, MD.

34

EVOLUTION OF SKULL-BASED CSF LEAK REPAIR: A SINGLE INSTITUTION COMPREHENSIVE STUDY OF 116 CASES OVER 10 YEARS.

Jennifer Dai[1], Alfred Iloreta[2], Raj Shrivastava[3]. [1]Medical Education, [2]Otolaryngology, [3]Neurosurgery. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: RAJ SHRIVASTAVA, MD.

35

DESIGN AND EVALUATION OF A PILOT HEALTH AND WELLNESS GROUP FOR INCARCERATED SURVIVORS OF INTIMATE PARTNER VIOLENCE.

Eva DeLappe[1], Lydia Lichtiger[2], Julia Shaw[2], Ann-Gel Palermo[1]. [1]Medical Education. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]STEPS to End Family Violence New York, NY.

MENTOR: ANN-GEL PALERMO, DRPH.

LIST OF ABSTRACTS

36	**REAL WORLD EFFECTIVENESS OF TOFACITINIB IN INFLAM-MATORY BOWEL DISEASE: A MULTI-CENTER STUDY.** Christina Dimopoulos[1], Marc Fenster[2], Anish Patel[3], Deepak Parakkal[4], Gaurav Syal[5], Andres Yarur[6], Robert Hirten[2], George Christophi[4], Aava Khatiwada[4], Lin Bixuan[6], Jean-Frederic Colombel[2], Christina Ha[5], Roni Weisshof[7], Poonam Beniwal-Patel[6], Benjamin Cohen[2], Joel Pekow[7], Ryan Ungaro[2]. [1]Medical Education, [2,3,4,5,6,7]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [4]Washington University in St. Louis, [5]Cedars-Sinai, [6]Medical College of Wisconsin, [7]University of Chicago. **MENTOR: RYAN UNGARO, MD.**
37	**REAL WORLD SAFETY OF TOFACITINIB IN INFLAMMATORY BOWEL DISEASE: A MULTI-CENTER STUDY.** Christina Dimopoulos[1], Marc Fenster[2], Deepak Parakkal[3], Aava Khatiwada[3], George Christophi[3], Andres Yarur[4], Lin Bixuan[4], Matthew Ciorba[3], Anish Patel[5], Geoffrey Bader[5], Gaurav Syal[6], Robert Hirten[2], Jean-Frederic Colombel[2], Christina Ha[6], Roni Weisshof[7], Joel Pekow[7], Benjamin Cohen[2], Poonam Beniwal-Patel[4], Ryan Ungaro[2]. [1]Medical Education, [2,3,4,5,6,7]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Washington University in St. Louis, [4]Medical College of Wisconsin, [6]Cedars-Sinai, [7]University of Chicago. **MENTOR: RYAN UNGARO, MD.**
38	**NARROWING THE LENS: A NEIGHBORHOOD-FOCUSED EXPLORATION OF MENTAL HEALTH RESOURCES IN EAST HARLEM.** Katherine Donovan[1], Ray Cornbill[2], Ann-Gel Palermo[1]. [1,2]Medical Education. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]East Harlem Community Health Committee. **MENTOR: ANN-GEL PALERMO, DRPH.**
39	**MAJOR DIFFERENCES IN EXPRESSION OF INFLAMMATORY PRODUCTS IN SKIN FROM DIFFERENT BODY SITES OF HEALTHY INDIVIDUALS.** Celina Dubin[1], Ester del Duca[2], Emma Guttman[3]. [1]Medical Education, [2,3]Dermatology. [1,3]Icahn School of Medicine at Mount Sinai, New York, New York, [2]University of Rome Tor Vergata, Italy. **MENTOR: EMMA GUTTMAN, MD, PHD.**
40	**EXPLORING THE RELATIONSHIP BETWEEN EMOTION PROCESSING DEFICITS AND ANGER ACROSS THE PERSONALITY DISORDERS.** Jarrett Fastman[1], M. Mercedes Perez-Rodriguez[2]. [1]Medical Education, [2]Psychiatry. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: M. MERCEDES PEREZ-RODRIGUEZ, MD, PHD.**

41

EFFICACY OF ANTITHROMBOTIC AGENTS IN PREVENTING VENOUS THROMBOEMBOLIC EVENTS FOLLOWING ORTHOPEDIC SURGERY.

Christopher Ferrer[1], Meredith Bartelstein[2], Ilya Iofin[3]. [1]Medical Education, [2,3]Orthopaedics. [1,3]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Memorial Sloan Kettering Cancer Center, New York, NY.

MENTOR: ILYA IOFIN, MD.

42

LOWERING THE THRESHOLD TO TEST FOR HYPOPHOSPHATASIA: MUTATIONS, SIGNS AND SYMPTOMS THAT SHOULD NOT BE MISSED.

Harper Gany-Beitler[1], Ron Do[2], Arden Moscati[2], Girish Nadkarni[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: GIRISH NADKARNI, MD.

43

EXPLORING PROVIDER PERSPECTIVES ON THE FEASIBILITY AND ACCEPTABILITY OF MEDICATION ADHERENCE SUPPORT SERVICES FOR HYPERTENSION AT A PRIVATE HOSPITAL IN KAMPALA, UGANDA.

Evan Garden[1], Rachel Wilkinson[1], Rose Clarke-Nanyonga[2], Allison Squires[3], David Heller[4]. [1]Medical Education, [4]Medicine. [1,4]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Clarke International University, Kampala, Uganda, [3]NYU Rory Meyers College of Nursing, New York, NY.

MENTOR: DAVID HELLER, MD, MPH.

44

COMMUNITY HEALTH OFFICER INSIGHTS INTO THE DESIGN AND IMPLEMENTATION OF AN INTERVENTION TO SCREEN AND TREAT CARDIOVASCULAR DISEASE USING THE COMMUNITY-BASED HEALTH PLANNING AND SERVICES (CHPS) INITIATIVE IN NAVRONGO, GHANA: A QUALITATIVE STUDY.

Katherine Garvey[1], Ethan Wood[2], Edith Dambayi[3], Denis Awuni[3], Raymond Aborigo[3], Elizabeth Jackson[4], James Phillips[4], Abraham Oduro[3], David Heller[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Navrongo Health Research Center, Navrongo, Ghana, [4]Columbia University Mailman School of Public Health. **MENTOR: DAVID HELLER, MD, MPH.**

45

REAL-TIME ASSESSMENT OF RESIDENTS' PERCEPTIONS OF INAPPROPRIATE NEUROLOGY CONSULTS.

Caroline Gentile[1], Emma Loebel[1], Charles Sanky[1], Stephen Krieger[2]. [1]Medical Education, [2]Neurology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: STEPHEN KRIEGER, MD.

LIST OF ABSTRACTS

46

PRIMARY CARE TRANSFORMATION: COHORT ANALYSIS OF OPERATIONS IN MOUNT SINAI PRIMARY CARE PRACTICES.

Brooke Gogel[1], Stella Safo[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: STELLA SAFO, MD, MPH.

47

PHYSICIAN BURNOUT (BO) IN PEDIATRIC HEMATOLOGY-ONCOLOGY (PHO) PROVIDERS.

Eliana Goldberg[1], Alex Sarosi[2], Andrea Weintraub[2]. [1]Medical Education, [2]Pediatrics. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: ANDREA WEINTRAUB, MD.

48

RISK OF READMISSION INJURY IN PATIENTS WITH EPILEPSY IN THE US.

Jonathan Goldstein[1], Churl-Su Kwon[2], Parul Agarwal[2], Mandip Dhamoon[2], Madhu Mazumdar[2], Nathalie Jetté[2]. [1]Medical Education, [2]Neurology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: NATHALIE JETTÉ, MD.

49

METRICS OF RETENTION IN HIGH-RISK POPULATIONS: DECREASING "NO-SHOW" APPOINTMENTS THROUGH BEHAVIORAL ECONOMICS.

Phillip Groden[1], Erica Levine[2], Bernard Ortega[2], Sandeep Kishore[3]. [1]Medical Education, [2]Arnhold Institute for Global Health, [3]Medicine. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: SANDEEP KISHORE, MD, PHD.

50

A NOVEL APPROACH TO ADVANCING HEALTHCARE QUALITY: THE PRODUCTION AND IMPLEMENTATION OF A COMMUNITY-BASED EDUCATIONAL FILM ON INFLUENZA VACCINATION IN A FREE CLINIC WAITING ROOM IN EAST HARLEM.

Jennifer Grom[1], Caroline Gentile[2], Michelle Lai[2], Julio Ramos[2], Ethan Wood[2], Yasmin Meah[3]. [1]Medical Education, [2]Family Medicine and Community Health, [3]Medicine. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: YASMIN MEAH, MD.

51

VALIDATION OF A RISK-ASSESSMENT TOOL FOR PREDICTING HIGH COST IN ELDERLY HIP FRACTURE PATIENTS.

Jordan Hall[1], Jessica Mandel[2], Kenneth Egol[3], Sanjit Konda[3]. [1]Medical Education, [2,3]Orthopaedics. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]University of Florida College of Medicine, Gainesville, FL, [3]NYU Langone Orthopedic Hospital, New York, NY.

MENTOR: SANJIT KONDA, MD.

52

A COMPREHENSIVE GENE PROFILING OF LESIONAL SKIN FROM LIMITED AND DIFFUSE SYSTEMIC SCLEROSIS PATIENTS DEMONSTRATES DYSREGULATION OF ECM AND VASCULAR GENES WITH VARIABLE IMMUNE ACTIVATION.

Joseph Han[1], Helen He[2], Saakshi Khattri[2], Emma Guttman[2]. [1]Medical Education, [2]Dermatology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: EMMA GUTTMAN, MD, PHD.

53

GENOME-WIDE DNA METHYLATION PROFILING REVEALS NOVEL CANDIDATE EPIGENETIC GATEKEEPERS IN HEPATOCARCINO-GENESIS.

Gabriela Hernandez Meza[1], Johann Von Felden[2], Amanda Craig[2], Sergi Sayols[3], Anna Portela[4], Manel Esteller[4], Myron Schwartz[5], Vincenzo Mazzaferro[6], Josep Llovet[2], Augusto Villanueva[2]. [1]Medical Education, [2,3,4,6]Oncological Sciences, [5]Surgery. [1,2,5]Icahn School of Medicine at Mount Sinai, New York, NY, [3]Institute of Molecular Biology, Mainz, Germany, [4]IDIBELL Bellvitge Biomedical Research Institute, Spain, [6]Fondazione IRCCS Istituto Nazionale dei tumori, Italy.

MENTOR: AUGUSTO VILLANUEVA, MD, PHD.

54

COMBINING THE SHOCK INDEX WITH LACTATE DOES NOT IMPROVE PREDICTION OF NEED FOR INTERVENTION IN TRAUMA PATIENTS WITH OCCULT SHOCK.

Derek Hilgers[1], Peter England[2], Megha Rajpal[2], Sam Schuberg[2], Kaushal Shah[2]. [1]Medical Education, [2]Emergency Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: KAUSHAL SHAH, MD.

55

HIGH-NORMAL BLOOD PRESSURE AS A PREDICTOR OF PREECLAMPSIA IN TWIN PREGNANCIES.

Melissa Hill[1], Courtney Connolly[1], Rebecca Klahr[1], Andrei Rebarber[2], Nathan Fox[2]. [1]Medical Education, [2]Obstetrics, Gynecology, and Reproductive Science. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: NATHAN FOX, MD.

LIST OF ABSTRACTS

56	**A COMPARISON OF QUALITY OF LIFE MEASUREMENTS IN NON-SMALL CELL LUNG CANCER PATIENTS BEFORE, DURING, AND AFTER SURGERY OR RADIOTHERAPY.** Stephanie Hojsak[1], Keith Sigel[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: KEITH SIGEL, MD, PHD.**
57	**ELEVATED SUPAR PREDICTS DEVELOPMENT OF KIDNEY DISEASE IN ACUTELY HOSPITALIZED MEDICAL PATIENTS.** Esben Iversen[1], Morten Houlind[2], Thomas Kallemose[2], Line Jee Hartmann Rasmussen[2], Mads Hornum[3], Salim Hayek[4], Ove Andersen[2], Jesper Eugen-Olsen[2]. [1]Medical Education. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Copenhagen University Hospital, Hvidovre, Denmark, [3]Rigshospitalet, Copenhagen, Denmark, [4]University of Michigan, Ann Arbor, Michigan, USA. **MENTOR: JESPER EUGEN-OLSEN, PHD.**
58	**ORAL MICROBIOTA IN FOOD ALLERGY.** Oranicha Jumreornvong[1], Hsi-en Ho[2], Supinda Bunyavanich[2]. [1]Medical Education, [2]Genetics and Genomic Sciences. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTORS: HSI-EN HO, MD, SUPINDA BUNYAVANICH, MD, MPH.**
59	**EXPLORING INTERVENTIONS: MANAGING COMPASSION FATIGUE (CF) AND BURNOUT (BO) IN PEDIATRIC SUBSPECIALISTS.** Samuel Kase[1], Jeanie Gribben[1], Elisha Waldman[2], Andrea Weintraub[3]. [1]Medical Education, [2,3]Pediatrics. [1,3]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Lurie Children's Hospital of Chicago. **MENTOR: ANDREA WEINTRAUB, MD.**
60	**A PREDICTIVE NOMOGRAM FOR SMALL INTESTINE NEURO-ENDOCRINE TUMORS (NETS).** Susheian Kelly[1], Jeffrey Aalberg[2], Michelle Kim[3], Celia Divino[2]. [1]Medical Education, [2]Surgery, [3]Medicine. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, NY. **MENTOR: CELIA DIVINO, MD.**

61

MALPRACTICE LITIGATION IN BRAIN TUMOR SURGERY: A 31-YEAR ANALYSIS OF CAUSATIVE FACTORS IN THE UNITED STATES.

Remi Kessler[1], Deborah Benzil[2], Joshua Loewenstern[1], Alan Scarrow[3], Constantinos Hadjipanayis[4], Raj Shrivastava[4]. [1]Medical Education, [2,3,4]Neurosurgery. [1,4]Icahn School of Medicine at Mount Sinai, New York, New York, [2]The Cleveland Clinic, Cleveland, OH, [3]Mercy Health System, St. Louis, MO.

MENTOR: RAJ SHRIVASTAVA, MD.

62

LONG-TERM OUTCOMES OF RADIOFREQUENCY ABLATION OF HIGH-GRADE SQUAMOUS INTRAEPITHELIAL LESIONS.

Murad Khan[1], Justin Im[2], Stephen Goldstone[3]. [1]Medical Education, [2,3]Surgery. [1,3]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Laser Surgery Care, New York, NY.

MENTOR: STEPHEN GOLDSTONE, MD.

63

THE IMPACT OF OBESITY IN PATIENTS UNDERGOING ROBOTIC PARTIAL NEPHRECTOMY.

Yongkyum Kim[1], Daniel Rosen[2], Muthumeena Kannappan[2], David Paulucci[2], Alp Beksac[2], Ronney Abaza[3], Daniel Eun[4], Akshay Bhandari[5], Ashok Hemal[6], James Porter[7], Ketan Badani[2]. [1]Medical Education, [2,4,5,6,7]Urology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]OhioHealth Dublin Methodist Hospital, Columbus, OH, USA, [4]Temple University School of Medicine, Philadelphia, PA, USA, [5]Columbia University at Mount Sinai, Miami Beach, FL, USA, [6]Wake Forest School of Medicine, Winston-Salem, NC, USA, [7]Swedish Medical Center, Seattle, WA, USA.

MENTOR: KETAN BADANI, MD.

64

LONGITUDINAL ENGAGEMENT IN PRIMARY CARE SERVICES AMONG PEOPLE WHO HAVE EXPERIENCED SEX TRAFFICKING.

Yonina Kirsch[1], Eve Waltermauer[2], Anita Ravi[3]. [1]Medical Education, [2,3]Family Medicine and Community Health. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Institute for Family Health 2006 Madison Ave, New York, NY 10035, [3]PurpLE Clinic 230 West 17th Street, New York, NY 10011.

MENTOR: ANITA RAVI, MD, MPH.

65

LIKELIHOOD OF VASA PREVIA RESOLUTION ACROSS GESTATION.

Rebecca Klahr[1], Nathan Fox[2], Kelly Zafman[3], Melissa Hill[3], Courtney Connolly[3], Andrei Rebarber[2]. [1,3]Medical Education, [2]Obstetrics, Gynecology, and Reproductive Science. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: ANDREI REBARBER, MD.

LIST OF ABSTRACTS

66	**EVALUATING PATIENT'S KNOWLEDGE, ATTITUDES, AND BELIEFS TOWARDS CLINIC FLOW, OPERATIONS, AND INFRASTRUCTURE AT THE KORLE-BU TEACHING HOSPITAL OUTPATIENT CLINIC.** Benjamin Kornbluth[1], Lara Sokoloff[2], Stella Safo[2], Adwoa Agyei-Nkansah[3]. [1]Medical Education, [2,3]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Korle-Bu Teaching Hospital Accra, Ghana. **MENTORS: STELLA SAFO, MD, ADWOA AGYEI-NKANSAH, MD.**
67	**OCULAR SYPHILIS: CLINICAL MANIFESTATIONS AND VISUAL OUTCOMES.** Merav Koschitzky[1], Kunyong Wu[2], Szilard Kiss[2]. [1]Medical Education, [2]Ophthalmology. [2]Weill Cornell Medicine. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, NY. **MENTOR: SZILARD KISS, MD.**
68	**SELF-REPORTED MILD BEHAVIORAL IMPAIRMENT CHECKLIST.** Hannah Krystal[1], Judith Neugroschl[2], Carolyn Zhu[2], Mary Sano[3]. [1]Medical Education, [2]Geriatrics and Palliative Medicine, [3]Psychiatry. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, NY. **MENTOR: JUDITH NEUGROSCHL, MD.**
69	**FAMILY CAREGIVING NETWORKS IN THE CONTEXT OF HOSPICE USE.** Vedika Kumar[1], Katherine Ornstein[2]. [1]Medical Education, [2]Geriatrics and Palliative Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: KATHERINE ORNSTEIN, PHD.**
70	**PHYSICIAN AND PARENT COMFORT, AWARENESS, BARRIERS, AND IMPLEMENTATION OF THE GUIDELINES FOR THE PREVENTION OF PEANUT ALLERGY.** Michelle Lai[1], Scott Sicherer[2]. [1]Medical Education, [2]Pediatrics. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: SCOTT SICHERER, MD.**

71

ASSESSING COST AND EPISODE-BASED OUTCOMES BETWEEN SURGICAL SPECIALTIES PERFORMING ANTERIOR LUMBAR INTERBODY FUSIONS.

Marcus Laroche[1], Brian Deutsch[2], Sean Neifert[2], Samuel Hunter[3], Luke Hermann[4], Samuel DeMaria[3], Jonathan Gal[3], John Caridi[2]. [1]Medical Education, [2]Neurosurgery, [3]Anesthesiology, [4]Emergency Medicine. [1,2,3,4]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: JOHN CARIDI, MD.

72

MODIFYING FACTORS FOR CONCUSSION INCIDENCE AND SEVERITY IN PROFESSIONAL FOOBALL.

Adam Li[1], Jennifer Dai[2], Tanvir Choudhri[2]. [1]Medical Education, [2]Neurosurgery. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: TANVIR CHOUDHRI, MD.

73

EVALUATION OF A MALNUTRITION OUTREACH EDUCATION PROGRAM CONDUCTED BY SOFT POWER HEALTH IN RURAL UGANDA.

Letitia Li[1], Emily Hertzberg[2], Jessie Stone[3], Roberto Posada[2]. [1]Medical Education, [2]Pediatrics. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Soft Power Health Allan Stone Community Health Center Kyabirwa, Uganda.

MENTOR: ROBERTO POSADA, MD.

74

CEREBRAL VENOUS ANATOMY MODELING FOR ENDOVASCULAR BRAIN STIMULATION.

Adam Lieber[1], Christopher Kellner[2]. [1]Medical Education, [2]Neurosurgery. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: CHRISTOPHER KELLNER, MD.

75

LONG-TERM CARDIOVASCULAR RISK FOLLOWING RADIATION THERAPY IN LUNG CANCER.

Benjamin Liu[1], Keith Sigel[2], Juan Wisnivesky[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, NY.

MENTORS: KEITH SIGEL, MD, PHD, JUAN WISNIVESKY, MD.

LIST OF ABSTRACTS

76	**ANALYSIS OF ENDOSCOPY TIMING ON DAY OF WEEK AND LENGTH OF STAY FOR PATIENTS HOSPITALIZED WITH GASTROINTESTINAL HEMORRHAGE AT A TERTIARY MEDICAL CENTER.** Emma Loebel[1], Jason Chalil[2], Andrew Dunn[2], Aveena Kochar[2], Hyung Cho[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: HYUNG CHO, MD.**
77	**VIRTUAL REALITY MEDITATION AND RESIDENT WELLNESS: A STUDY ON EFFICACY AND IMPLEMENTATION.** Adam Lupicki[1], Ryan Tufts[2], Alfred Iloreta[3]. [1]Medical Education, [2]Anesthesiology, [3]Otolaryngology. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: ALFRED ILORETA, MD.**
78	**A REPORT ON POST-OPERATIVE OUTCOMES AT THE PRE-ANESTHESIA EVALUATION CLINIC.** Jacob Lurie[1], Marc Casale[2], Maryna Khromava[2], George Silvay[2]. [1]Medical Education, [2]Anesthesiology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: GEORGE SILVAY, MD, PHD.**
79	**MENTAL HEALTH OF CHILDREN HELD AT A UNITED STATES IMMIGRATION DETENTION CENTER.** Sarah MacLean[1], Priscilla Agyeman[2], Joshua Walther[3], Elizabeth Singer[1], Kim Baranowski[1], Craig Katz[1]. [1,3]Medical Education, [2]Global Health. [1,2]Icahn School of Medicine at Mount Sinai, New York, NY, [3]UT San Antonio, San Antonio, TX. **MENTOR: CRAIG KATZ, MD.**
80	**THE EFFICACY OF PHOTODYNAMIC THERAPY IN COMBINATION WITH CHEMORADIATION IN A THERAPY-RESISTANT RODENT GLIOBLASTOMA MODEL.** Kevin Mahmoudi[1], Alexandros Bouras[2], Dominique Bozec[2], Joe Gerald Jesu Raj[2], Constantinos Hadjipanayis[2]. [1]Medical Education, [2]Neurosurgery. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: CONSTANTINOS HADJIPANAYIS, MD, PHD.**

81

PEDIATRIC TRAINEE EDUCATION ON POSITIVE PARENTING BEHAVIOR AND CHILD DEVELOPMENT: THE EFFECT OF A NOVEL MEDICAL SCHOOL ELECTIVE ON KNOWLEDGE AND ATTITUDES.

Allie Mahon[1], Anna Zelig[2], Blair Hammond[2]. [1]Medical Education, [2]Pediatrics. [1,2]Icahn School of Medicine at Mount Sinai, New York, NY.

MENTOR: BLAIR HAMMOND, MD.

82

FUNCTIONAL MRI SHOWS ALTERED TASK-INDUCED DEACTIVATION OF THE DEFAULT MODE NETWORK IN GLIOMA PATIENTS.

Yash Maniar[1], Kyung Peck[2], Mehrnaz Jenabi[2], Madeleine Gene[2], Andrei Holodny[2]. [1]Medical Education. [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]Radiology. [2]Memorial Sloan Kettering Cancer Center, New York, NY.

MENTOR: ANDREI HOLODNY, MD.

83

ENDOSCOPIC VERSUS MICROSCOPIC MIDDLE EAR SURGERY: A META-ANALYSIS OF OUTCOMES FOLLOWING TYMPANOPLASTY AND STAPES SURGERY.

Sayan Manna[1], Vivian Kaul[2], Mingyang Gray[2], George Wanna[2]. [1]Medical Education, [2]Otolaryngology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: GEORGE WANNA, MD.

84

GLOBAL CHARACTERIZATION OF FOXA2 LINEAGE TRACING.

Tucker Matthews[1], Nicole Dubois[2]. [1]Medical Education, [2]Developmental and Regenerative Biology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: NICOLE DUBOIS, PHD.

85

A RANDOMIZED PLACEBO-CONTROLLED SINGLE CENTER PILOT STUDY OF THE SAFETY AND EFFICACY OF APREMILAST IN SUBJECTS WITH MODERATE TO SEVERE ALOPECIA AREATA.

Daniela Mikhaylov[1], Ana Pavel-Brandusa[2], Christopher Yao[2], Grace Kimmel[2], John Nia[2], Peter Hashim[2], Anjali S. Vekaria[2], Mark Taliercio[2], Giselle Singer[2], Rachel Karalekas[2], Danielle Baum[2], Yasaman Mansouri[2], Mark G. Lebwohl[2], Emma Guttman[2]. [1]Medical Education, [2]Dermatology. [1,2]Icahn School of Medicine at Mount Sinai, New York, NY.

MENTOR: EMMA GUTTMAN, MD, PHD.

LIST OF ABSTRACTS

86

WHY THEY GO BACK: INDICATIONS AND RISK FACTORS FOR UNPLANNED REOPERATION AND READMISSION IN THE CROHN'S POPULATION.

Michael Miller[1], Alexandra Agathis[1], Jeffrey Aalberg[2], Celia Divino[2]. [1]Medical Education, [2]Surgery. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: CELIA DIVINO, MD.

87

IMPACT OF SUBSTANCE USE DISORDER IN CERVICAL MYELOPATHY SURGICAL PROCEDURES.

Rocco Morra[1], Brian Deutsch[1], Sean Neifert[1], John Caridi[2]. [1]Medical Education, [2]Neurosurgery. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: JOHN CARIDI, MD.

88

A PREDICTIVE ANALYSIS OF INFLAMMATORY BOWEL DISEASE MARKERS AND OUTCOMES BASED ON RESILIENCE AND OTHER ASSOCIATED VARIABLES.

Udit Nangia[1], Priya Sehgal[2], Laurie Keefer[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: LAURIE KEEFER, PHD.

89

COMPARING HPV SCREENING KNOWLEDGE AND PREFERENCES OF WOMEN IN MONROVIA, LIBERIA.

Reema Navalurkar[1], Molly Lieber[2], Omara Afzal[2], Sayeeda Chowdhury[1], Lucy O'Shaughnessy[1], Andrew Dottino[2], Wilhemina Jallah[3], Ann Marie Beddoe[2]. [1]Medical Education, [2,3]Obstetrics, Gynecology, and Reproductive Science. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Republic of Liberia.

MENTOR: ANN MARIE BEDDOE, MD.

90

THE BURDEN OF MULTIPLE CHRONIC CONDITIONS IN NEW YORK STATE, 2011-2016.

Daniel Newman[1], Erica Levine[2], Sandeep Kishore[3]. [1]Medical Education, [3]Medicine. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: SANDEEP KISHORE, MD, PHD.

91	**PERORAL ENDOSCOPIC MYOTOMY USING MULTIPURPOSE ELECTROSURGICAL KNIFE.** Jeremy Nussbaum[1], Nikhil Kumta[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: NIKHIL KUMTA, MD.**
92	**HOW A POPULATION HEALTH FRAMEWORK MAY EXACERBATE HEALTH INEQUITIES AND DISPARITIES.** Rinas Osman[1], Stella Safo[2]. [1]Medical Education, [2]Population Health Science and Policy. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: STELLA SAFO, MD, MPH.**
93	**THE ROLE OF CARDIAC STRAIN DETECTION BY ECHOCARDIO-GRAPHY IN BREAST CANCER PATIENTS.** Arence Paasewe[1], Sean Kotkin[2], Stephen McCullough[3], Saad Mahmood[3], Lori Croft[2]. [1]Medical Education, [2,3]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Weill Cornell Medicine NYC, NY. **MENTOR: LORI CROFT, MD.**
94	**INCREASING AMOUNT OF INFORMATION TRANSFER DURING PATIENT HANDOFF FROM EMS PERSONNEL TO ED PHYSICIANS.** Samuel Paci[1], Kevin Munjal[2]. [1]Medical Education, [2]Emergency Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: KEVIN MUNJAL, MD.**
95	**ACCURACY AND INCIDENCE OF SUB-CLINICAL SEIZURE DETECTION IN POST-OPERATIVE BRAIN TUMOR PATIENTS.** Akila Pai[1], William Shuman[1], Megan D'Andrea[1], Kaitlin Reilly[2], Neha Dangayach[2], Raj Shrivastava[3]. [1]Medical Education, [2]Neurology, [3]Neurosurgery. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: RAJ SHRIVASTAVA, MD.**

LIST OF ABSTRACTS

96	**IDENTIFICATION OF INTRAOPERATIVE BLEEDING AT THE LOCATION OF A SPOT SIGN DURING INTRACEREBRAL HEMORRHAGE (ICH) ENDOSCOPIC EVACUATION.** Jonathan Pan[1], Rui Song[2], Adam Lieber[1], Alexander Chartrain[2], Jacopo Scaggiante[2], J Mocco[2], Christopher Kellner[2]. [1]Medical Education, [2]Neurosurgery. [1,2]Icahn School of Medicine at Mount Sinai, New York, NY. **MENTOR: CHRISTOPHER KELLNER, MD.**
97	**INITIAL EXPERIENCE COMPARING ARTEMIS AND APOLLO ASPIRATION SYSTEMS FOR INTRACEREBRAL HEMORRHAGE (ICH) EVACUATION.** Jonathan Pan[1], Rui Song[2], Adam Lieber[1], Alexander Chartrain[2], Jacopo Scaggiante[2], J Mocco[2], Christopher Kellner[2]. [1]Medical Education, [2]Neurosurgery. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: CHRISTOPHER KELLNER, MD.**
98	**INTEGRATION AND ADOPTION ANALYSIS OF DIGITAL HEALTH MONITORING DEVICES FOR CHF MANAGEMENT.** Christopher Park[1], Emamuzo Otobo[2], Jason Rogers[2], Farah Fasihuddin[2], Shashank Garg[2], Sarthak Kakkar[2], Chloe Yang[2], Zahin Roja[2], Sai Vishudhi Chandrasekhar[2], Marni Goldstein[2], Ashish Atreja[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: ASHISH ATREJA, MD, MPH.**
99	**OBSERVATIONAL PROCESS MAPPING (OPM) TO IDENTIFY GAPS AND INEFFICIENCIES IN A WESTERN KENYAN REFERRAL SYSTEM.** Shravani Pathak[1], McKinsey Pillsbury[2], Juliet Miheso[3], Josephine Andesia[3], Gerald Bloomfield[4], Jemima Kamano[5], Violet Naanyu[6], Benson Njuguna[5], Sonak Pastakia[7], Aarti Thakkar[8], Constantine Akwanalo[9], Timothy Mercer[10], Rajesh Vedanthan[11]. [1,2,6,8]Medical Education, [4,5,7,9,10,11]Medicine. [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]UCSF School of Medicine, [3]Academic Model Providing Access To Healthcare (AMPATH), [4,8]Duke University School of Medicine, [5,6,9]Moi Teaching and Referral Hospital University, [7]Purdue University College of Pharmacy, [10]University of Texas, Austin, [11]NYU Langone Health, New York, NY 10016. **MENTOR: RAJESH VEDANTHAN, MD, MPH.**
100	**PREOPERATIVE INFLAMMATORY STATUS IS NOT ASSOCIATED WITH PRIMARY PATENCY OF TIBIAL STENTS.** Shravani Pathak[1], Kenneth Nakazawa[2], Rami Tadros[2], Robert Lookstein[2], Peter Faries[2], Ageliki Vouyouka[2]. [1]Medical Education, [2]Cardiovascular Surgery. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: AGELIKI VOUYOUKA, MD.**

101

SURVIVAL OF PATIENTS WITH MUSCLE-INVASIVE UROTHELIAL CANCER OF THE BLADDER WITH RESIDUAL DISEASE AT THE TIME OF CYSTECTOMY FOLLOWING NEOADJUVANT CHEMOTHERAPY: AN ANALYSIS OF THE NATIONAL CANCER DATABASE.

John Pfail[1], François Audenet[2], Alberto Martini[2], Kyrollis Attalla[2], Nikhil Waingankar[2], Matthew Galsky[3], John Sfakianos[2]. [1]Medical Education, [2]Urology, [3]Medicine. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: JOHN SFAKIANOS, MD.

102

RESTORATION OF FAILING HUMAN CARDIOMYOCYTE ELECTROPHYSIOLOGY AND CALCIUM HANDLING BY ADULT STEM CELLS: A COMPUTATIONAL APPROACH TO THERAPEUTIC OPTIMIZATION.

Katherine Phillips[1], Joshua Mayourian[2], Kevin Costa[2]. [1]Medical Education, [2]Medicine. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: KEVIN COSTA, PHD.

103

USING CONVOLUTIONAL NEURAL NETWORKS TO DEVELOP AN OBJECTIVE METHOD TO CLASSIFY THE DEGREE OF JOINT EROSION AND NARROWING IN RHEUMATOID ARTHRITIS.

Alison Pruzan[1], Dan Samber[2], Venkatesh Mani[2], Zahi Fayad[2]. [1]Medical Education, [2]Radiology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: ZAHI FAYAD, PHD.

104

THE IMPACT OF DEFERRED ACTION FOR CHILDHOOD ARRIVALS (DACA) MEDICAL STUDENTS - A SCARCE RESOURCE TO U.S. HEALTHCARE.

Julio Ramos[1], Emanuela Taioli[2]. [1]Medical Education, [2]Thoracic Surgery. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: EMANUELA TAIOLI, MD, PHD.

105

CHARACTERIZING TRENDS IN PRIMARY CARE VISITS USING NAMCS 2008-2014.

Aarti Rao[1], Zhuo Shi[2], Kristin Ray[3], Ateev Mehrotra[4], Ishani Ganguli[5]. [1]Medical Education, [3]Pediatrics, [4,5]Medicine. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Harvard Medical School, Boston, Massachusetts, [3]University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania, [4]Beth Israel Deaconess Medical Center, Boston, MA, [5]Brigham and Women's Hospital, Boston, MA.

MENTOR: ISHANI GANGULI, MD, MPH.

LIST OF ABSTRACTS

106	**PREDICTING DELIRIUM AFTER AORTIC VALVE REPLACEMENT: ADDITIVE VALUE OF FRAILTY TO AN EXISTING DELIRIUM RISK MODEL.** Aarti Rao[1], Sandra Shi[2], Edward Marcantonio[2], Dae Hyun Kim[2]. [1]Medical Education, [2]Geriatrics and Palliative Medicine. [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA. **MENTOR: DAE HYUN KIM, MD.**
107	**QUANTITATIVE TRACKING OF INFLAMMATORY ACTIVITY AT THE PEAK AND TROUGH PLASMA LEVELS OF A JANUS KINASE INHIBITOR VIA IN VIVO 18F-FDG PET.** Sanchita Raychaudhuri[1], Christine Abria[2], Zachary Harmany[3], Smriti Kundu-Raychaudhuri[4], Siba Raychaudhuri[4], Abhijit Chaudhari[5]. [1]Medical Education, [2]Medicine, [3]Pathology, [5]Radiology. [1]Icahn School of Medicine at Mount Sinai, NY, NY, [2,3,4,5]University of California Davis School of Medicine, Davis, CA. **MENTOR: ABHIJIT CHAUDHARI, PHD.**
108	**PREDICTORS OF 30-DAY OUTCOMES FOLLOWING MITRAL VALVE REPAIR.** Adam Reisman[1], Allison Thomas[1], Michael Leitman[1]. [1]Medical Education. [1]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: MICHAEL LEITMAN, MD.**
109	**INTEGRATING A SOCIAL DETERMINANT OF HEALTH SCREENER AT AN OUTPATIENT PEDIATRIC CLINIC IN EAST HARLEM, NEW YORK CITY.** Rebecca Rinehart[1], Lauren Zajac[2], Rebecca Kann[3], Jennifer Avecedo[2], Leora Mogilner[2]. [1]Medical Education, [2,3]Pediatrics. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Barnard College, New York City, New York. **MENTOR: LEORA MOGILNER, MD.**
110	**LONG BONE REGENERATION OF THE RADIUS USING ADENOSINE RECEPTOR ACTIVATION AND 3D PRINTED BIO-CERAMIC SCAFFOLDS.** Ricardo Rodriguez Colon[1], Christopher Lopez[1], Lukasz Witek[2], Paulo Coelho[2]. [1]Medical Education. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]NYU, New York, NY. **MENTOR: PAULO COELHO, PHD.**

111

RESILIENCE BEHAVIORS AMONGST MEDICAL STUDENTS AFTER NATURAL DISASTERS: A PERSPECTIVE ON RELIABILTY.

Ana Rodriguez[1], Daniel Afonin[2], Rie Sakamoto[3], Hiroki Ando[3], Yuzo Takeguchi[3], Tenshin Otsuka[3], Tomoyuki Jimbo[3], Kanako Taku[4], Satoshi Waguri[3], Robert Yanagisawa[5], Craig Katz[6]. [1]Medical Education, [4,6]Psychiatry, [5]Medicine. [1,2,5,6]Icahn School of Medicine at Mount Sinai, New York, NY, [3]Fukushima Medical University, Fukushima, Japan, [4]Oakland University, Rochester, MI.

MENTORS: ROBERT YANAGISAWA, MD, CRAIG KATZ, MD.

112

EPIDEMIOLOGY OF PEDIATRIC SEPSIS IN THE EMERGENCY DEPARTMENT: A DESCRIPTION OF RISK FACTORS AND ASSOCIATED OUTCOMES.

Hailey Rosenthal[1], James Tsung[2]. [1]Medical Education, [2]Emergency Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: JAMES TSUNG, MD, MPH.

113

THE ROLE OF DEMARCATION LASER PHOTOCOAGULATION IN TREATING LARGE RETINAL BREAKS: A CASE SERIES.

Collin Rozanski[1], Richard Kaplan[2], Jonathan Lo[2], Ross Chod[3], Alexander Barash[2]. [1]Medical Education, [2,3]Ophthalmology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Vision Care Specialists Denver, Colorado.

MENTOR: ALEXANDER BARASH, MD.

114

COMPARING INTERVENTIONS FOR TEMPOROMANDIBULAR JOINT ANKYLOSIS IN THE PEDIATRIC POPULATION: A SYSTEMATIC REVIEW.

Collin Rozanski[1], Hope Xu[1], Kasey Wood[2], Paymon Sanati[2], Peter Taub[2]. [1]Medical Education, [2]Pediatrics. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: PETER TAUB, MD.

115

HISTOLOGICAL IDENTIFICATION OF BLAST EXPOSURE IN DOLPHIN LUNG TISSUE.

Stephen Russell[1], Virginia Gillespie[2], Joy Reidenberg[1]. [1]Medical Education, [2] Pathology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: JOY REIDENBERG, PHD.

LIST OF ABSTRACTS

116	**ONCOLOGICAL OUTCOMES OF OPEN VERSUS ENDOSCOPIC APPROACH TO SKULL BASE MALIGNANCY: A 10-YEAR EXPERIENCE.** John Rutland[1], Travis Ladner[2], David Goldrich[3], Dillan Villavisanis[3], Akila Pai[2], Amit Banihashemi[4], Corey Gill[1], Brett Miles[3], Sonam Sharma[5], Priti Balchandani[6], Joshua Bederson[2], Alfred Iloreta[3], Raj Shrivastava[2]. [1]Medical Education, [2]Neurosurgery, [3]Otolaryngology, [4]Pathology, [5]Radiation Oncology, [6]Radiology. [1,2,3,4,5,6]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: RAJ SHRIVASTAVA, MD.**
117	**DEGENERATION OF THE LATERAL GENICULATE NUCLEUS FROM CHIASMAL COMPRESSION OF PITUITARY ADENOMA DETECTED BY ULTRA-HIGH MRI PREDICTS VISION RECOVERY FOLLOWING SURGICAL DECOMPRESSION.** John Rutland[1], Javin Schefflein[2], Annie Arrighi-Allisan[1], Daniel Ranti[1], Travis Ladner[3], Joshua Loewenstern[1], Hung-Mo Lin[4], James Chelnis[5], Bradley Delman[2], Priti Balchandani[2], Raj Shrivastava[3]. [1]Medical Education, [2]Radiology, [3]Neurosurgery, [4]Population Health Science and Policy, [5]Ophthalmology. [1,2,3,4,5]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: RAJ SHRIVASTAVA, MD.**
118	**PREVALENCE OF TOBACCO AND MARIJUANA SMOKE EXPOSURE AMONG CHILDREN 0-3 YEARS OLD.** Lodoe Sangmo[1], Karen Wilson[2]. [1]Medical Education, [2]Pediatrics. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: KAREN WILSON, MD, MPH.**
119	**MOLECULAR PROFILING OF FRONTAL FIBROSING ALOPECIA REVEALS TH1 AND JAK/STAT UPREGULATION WITH NO HAIR KERATIN SUPPRESSION.** Riana Sanyal[1], Juan Ruano Ruiz[2], Teresa Song[3], Jesus Gay-Mimbrera[2], Robert Phelps[4], Ana Pavel-Brandusa[5], Ning Zhang[5], Yeriel Estrada[5], Emma Guttman[5]. [1]Medical Education, [2,3,5]Dermatology, [4]Pathology. [1,4,5]Icahn School of Medicine at Mount Sinai, New York, New York, [2]IMIBIC/Reina Sofía University Hospital, University of Córdoba, Spain, [3]SUNY Downstate, New York NY. **MENTOR: EMMA GUTTMAN, MD, PHD.**
120	**METABOLIC EFFECTS OF JAK1/2 INHIBITION IN PATIENTS WITH MYELOPROLIFERATIVE NEOPLASMS.** Manali Sapre[1], Douglas Tremblay[2], Amanda Leiter[2], Alexander Coltoff[2], Anita Geevarghese[2], Sheena Bhalla[2], John Mascarhenas[2], Emily Gallagher[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: EMILY GALLAGHER, MD, PHD.**

121

COMPASSION FATIGUE (CF) AND COMPASSION SATISFACTION (CS) IN PEDIATRIC HEMATOLOGY-ONCOLOGY PROVIDERS.

Alex Sarosi[1], Eliana Goldberg[1], Andrea Weintraub[2]. [1]Medical Education, [2]Pediatrics. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: ANDREA WEINTRAUB, MD.

122

RELATIONSHIP BETWEEN INTRAOPERATIVE HEMODYNAMIC STATUS & FRAILTY WITH POSTOPERATIVE ICU ADMISSION AMONG OLDER ADULTS WITH CANCER.

Dahniel Sastow[1], Armin Shahrokni[2], Anoushka Afonso[3]. [1]Medical Education, [2]Oncological Sciences, [3]Anesthesiology. [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2,3]Memorial Sloan Kettering, New York, NY.

MENTOR: ANOUSHKA AFONSO, MD.

123

IS INCREASED BMI A CONTRAINDICATION FOR LIVING KIDNEY DONATION?

Lilli Schussler[1], Prerna Khetan[2], Edward Chin[2]. [1]Medical Education, [2]Surgery. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: EDWARD CHIN, MD.

124

EVALUATING PATIENT DERIVED BREAST CANCER ORGANOIDS AS AN IN VITRO DISEASE MODEL FOR PRECISION MEDICINE.

Julia Schwarz[1], Pamela Cheung[2], John He[2], Ramon Parsons[2], Stuart Aaronson[2], Hank Schmidt[3]. [1]Medical Education, [2]Oncological Sciences, [3]Surgery. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, NY.

MENTOR: HANK SCHMIDT, MD, PHD.

125

TEAM MEMBER PERCEPTIONS OF INEFFICIENCIES IN MICROVASCULAR FREE FLAP RECONSTRUCTION SURGERIES.

Solomon Seckler[1], Rohini Bahethi[2], Katelyn Stepan[2], Eliezer Kinberg[2], Mingyang Gray[2], Brett Miles[2], Eric Genden[2]. [1]Medical Education, [2]Otolaryngology. [1,2]Icahn School of Medicine at Mount Sinai, New York, NY.

MENTOR: ERIC GENDEN, MD.

LIST OF ABSTRACTS

126	**EVALUATION OF ANAL HIGH-GRADE SQUAMOUS EPITHELIAL LESIONS IN THE PATIENTS INFECTED WITH HUMAN IMMUNODEFICIENCY VIRUS.** Nikhil Shamapant[1], Yuxin Liu[2], Michael Gaisa[3], Keith Sigel[3]. [1]Medical Education, [2]Pathology, [3]Medicine. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, NY. **MENTOR: KEITH SIGEL, MD, PHD.**
127	**MORPHOMETRIC EVALUATION OF ILEAL STRICTURES IN CROHN'S DISEASE.** Abdul Sheikh[1], Xiaofei Zhang[2], Noam Harpaz[2]. [1]Medical Education, [2]Pathology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: NOAM HARPAZ, MD, PHD.**
128	**THE AESTHETICALLY IDEAL BREAST: ATTRACTIVENESS RATINGS IN A COMMUNITY SAMPLE.** Devki Shukla[1], Amy Yao[2], Matthew Dillon[3], Peter Taub[4], Julie Schnur[5], Guy Montgomery[5]. [1]Medical Education, [2]Surgery, [3,4]Surgery, [5]Population Health Science and Policy. [1,4,5]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Montefiore Medical Center, Bronx, NY, [3]Xaxis, New York, NY. **MENTOR: GUY MONTGOMERY, PHD.**
129	**THE IMPACT OF DIABETES MELLITUS ON IN-HOSPITAL COMPLICATION RATES AND COST OF CARE FOR PATIENTS UNDERGOING ANTERIOR CERVICAL DISCECTOMY AND FUSION.** William Shuman[1], Sean Neifert[1], Daniel Snyder[1], Brian Deutsch[1], Jonathan Gal[2], Jeffrey Zimering[3], Robert Rothrock[3], John Caridi[3]. [1]Medical Education, [2]Anesthesiology, [3]Neurosurgery. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: JOHN CARIDI, MD.**
130	**POSTERIOR CERVICAL DECOMPRESSION AND INSTRUMENTED FUSION: AN ANALYSIS OF DISPARITIES IN OUTCOMES BY INSURANCE PAYER GROUPS.** Daniel Snyder[1], Jonathan Rasouli[2], Sean Neifert[1], Jonathan Gal[3], Brian Deutsch[1], John Caridi[2]. [1]Medical Education, [2]Neurosurgery, [3]Anesthesiology. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: JOHN CARIDI, MD.**

131

EVALUATING PATIENT'S KNOWLEDGE, ATTITUDES, AND BELIEFS TOWARDS PROVIDER RELATIONSHIPS AT THE KORLE-BU TEACHING HOSPITAL OUTPATIENT CLINIC.

Lara Sokoloff[1], Benjamin Kornbluth[1], Adwoa Agyei-Nkansah[2], Stella Safo[3]. [1]Medical Education, [2,3]Medicine. [1,3]Icahn School of Medicine at Mount Sinai, New York, New York, [2]School of Medicine and Dentistry, Ghana.

MENTORS: ADWOA AGYEI-NKANSAH, MD, STELLA SAFO, MD, MPH.

132

ASSESSING THE EFFICACY AND EXPERIENCE OF IN-PERSON VERSUS TELEPHONIC PSYCHIATRITC EVALUATIONS OF ASYLUM SEEKERS IN THE U.S.

Lara Sokoloff[1], Mitchell Bayne[1], Rebecca Rinehart[1], Axel Epie[1], Leeza Hirt[1], Craig Katz[2]. [1]Medical Education, [2]Psychiatry. [1,2]Icahn School of Medicine at Mount Sinai, New York, NY.

MENTOR: CRAIG KATZ, MD.

133

ANALYZING NEGATIVE SYMPTOMS AND LANGUAGE IN YOUTHS AT RISK FOR PSYCHOSIS USING AUTOMATED LANGUAGE ANALYSIS.

Emma Stanislawski[1], Guillermo Cecchi[2], Cheryl Corcoran[3]. [1]Medical Education, [3]Psychiatry. [1,3]Icahn School of Medicine at Mount Sinai, New York, New York, [2]IBM.

MENTOR: CHERYL CORCORAN, MD.

134

PREVALENCE OF LOWER EXTREMITY PERIPHERAL ARTERIAL DISEASE AND SELF-REPORTED LEG SYMPTOMS IN RELATION TO CHRONIC KIDNEY DISEASE AND DIABETES MELLITUS AMONG UNITED STATES ADULTS.

Samantha Stein[1], Usman Baber[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: USMAN BABER, MD.

135

CAUSES OF HOSPITAL READMISSIONS AFTER AN EPILEPSY RELATED SURGICAL INTERVENTION IN THE NATIONWIDE READMISSIONS DATABASE.

Varsha Subramaniam[1], Churl-Su Kwon[2], Parul Agarwal[3], Mandip Dhamoon[2], Madhu Mazumdar[2], Nathalie Jetté[2]. [1]Medical Education, [2]Neurology, [3]Population Health Science and Policy. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: NATHALIE JETTÉ, MD.

LIST OF ABSTRACTS

136

EVALUATING INFLAMMATORY CYTOKINE PROFILES OF MILITARY VETERANS WITH PTSD, MTBI, AND THEIR INTERACTION.

Ray Tang[1], Carly Walter[2], Janine Flory[3]. [1]Medical Education, [2,3]Psychiatry. [1,3]Icahn School of Medicine at Mount Sinai, New York, NY, [2]James J. Peters VA Medical Center.

MENTORS: CARLY WALTER, BS, JANINE FLORY, PHD.

137

ASSESSING BARRIERS TO HEALTHCARE IN SOUTH ASIAN IMMIGRANT POPULATION AT HIGH RISK FOR MYOCARDIAL INFARCTION.

Sahityasri Thapi[1], Joseph Masci[2]. [1]Medical Education, [2]Medicine. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Elmhurst Hospital.

MENTOR: JOSEPH MASCI, MD.

138

DISEASE SPECIFIC SURVIVAL OF PATIENTS WITH GASTROINTESTINAL NEUROENDOCRINE TUMORS AND DIABETES MELLITUS.

Sahityasri Thapi[1], Kiwoon Baeg[2], Emily Gallagher[2], Michelle Kim[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTORS: EMILY GALLAGHER, MD, MICHELLE KIM, MD.

139

ASSESSING THE CHALLENGES AND OPPORTUNITIES IN ESTABLISHING A PRIMARY CARE LEARNING NETWORK AS THE FIRST STEP TOWARDS A TRUE SERVICE LINE.

Daniel Thomas[1], Natalie Privett[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: NATALIE PRIVETT, PHD.

140

LOW BASELINE MENTAL HEALTH SCORES PREDISPOSE PATIENTS TO WORSE OUTCOMES FOLLOWING PATELLOFEMORAL ARTHROPLASTY.

Jared Tishelman[1], Cynthia Kahlenberg[2], Jordan Gruskay[2], Benedict Nwachukwa[2], Sabrina Strickland[2]. [1]Medical Education, [2]Orthopaedics. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Hospital for Special Surgery, New York, NY.

MENTOR: SABRINA STRICKLAND, MD.

141

FECAL MICROBIOTA TRANSPLANT DECREASES MORTALITY IN PATIENTS WITH SEVERE AND FULMINANT CLOSTRIDIUM DIFFICILE INFECTION.

Emily Tixier[1], Elijah Verheyen[2], Ryan Ungaro[2], Ari Grinspan[3]. [1]Medical Education, [2]Medicine. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: ARI GRINSPAN, MD.

142

POSTERIOR LUMBAR FUSION AND EPISODE-BASED OUTCOMES: A 10-YEAR INSTITUTIONAL RETROSPECTIVE ANALYSIS.

Nir Tomer[1], Sean Neifert[1], Daniel Snyder[1], Jared Tishelman[1], Samuel DeMaria[2], Jonathan Gal[2], John Caridi[3]. [1]Medical Education, [2]Anesthesiology, [3]Neurosurgery. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: JOHN CARIDI, MD.

143

ASSESSMENT OF CARE TRANSITIONS AND CAREGIVER BURDEN IN ANTI-N-METHYL-D-ASPARTATE RECEPTOR ENCEPHALITIS.

Amanda Tomlinson[1], Raia Blum[1], Sylviah Nymau[2], Churl-Su Kwon[2], Nathalie Jetté[2], Anusha Yeshokumar[2]. [1]Medical Education, [2]Neurology. [1,2]Icahn School of Medicine at Mount Sinai, New York, NY.

MENTOR: ANUSHA YESHOKUMAR, MD.

144

CHARACTERIZING ASTIGMATISM IN THE US: A POPULATION-BASED NHANES STUDY.

Girish Valluru[1], Janek Klawe[2], Sumayya Ahmad[2]. [1]Medical Education, [2]Ophthalmology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTORS: JANEK KLAWE MA, SUMAYYA AHMAD, MD.

145

AN INITIATIVE TO IDENTIFY AND TREAT HOSPITALIZED PATIENTS WITH OPIOID USE DISORDER.

Dillan Villavisanis[1], Trevor Lee[2], Reema Navalurkar[1], Benjamin Shuham[1], Matthew Fine[1], Leeza Hirt[1], Linda Wang[2], Michael Herscher[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTORS: TREVOR LEE, MD, MICHAEL HERSCHER, MD.

LIST OF ABSTRACTS

146

RACIAL/ETHNIC DISPARITIES IN SEVERE MATERNAL MORBIDITY AND VERY LOW BIRTH WEIGHT BABIES: A QUALITATIVE STUDY ON WOMEN'S EXPERIENCES OF PERIPARTUM CARE.

Eileen Wang[1], Shoshanna Sofaer[2], Amy Balbierz[3], Elizabeth Howell[3]. [1]Medical Education, [2,3]Population Health Science and Policy. [1,3]Icahn School of Medicine at Mount Sinai, New York, New York, [2]American Institutes for Research, New York, NY.

MENTOR: ELIZABETH HOWELL, MD.

147

RATES OF PREECLAMPSIA IN DICHORIONIC DIAMNIOTIC TWIN GESTATIONS UNDERGOING CHORIONIC VILLUS SAMPLING.

Leslie Warren[1], Joanne Stone[2], Eric Bergh[3], Luciana Vieira[2]. [1]Medical Education, [2,3]Obstetrics, Gynecology, and Reproductive Science. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]McGovern Medical School, The University of Texas Health Science Center at Houston, Houston, Texas.

MENTOR: LUCIANA VIEIRA, MD.

148

HYPOSPADIAS AND RITUAL CIRCUMCISION.

Mark Weingarten[1], Jeffrey Stock[2]. [1]Medical Education, [2]Urology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: JEFFREY STOCK, MD.

149

A GENOTYPE-FIRST APPROACH TO EXPLORING MENDELIAN CARDIOVASCULAR TRAITS.

Brittany Wenger[1], Amy Kontorovich[2], Bruce Gelb[3]. [1]Medical Education, [2]Medicine, [3]Genetics and Genomic Sciences. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: BRUCE GELB, MD.

150

EXPLORING PATIENT PERSPECTIVES ON THE ACCEPTABILITY OF MEDICATION ADHERENCE SUPPORT SERVICES AT A LARGE PRIVATE HOSPITAL IN KAMPALA, UGANDA.

Rachel Wilkinson[1], Evan Garden[1], Rose Nanyonga Clarke[2], Allison Squires[3], Jeremy Schwartz[4], David Heller[5]. [1]Medical Education, [2,3,4,5]Medicine. [1,5]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Clarke International University, [3]New York University, [4]Yale University.

MENTOR: DAVID HELLER, MD, MPH.

151

EFFECTS OF OBSTRUCTIVE SLEEP APNEA ON HUMAN SPATIAL NAVIGATIONAL MEMORY CONSOLIDATION IN COGNITIVELY NORMAL OLDER INDIVIDUALS.

Masrai Williams[1], Andrew Varga[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: ANDREW VARGA, MD, PHD.

152

LEVERAGING SUB-DISTRICT OFFICER INSIGHT AND EXPERIENCE TO ADAPT THE COMMUNITY-BASED HEALTH PLANNING SERVICES (CHPS) PROGRAM TO SCREEN AND TREAT CARDIOVASCULAR DISEASE IN NAVRONGO, GHANA: A PILOT STUDY.

Ethan Wood[1], Katherine Garvey[1], Edith Dambayi[2], Denis Awuni[3], Raymond Aborigo[2], Elizabeth Jackson[4], James Phillips[5], Abraham Oduro[2], David Heller[1]. [1]Medical Education, [3]Medicine. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Navrongo Health Research Center Navrongo, Ghana, [3]Navrongo Health Research Center, [4,5]Columbia University, New York New York, NY.

MENTOR: DAVID HELLER, MD, MPH.

153

THE VALUE OF PLASTIC SURGEON SPINAL CLOSURE: A REVIEW OF 782 SPINE CASES.

Hope Xu[1], Collin Rozanski[2], Peter Taub[2]. [1]Medical Education, [2]Surgery. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: PETER TAUB, MD.

154

INTERNAL CRANIAL EXPANSION SURGERY FOR TREATMENT OF REFRACTORY IDIOPATHIC INTRACRANIAL HYPERTENSION IN AN ADULT POPULATION.

Hope Xu[1], Collin Rozanski[2], Jeremy Steinberger[3], Amy Tucker[3], Kambiz Nael[4], Saadi Ghatan[3], Peter Taub[2]. [1]Medical Education, [2]Surgery, [3]Neurosurgery, [4]Radiology. [1,2,3,4]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: PETER TAUB, MD.

155

C7 SLOPE AS A PROXY FOR T1 SLOPE: A RADIOGRAPHIC ANALYSIS.

Ivan Ye[1], Ray Tang[2], Zoe Cheung[3], Samuel Cho[3]. [1]Medical Education, [2,3]Orthopaedics. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

MENTOR: SAMUEL CHO, MD.

LIST OF ABSTRACTS

156	**CHARACTERISTICS OF ANTIBIOTIC PROPHYLAXIS AND RISK OF SURGICAL SITE INFECTIONS IN PRIMARY TOTAL HIP AND KNEE ARTHROPLASTY.** Ryley Zastrow[1], Hsin-Hui Huang[2], Jashvant Poeran[2], Patricia Saunders-Hao[3], Leesa Galatz[4], Madhu Mazumdar[2], Calin Moucha[4]. [1]Medical Education, [2]Population Health Science and Policy, [3]The Mount Sinai Hospital, [4]Orthopaedics. [1,2,4]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTORS: JASHVANT POERAN, MD, PHD, CALIN MOUCHA, MD.**
157	**REVEALING SUBCLINICAL GLAUCOMA PROGRESSION USING HIGH-RESOLUTION RETINAL IMAGING.** Davis Bing Zhou[1], Maria Castanos[2], Jorge Andrade[2], Melvi Eguia[3], Erica Jacobs[3], Donald Hood[4], Robert Ritch[3], Richard Rosen[5], Toco Chui[5]. [1]Medical Education, [2,5]Ophthalmology. [1,5]Icahn School of Medicine at Mount Sinai, New York, New York, [2,3]New York Eye and Ear Infirmary of Mount Sinai, New York, NY, [4]Columbia University. **MENTORS: RICHARD ROSEN, MD, TOCO CHUI, PHD.**
158	**PREDICTORS OF HEPATITIS C TREATMENT OUTCOMES.** Jacob Ziff[1], Jeffrey Weiss[2], Keith Sigel[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: KEITH SIGEL, MD, PHD.**
159	**EXPLORING SEX SPECIFIC ASSOCIATIONS BETWEEN PRENATAL AIR POLLUTION AND EARLY CHILDHOOD WHEEZE PHENOTYPES.** Nicholas Zirn[1], Alison Lee[2], Whitney Cowell[2], Rosalind Wright[2]. [1]Medical Education, [2]Pediatrics. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York. **MENTOR: ALISON LEE, MD.**

SECTION 2:

Abstracts

ABSTRACT 1

IDENTIFYING PATIENT PRIORITIES FOR PRECONCEPTION AND PREGNANCY COUNSELING IN IBD.

Aiya Aboubakr[1], Alexa Riggs[2], Maria Teresa Mella[3], Marla Dubinsky[4]. [1]Medical Education, [2]Medicine, [3]Obstetrics, Gynecology, and Reproductive Science, [4]Pediatrics.
[1,2,3,4]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Inflammatory bowel disease (IBD) commonly affects women of reproductive age. Many lacking knowledge on IBD and reproduction make uninformed decisions, such as voluntary childlessness and medication cessation. Education should be individualized to a patient's knowledge base and include topics most important to her.

HYPOTHESIS OR RESEARCH QUESTION: We aim to describe the priority rankings of topics of patients seeking preconception and pregnancy counseling.

STUDY DESIGN/METHODS: As part of an ongoing prospective cohort study, intake forms were administered to women seen at the Marie and Barry Lipman IBD Preconception and Pregnancy Planning (I-PrePP) Clinic between 2015-2018. Demographic and clinical data was collected. Patients were asked to rank nine a priori preconception, pregnancy and postpartum topics to be addressed by the care team (IBD physician and high-risk OB). Forms were excluded if >3 items were ranked as top priority. Primary outcome was the frequency each topic(s) was ranked as #1 priority. Descriptive statistics summarize patient level data (mean (SD)).

RESULTS: Ninety-five women with IBD (mean (SD) age 32 (4.5) years) were seen and 65 (60% CD, 40% UC) intake forms were analyzed. 40 (62%) were seen preconception (63% Gravida 0) and 25 (38%) were pregnant (48% Gravida 1 Parity 0). Forty-three percent (28) were on biologics, twenty percent (13) were not on IBD therapy and the remainder were on 6-mp (17%), 5-ASA (3%) and/or steroids (8%). Nineteen (29%) women had a prior surgery (84% bowel resection; 16% perianal surgery). Safety of medication was most commonly ranked as top priority (48%) followed by control of IBD activity and impact on pregnancy (31%), and impact of IBD and surgery on fertility (20%). Of those who prioritized medication safety, 5 were not on therapy, 13 on non-biologics and 13 on biologics. 10 patients not on biologics had a prior history and 2 had stopped due to pregnancy. Of 13 patients with fertility as priority, 5 were Gravida 0, 3 had spontaneous abortion, 5 had ≥1 child; 6 sought fertility counseling and 1 used assisted reproductive technology.

CONCLUSIONS/FUTURE PLANS: Safety of IBD medication remains a top priority for patients seeking preconception and pregnancy counseling. Improving knowledge on topics prioritized by patients will improve pregnancy outcomes.

ABSTRACT 2

INCREASED RISK OF GLOMERULAR DYSFUNCTION IN CHRONIC MYELOID LEUKEMIA PATIENTS USING DASATINIB.

Benjamin Adegbite[1], Victoria Gutgarts[2], Alecia Muwonge[3], Kirk Campbell[3], Ellin Berman[2], Edgar Jaimes[2], Evren Azeloglu[3]. [1]Medical Education, [2,3]Medicine. [1,3]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Memorial Sloan Kettering Cancer Center NY, NY.

BACKGROUND/RATIONALE: BCR-ABL tyrosine kinase inhibitors (TKIs) inhibit the growth of cancer cells expressing the BCR-ABL gene in CML (chronic myeloid leukemia) patients, but can be nephrotoxic. Dasatinib is a TKI that has been widely used due to its efficacy, but evidence shows that its toxicity is more potent than other TKIs because it directly affects the glomerular cytoskeletal structure.

HYPOTHESIS OR RESEARCH QUESTION: The aim of this study is to 1) measure the extent of nephrotoxicity of dasatinib in relation to other TKIs, and 2) determine factors that increase the risk of developing proteinuria from using dasatinib. It was hypothesized that proteinuria will be more frequent in patients in dasatinib users as compared to the other TKIs, and the risk of proteinuria in these dasatinib patients will be increased as dosage and duration of use increases.

STUDY DESIGN/METHODS: CML patients from the Sloan Kettering Center participated in the study. Urine samples were centrifuged before 1 mL of urine was sent to a clinical lab for protein, microalbumin, and creatinine measures. Proteinuria was determined as having a microalbumin/creatinine ratio (MACR) above 100 mg/dL. Risk factor regression analysis factors were: most recent drug used, duration of treatment until collection date, age, and sex. An odds ratio determined the odds of developing proteinuria when using dasatinib rather than other TKIs.

RESULTS: 35 patients were tested; 4 were excluded due to discontinued TKI use or their incalculable MACR. Of the remaining, there were 15 females, and 16 males. Patients were 58.7 ± 11.3 years old (mean ± STD). Twelve used dasatinib, and the remaining used other TKIs. On average, dasatinib users had a MACR of 117.4 ± 191.0 mg/dL while non-dasatinib TKI users had a MACR of 21.9 ± 17.4 mg/dL, which was significantly lower ($p < 0.05$). Four patients had proteinuria; all were on dasatinib. The odds ratio was 9.0, with a 95% CI of 0.8 to 93. The risk factor regression analysis showed no significant factors.

CONCLUSIONS/FUTURE PLANS: CML patients using dasatinib showed significantly more proteinuria compared to those using other TKIs. While the odds of developing proteinuria using dasatinib versus other TKIs was not significant due to low power, there was a strong trend. Thus, we plan to increase our sample size for a greater effect.

ABSTRACT 3

VALIDITY OF A NEW MEASURE OF RESILIENCY PROMOTING BEHAVIORS IN MEDICAL STUDENTS FOLLOWING JAPAN'S 3/11 DISASTER.

Daniel Afonin[1], Ana Rodriguez[1], Yuzo Takeguchi[2], Rie Sakamoto[2], Hiroki Ando[2], Tenshin Otsuka[2], Tomoyuki Jimbo[2], Satoshi Waguri[3], Kanako Taku[4], Craig Katz[5], Robert Yanagisawa[6]. [1,2]Medical Education,[5]Psychiatry. [1,5,6]Icahn School of Medicine at Mount Sinai, New York, NY, [2,3]Fukushima Medical University, Fukushima, Japan, [4]Oakland University, Rochester, MI, USA.

BACKGROUND/RATIONALE: The Great East Japan Earthquake of March 2011 resulted in unprecedented loss of life and infrastructural damage throughout the northeastern regions of the country. The Fukushima prefecture, specifically, suffered the trifecta of Japan's most powerful-recorded earthquake, multiple tsunamis, and the meltdown of the Fukushima Daiichi Nuclear Power Plant. Today, residents are still dealing with the physical and emotional repercussions.

HYPOTHESIS OR RESEARCH QUESTION: Does the expansion of the 10-Factor Resiliency Behavior Scale (10FRBS) into the 45-Factor Resiliency Behavior Scale (45FRBS) capture specific resiliency promoting behaviors?

STUDY DESIGN/METHODS: We distributed surveys to Japanese students at Fukushima Medical University which included: 1) the Connor-Davidson Resilience Scale (CD-RISC) and 2) the newly created 45-Factor Resilience Behavior Scale (45FRBS). Some students expanded on their responses in optional follow-up interviews.

RESULTS: We surveyed 467 students. Consistent with prior findings with the 10FRBS (Levine et al., 2018), the same 4 strategies demonstrated the highest correlations with overall resilience as measured by CD-RISC: "Engage in Positive Attitude and Optimism," "Develop Acting Coping Skills," "Establish and Nurture a Supportive Social Network," and "Find and Foster Strengths." The most frequently cited resilience behaviors with the 45FRBS were: "Accept that certain things are out of your power to change" (M=2.92, SD=0.952), "Recognize and do what excites you" (M=2.72, SD=0.967), "Affirm the coexistence of positive and negative thoughts" (M=2.58, SD=1.038), and "Assess your core values and beliefs" (M=2.5, SD=0.987). All 45 behaviors were significantly correlated with CD-RISC overall resilience. Correlations ranged from r=0.587 to r=0.097, with p ranging from <0.01 (N=43) to <0.05 (N=2).

CONCLUSIONS/FUTURE PLANS: The 45FRBS expands the strategies of the 10FRBS into behaviors that are each significantly correlated with resilience. That the correlations vary suggests that the items are capturing related but different phenomena and that the scale encompasses a range of specific resilience behaviors. Future research will explore whether composite scoring of the 45 individual items of the 45FRBS yields a statistically and clinically meaningful measure of resilient behavior.

ABSTRACT 4

BILIRUBIN AS A PREDICTOR FOR PERFORATED APPENDICITIS.

Alexandra Agathis[1], Jeffrey Aalberg[2], Celia Divino[2]. [1]Medical Education, [2]Surgery. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: The incidence of perforated appendicitis is 16.5%. Pre-operative predictors of perforation include imaging findings, elevated temperature, and leukocytosis. Prior studies have presented the correlation between hyperbilirubinemia and perforated appendicitis in smaller samples, but failed to provide clinical applicability.

HYPOTHESIS OR RESEARCH QUESTION: This study analyzes the predictive value of using total serum bilirubin to diagnose perforated appendicitis using a national database.

STUDY DESIGN/METHODS: The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database is an outcomes-based national surgical database. NSQIP was used to compare pre-operative total serum bilirubin values between perforated and non-perforated appendicitis cases. A multivariate logistical model was developed, adjusting for risk factors and the interaction between WBC and bilirubin. Cut-off values were calculated to indicate at which levels perforation has likely (based on maximized Youden's J statistic) occurred at certain ages.

RESULTS: Of the total 6308 patients, 1196 (19%) were perforated and 5112 (81%) were non-perforated. The perforated and non-perforated groups had median bilirubin values of 0.9 mg/dL (IQR 0.6-1.2) and 0.7 mg/dL (IQR 0.5-1.0), respectively. The logistical regression revealed a diagnostic model with sensitivity = 75.0%, specificity = 69.3%, NPV = 92.2%, PPV = 36.4%. The model ROC AUC = 0.795, and bilirubin alone AUC = 0.640. Cut-off values based on age groups were: 2.99 mg/dL (age 20), 2.40 mg/dL (age 30), 1.81 mg/dL (age 40), 1.22 mg/dL (age 50). Analysis of WBC and bilirubin showed that as WBC count increases, bilirubin odds ratio increases.

CONCLUSIONS/FUTURE PLANS: Our study supports the correlation between hyperbilirubinemia and perforated appendicitis in a national population, while providing clinical cut-off values. An elevated total serum bilirubin can inform the physician that a patient's appendix has likely perforated and thus their condition is more severe. For a fast, inexpensive blood test, bilirubin adds valuable diagnostic power when considered in conjunction with other labs, the clinical picture, and imaging.

ABSTRACT 5

OPTIMIZING TREATMENT OF DISTAL RADIUS FRACTURES: EFFECTS OF VOLAR TILT AND PLATE POSITION ON FLEXOR POLLICIS LONGUS TENDON CONTACT FORCE.

Amy Ahn[1], Matthew Gluck[2], Josh McGough[2], Michael Hausman[2]. [1]Medical Education, [2]Orthopaedics. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: The volar locking plate is commonly used to treat distal radius fractures, but is also associated with rupture of the flexor pollicis longus (FPL) tendon. There is a paucity of literature investigating the optimum plate placement to decrease FPL tendon contact force.

HYPOTHESIS OR RESEARCH QUESTION: This study aims to determine the optimal combination of volar tilt and volar plate position to reduce FPL tendon rupture. We hypothesize restoration of the anatomic volar tilt and plate placement at the watershed line will result in the least amount of FPL contact force.

STUDY DESIGN/METHODS: We used ten (n=10) cadaveric upper extremities for testing. The following surgical conditions were tested. Control: intact radius with no locking volar plate. The rest of the conditions simulated a healing radius fracture. Anatomic Plate: plate placed just proximal to the watershed line at a normal volar tilt. Anatomic Plate Dorsal: plate placed just proximal to the watershed line at 15° dorsal volar tilt. Distal Plate: plate placed 2mm distal to the watershed line at normal volar tilt. Distal Dorsal Plate: plate placed 2mm distal to the watershed line at 15° dorsal volar tilt. Contact pressure was measured with a small force transducer between the FPL and the volar lip of the radius/volar plate using 1kg and 3kg weights 3 times for each condition. A two-way ANOVA was used to assess for statistical significance ($p<0.05$) in contact pressure stratifying by both load size and surgical condition.

RESULTS: There was no significant difference in contact force between the Control and Anatomic Plate conditions for both 1kg and 3kg loads. There was a significant increase in contact force between the Control and the Anatomic Distal Plate condition for both loads. There was a larger increase with the Dorsal Plate condition for both loads. The largest increase was seen in the Dorsal Distal Plate condition for both loads.

CONCLUSIONS/FUTURE PLANS: This study demonstrates that the optimum placement for volar locking plates in the treatment of distal radius fractures is in the Anatomic Plate condition, just proximal to the watershed line, fixed at a normal volar tilt. Future studies could investigate procedures within institutions to see whether these conclusions are supported from retrospective patient data.

ABSTRACT 6

CORRELATION BETWEEN NEUROLOGIC CHALLENGE TASK PERFORMANCE AND LESION LOCALIZATION OF SUB-THRESHOLD LESIONS IN MULTIPLE SCLEROSIS PATIENTS WITH EXPANDED DISABILITY STATUS SCORE OF 0.

Ali Antoine[1], James Sumowski[2], Stephen Krieger[2]. [1]Medical Education, [2]Neurology. [1,2]Icahn School of Medicine at Mount Sinai, New York, NY.

BACKGROUND/RATIONALE: Sub-threshold lesions in Multiple Sclerosis (MS), as characterized by the topographical model, are compensated for and yield no physical deficits. As silent lesions cross the clinical threshold, clinical symptoms become apparent.

HYPOTHESIS OR RESEARCH QUESTION: This study will assess if physically High challenge tests reveal sub-threshold deficits in patients with EDSS Score of 0

STUDY DESIGN/METHODS: In 185 patients with early MS (diagnosed <5 years), 63 patients with an Expanded Disability Status Scale (EDSS) score = 0 were analyzed, as well as 50 healthy controls. Patients and controls completed standard motor tasks (Nine Hole Peg Test, NHPT; Timed 25 Foot Walk, T25FW) and higher challenge tasks of upper extremity function (Grooved Pegboard, Finger Tapping, Grip Strength with dynamometer) and balance (NIH-TB Balance Test, novel Balance Board test). Tasks were adjusted for age, sex, height and weight. T-tests assessed differences between MS patients (EDSS=0) and controls on all tasks. Patients underwent MRI, yielding infratentorial lesion counts (midbrain, pons, cerebellum, medulla, c-spine). The association between performance and infratentorial lesions was assessed.

RESULTS: EDSS=0 patients performed worse than controls on higher challenge upper extremity tasks (Grooved Pegboard, p=.038; Grip Strength, p=.030) but not the standard task (NHPT, p=.177). Despite a normal EDSS and T25FW (mean=4.0s, sd=0.5s, range: 2.8-4.9), patients exhibited worse balance than controls on higher challenge tasks (NIH-TB Balance Test, p=.043; Balance Board test, p=.034). Likewise, infratentorial lesions were associated with performance higher challenge tasks (Grooved Pegboard p=.028; Balance Board p=.036) but not standard tests (NHPT p=.087, T25FT p=.943).

CONCLUSIONS/FUTURE PLANS: Challenge tests were sensitive to performance differences between healthy controls and MS patients with EDSS=0. Grip strength identified motor differences between these patients and healthy controls and correlated with patient reported outcomes on MSIS-29. The Balance Board Test was sensitive to detect subthreshold balance deficiencies and correlated with infratentorial lesions. Recognition of sub-threshold deficits in apparently neurologically normal MS patients may help clinicians understand and predict disease course.

ABSTRACT 7

THEATER AND MEDICINE: INCREASING EMPATHY IN MEDICAL STUDENTS.

Melanie Arnold[1], Erika Landau[2]. [1]Medical Education, [2]Pediatrics. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: The pillars of both theater and medical school education have several important factors in common. Theater involves the study of minute details of human interactions in order to accurately portray characters on stage, thus promoting a new form of empathy useful in medical education. Several studies confirm this, asserting that teaching theater techniques in class improves 'clinical empathy' (Dow 2007) and 95% of students are aware that studying theater could make them better doctors (Watson 2011).

HYPOTHESIS OR RESEARCH QUESTION: Is the addition of theater in the medical school curriculum a way to increase empathy in the students?

STUDY DESIGN/METHODS: A 5-week course was designed and taught at Icahn School of Medicine at Mount Sinai to students of all years. Analysis of the themes of medicine, disability, chronic disease, and the various portrayals of doctors on stage was performed by reading, acting out, and watching videos of the content. At the end of the class, a simple 4-question survey was disseminated to the students and evaluated.

RESULTS: Following the first session, students somewhat agreed that the class increased observational skills (3.375/5), allowed them to understand the patient from a different point-of-view (3.5/5), taught them something about medicine they did not know (3.875), and would be a worthy addition to medical school (4.375). After five sessions, students unanimously strongly agreed with all of these statements (5/5).

CONCLUSIONS/FUTURE PLANS: Several medical schools like Harvard and Yale have acknowledged the importance of art as an addendum to the medical school curriculum, citing that focus on the arts can actually improve baseline levels of empathy in medical students. Based on the future results of this study and the other existing programs, we could consider adding art in all its forms to the curriculum.

ABSTRACT 8

THE EFFECTS OF COPING AND ANXIETY ON PATIENTS UNDERGOING BENIGN INTRACRANIAL TUMOR RESECTION.

Annie Arrighi-Allisan[1], Raj Shrivastava[2]. [1]Medical Education, [2]Neurosurgery. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: With over 616,000 U.S. patients living with a benign intracranial tumor and over 55,150 new expected diagnoses, optimization of patient outcomes following resection of these tumors has become increasingly important. Extant literature has shown coping ability and psychiatric factors to be predictive of patient experiences and outcomes in both surgical and non-surgical spheres. The relationship between coping ability, anxiety, and neurosurgical outcomes, however, has not been explored.

HYPOTHESIS OR RESEARCH QUESTION: How do preoperative anxiety and coping affect patients undergoing benign intracranial tumor resection?

STUDY DESIGN/METHODS: Thirteen patients planning to undergo a brain tumor resection completed preoperative questionnaires, which included self-reported measures of coping (Coping Self-Efficacy Scale [CSE], Chesney et al., 2006) and anxiety (GAD-7, Spitzer et al., 2006). The CSE is further subdivided into three styles of coping, as well as a shorter, refined CSE. Six patients completed the postoperative questionnaire, which measured coping, anxiety, pain, and common postoperative complications. Pearson and Spearman correlation coefficients were calculated between a number of pre- and postoperative indices.

RESULTS: 8/13 patients (61.5%) met the threshold for moderate-to-severe generalized anxiety disorder; however, postoperatively, only 2/6 (33.33%) met this cutoff. Coping on the refined CSE showed a strong negative correlation (r =-0.69, P=0.013) with preoperative anxiety. Preoperative coping exhibited a negative correlation with postoperative pain scores (r_s=-0.647, P=0.165); however, the "stop unpleasant emotions and thoughts" coping style correlated more strongly with pain scores (r_s=-0.736, P=0.096). Lastly, the same coping measure correlated negatively (r_s=-0.577, P=0.231) with a conglomerate "discomfort" score, which included postoperative pain, nausea, and headache. Preoperative coping ability correlated more strongly than anxiety with all postoperative measures.

CONCLUSIONS/FUTURE PLANS: This pilot study suggests a correlation between preoperative coping ability and postoperative pain levels. Patients facing intracranial surgery report lower coping abilities and clinically significant levels of anxiety, thus indicating a need for preoperative anxiety prevention and management.

ABSTRACT 9

THE EFFECT OF IMMIGRATION STATUS ON THE SEVERITY OF PTSD SYMPTOMS AMONG LATINO WORLD TRADE CENTER RESPONDERS.

Imaz Athar[1], Alicia Hurtado[2]. [1]Medical Education, [2]Psychiatry. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Studies show that fear of deportation may exacerbate undocumented Latino immigrants' previous traumas, as they are disproportionately affected by post-traumatic stress disorder (PTSD) compared to citizens. Furthermore, studies show that World Trade Center attack responders—which include undocumented immigrants and US citizens—have an increased risk of developing PTSD. While some data suggests that Hispanic workers had particularly higher PTSD rates, the effect of factors such as immigration status on the severity of PTSD symptoms has not been examined.

HYPOTHESIS OR RESEARCH QUESTION: Undocumented Latino immigrants who worked at Ground Zero experience more severe PTSD symptoms than their Latino US Citizen counterparts.

STUDY DESIGN/METHODS: The medical charts of 70 Latino immigrants and citizens from the WTC Health Program were assessed for PTSD using the PCL checklist. Multivariate linear regression analysis was done to compare PCL scores between legal status groups, adjusting for quality of life (QOL) and gender.

RESULTS: Of the 70, 8 were undocumented, 37 were documented, and 25 were citizens, while 61% were males. The undocumented group had a median trauma score of 45.5, which is above the PCL clinical cut-off of 30-35. Meanwhile, the citizen and documented groups had higher median scores of 62 and 55 respectively. Furthermore, the undocumented group had a median QOL score of 3.5, while both the citizen and documented groups had medians of 4. In the multivariate linear regression, we found that the undocumented group had significantly lower trauma scores compared to citizens (Beta= -0.36, p=0.002). There was no statistical difference in trauma scores between the documented and citizen groups. Gender did not have a significant relationship with trauma. Higher QOL was significantly associated with less trauma (Beta=-.52, p< 0.001). The multivariate model accounted for 32% (R square) of the variance of the trauma score.

CONCLUSIONS/FUTURE PLANS: Immigration status explains differences in severity of PTSD symptoms, as undocumented Latino responders experience less severe PTSD than their citizen counterparts. Furthermore, higher quality of life is associated with experiencing less trauma. It's possible that differences in level of trauma are due to greater resilience in the undocumented group.

ABSTRACT 10

INEFFICIENCY DURING MICROVASCULAR FREE FLAP RECONSTRUCTIVE SURGERY: SUPPLIES AND COMMUNICATION.

Rohini Bahethi[1], Solomon Seckler[1], Katelyn Stepan[2], Mingyang Gray[2], Eliezer Kinberg[2], Samuel Demaria[3], Brett Miles[2]. [1]Medical Education, [2]Otolaryngology, [3]Anesthesiology. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Free flap reconstructions are some of the most challenging, lengthy and resource-intensive operations in otolaryngology, therefore efficient workflow is critical. Observational studies can reveal sources of inefficiency not obvious in traditional automated data collection. With regards to microvascular free flap surgeries, observational studies are particularly challenging to execute due to the lengthy procedure times. However, the results are beneficial for improving resource allocation and promoting patient safety.

HYPOTHESIS OR RESEARCH QUESTION: What are the major contributors to free flap inefficiency?

STUDY DESIGN/METHODS: Trained medical students observed 13 microvascular free flap surgeries performed by head and neck surgeons at the Mount Sinai Hospital over a six-week period. For each entrance or exit, the observers noted 1) time 2) role of person 3) reason.

RESULTS: In 13 cases, a total of 3683 entries and exits were observed over 106.8 hours. The average case was 8.6 hours long. The average number of entries and exits per case was 283.2±62.1. Pre-incision time was 1.61±0.44 hrs, representing 19.2% of total surgery time, which constituted 31.2% of entries and exits. The circulating nurse made the most entries and exits, representing 33.1% of the total observed. 34% of pre-incision entries and exits had a specific reason, the most common being 1) supplies 2) scrubbing in 3) communication/observation. Of all entries and exits, 46.9% had a specific reason, the most common being 1) communication/observation 2) supplies and 3) personnel changes.

CONCLUSIONS/FUTURE PLANS: A significant portion of surgery time is not spent operating but preparing during the pre-incision period. Insufficient availability of supplies within the OR is a key reason, increasing the burden on OR staff. A likely contributor is inadequate pre-operative communication. Thus, improving equipment availability and communication are good targets for interventions. This initial data will serve as the foundation for a more comprehensive QI intervention aimed at improving microvascular free flap efficiency at our institution.

ABSTRACT 11

COMPARISON OF LENGTH OF STAY BETWEEN CHILDREN ADMITTED TO AN OBSERVATION UNIT VERSUS INPATIENT UNIT.

Jennifer Bailey[1], C. Anthoney Lim[2], Julie Oh[2], Erick Eiting[3], Ethan Cowan[3], Barbara Barnett[3], Yvette Calderon[3]. [1]Medical Education, [2]Pediatrics, [3]Emergency Medicine. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Many pediatric patients requiring inpatient admission are otherwise healthy children with self-limited illnesses and discharged within 48 hours, making them ideal candidates for care in a pediatric observation unit (POU). There have been recent changes in the management of these conditions, but differences in patient outcomes for admission to a POU versus a pediatric inpatient unit have not been thoroughly evaluated.

HYPOTHESIS OR RESEARCH QUESTION: Is there a difference in length of stay (LOS) between children being admitted to a pediatric observation unit versus a traditional inpatient unit?

STUDY DESIGN/METHODS: In this retrospective observational cohort study, eligible subjects included children 0-18 years old who met criteria for admission to the POU. Admission data from the POU was compared to two years of inpatient pediatric data (PIU16 and PIU17) to control for seasonal variation in admissions. Information regarding the current illness, past medical history, emergency department treatment, and course in the POU or PIU were collected. The hospital length of stay (LOS) was analyzed as the primary outcome. Changes in level of care were collected as secondary outcomes.

RESULTS: 195 admissions were analyzed, 92 from POU, 53 from PIU16, and 50 from PIU17. There were no significant differences in patient sex, age, proportion with asthma/bronchiolitis, or illness days between the groups. The mean LOS was 24.4 hours (SD 13.1) for the POU, 62.0 hours (SD 39.7) for PIU16, and 47.5 hours (SD 29.5) for PIU17. The LOS for the POU group was significantly less compared to PIU16 ($p<0.0001$) and PIU17 ($p<0.0001$). 5 POU patients were converted to PIU. 4 patients from POU, 1 from PIU16, and 5 from PIU17 were transferred to the intensive care unit.

CONCLUSIONS/FUTURE PLANS: Children admitted to the POU have a significantly shorter LOS compared to those admitted to a PIU without more complications. Pediatric observation units may provide the means toward efficient, patient-centered care for children requiring brief hospitalizations.

ABSTRACT 12

ELEVATED HEMOGLOBIN A1C IS ASSOCIATED WITH PANCREATIC CYSTS IN A HIGH-RISK PANCREATIC SURVEILLANCE PROGRAM.

Ari Bar-Mashiah[1], Anne Aronson[2], Monica Naparst[2], Christopher Dimaio[2], Aimee Lucas[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: An estimated 55,440 people in the United States will be diagnosed with pancreatic cancer in 2018, with 5-year survival of 8%. Approximately 10% of pancreatic cancer cases are hereditary. Emerging evidence demonstrates that surveillance of high-risk individuals improves survival. Population-based data suggests that hyperglycemia may be present up to 3 years before a diagnosis of pancreatic cancer. We investigated the imaging characteristics and Hemoglobin A1C (HgbA1C) levels of individuals enrolled in a pancreatic cancer surveillance study.

HYPOTHESIS OR RESEARCH QUESTION: We hypothesize that patients in a high-risk pancreatic surveillance program with HgbA1c levels in the pre-diabetic range or above (≥ 5.7) would have a higher likelihood of cyst detection.

STUDY DESIGN/METHODS: Pancreatic surveillance with EUS and/or MRCP was conducted in patients with known BRCA1 or BRCA2 mutations as well as patients with familial pancreatic cancer (FPC), defined as patients with 2 or more family members with pancreas cancer, at least 1 of whom was a first degree relative. Analysis was conducted using the Fisher's exact test or chi-squared test, when appropriate.

RESULTS: We identified a total of 146 patients: 80 BRCA1/2 carriers (42 with a family history (FH) of pancreas cancer) and 66 FPC. Forty-four of the subjects were men and 102 were women. The median age was 59.5 years old. Cysts were found in 24/58 (41%) of patients with FPC compared to 9/30 (30%) in BRCA1/2 with FH ($p = 0.36$). No differences were noted in the prevalence of cysts in BRCA1/2 carriers with or without a FH of pancreas cancer (30% vs. 30%, $p = 1.0$). Patients with HgbA1C ≥ 5.7 were more likely to have pancreatic cysts compared to those with HgbA1C < 5.7 (59% v. 31%, $p = 0.03$).

CONCLUSIONS/FUTURE PLANS: This study provides evidence that BRCA1/2 mutation carriers develop cystic lesions in the pancreas, independent of FH. Additionally, cysts and other parenchymal abnormalities were no more likely to be found in FPC individuals compared to BRCA1/2 carriers with a FH. High-risk patients at the prediabetic range or higher (HgbA1c ≥ 5.7), were more likely to have pancreatic cysts compared to those with a normal HgbA1C. These findings may help tailor the surveillance protocols for those at increased risk of developing pancreatic adenocarcinoma.

ABSTRACT 13

DETECTION OF URIC ACID CRYSTALS IN THE VASCULATURE OF PATIENTS WITH GOUT USING DUAL-ENERGY COMPUTED TOMOGRAPHY.

Sharon Barazani[1], Weiwei Chi[2], Renata Pyzik[3], Zahi Fayad[3], Yousaf Ali[2], Venkatesh Mani[3].
[1]Medical Education, [2]Medicine, [3]Radiology. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: This study evaluated whether dual energy computed tomography (DECT) can identify monosodium urate (MSU) within vessel walls of individuals with gout and how this compared to vascular MSU in controls. This study may help elucidate why individuals with gout have increased risk for cardiovascular disease.

HYPOTHESIS OR RESEARCH QUESTION: Do patients with gout have uric acid deposition in their vasculature thus contributing to increased cardiovascular disease risk?

STUDY DESIGN/METHODS: 31 gout patients (16 tophaceous) and 18 controls without any chronic inflammatory or infectious diseases underwent DECT scans of the chest and abdomen. A material decomposition algorithm was used to segment regions of MSU, and calcifications from soft tissue. Volume of MSU deposition, calculated from segmented images using a semi-automated volume assessment program and number of urate spots in the aorta were then measured.

RESULTS: Gout patients had significantly higher MSU volume within the entire aorta compared to controls (133.2 ± 223.0 vs. 33.4 ± 62.7, p =0.02, respectively). Similarly, the number of deposits was also significantly higher in the gout group compared to controls (63.9 ± 134.0 vs. 15.9 ± 29.9, p=0.01, respectively). Unadjusted linear regression also showed that gout patients had higher MSU volume in the aorta compared to controls (p =0.02). However, this association was lost after correction for age, gender, history of coronary artery disease and diabetes. Increased age was also significantly positively associated with total urate volume within the aorta (r=0.41).

CONCLUSIONS/FUTURE PLANS: This pilot study showed that patients with gout have increased MSU deposition within their vasculature and this increase in MSU within vasculature could potentially be a mechanism by which individuals with gout have higher cardiovascular risk.

ABSTRACT 14

PHYSIOLOGICAL RESPONSE TO MIFEPRISTONE IN MALE US MILITARY VETERANS WITH POST TRAUMATIC STRESS DISORDER.

Brendan Bechard[1], Xue Li[2], Marcel Bizien[3], Robin Hurley[4], Rachel Yehuda[5], Dewleen Baker[6], Michael Hertzberg[7], Julia Golier[8]. [1]Medical Education,[4,6,7,8]Psychiatry, [5]Neuroscience. [1,5,8]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Hines VA Cooperative Studies Program, [3]Albuquerque VA Cooperative Studies Pharmacy, [4]Wake Forest University School of Medicine, [6]San Diego VA Medical Center, [7]Durham VA Medical Center.

BACKGROUND/RATIONALE: PTSD is an often-debilitating illness associated with altered HPA axis signaling. As such, the multi-site clinical trial CCTA#04 assessed the safety of Mifepristone in a cohort of male US military Veterans with PTSD.As this was the first large-scale clinical trial to utilize Mifepristone for the treatment of PTSD, assessing physiological response(s) to medication was important for determining safety in this population. HYPOTHESIS OR RESEARCH QUESTION: To characterize the impact of short-term treatment with a glucocorticoid receptor antagonist versus placebo on medical lab values in Veterans with PTSD.

STUDY DESIGN/METHODS: Multi-site, double-blind, randomized, placebo-controlled trial of Mifepristone.81 male US military Veterans with PTSD were recruited through the VA and randomized to placebo(n=43)or study drug(n=38).Veterans were administered 600mg Mifepristone x7 days, and assessed x3 months. Veterans underwent blood draws at: baseline, 3 days,1-week, and 4-weeks. The results from 1-week and 4-weeks post-treatment were compared to baseline pre-drug/placebo values generating a change score. Change scores from baseline were compared between the Mifepristone and placebo groups using the Wilcoxon rank-sum test.

RESULTS: Cortisol and ACTH increased substantially only in drug group at 1-week (p's <.0001); and resolved by week-4.There were no group differences in baseline plasma electrolytes, glucose or LFTs. At 1-week, elevation in creatinine (0.03 vs.-0.03 mg/dL, p=.003), blood glucose (2.9 vs.-5.0 mg/dL, p-value=0.03) bilirubin (0.10 vs.-0.06 mg/dl,p=.001) and decreases in Mg(-0.07vs. 0.01 mg/dL,p=0.03),WBC(-0.37 vs.0.18 k/cmm, p=0.04),ALP(-5.12 vs.-1.92 U/L,p=.028),and total protein (-0.24 mg/dL, p=.038)were noted in the drug group relative to placebo; but levels remained within the normal range. Reduction in ALP alone persisted into week 4(-6.69 vs.-2.05 U/L, p=.0002).

CONCLUSIONS/FUTURE PLANS: Mifepristone treatment yielded changes in electrolytes/LFTs that were small in absolute value but statistically significant. The values fell within the normal range with acute treatment and mostly resolved at 1-month follow-up. Taken together with data showing no group difference in treatment emergent adverse events, this data furthers the view that this regimen of mifepristone is safe and well-tolerated in veterans with PTSD.

ABSTRACT 15

BIOMARKER MONITORING IN HIGH RISK GVHD PATIENTS.

Kaitlyn Ben-David[1], James Ferrara[2]. [1]Medical Education, [2]Oncological Sciences. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Allogeneic hematopoietic cell transplantation cures a number of hematologic malignancies. However, the therapeutic graft-versus-leukemia effect is often diminished by the toxicity of graft-versus-host disease (GVHD). GVHD is a dynamic process, thus, monitoring clinical response to inform GVHD therapy is inexact. Nevertheless, clinical response after 4 weeks of therapy is considered the gold standard as a surrogate for long-term survival. My mentor has shown that serum biomarkers can accurately predict long-term outcomes and has validated an algorithm that combines weighted concentrations of biomarkers ST2 and REG3.

HYPOTHESIS OR RESEARCH QUESTION: Biomarker probabilities (pHATs) at week 4 more accurately predict lethal GVHD than clinical response at week 4, the current gold standard.

STUDY DESIGN/METHODS: I identified 57 patients that were high probability (HP) by biomarkers at the onset of treatment for GVHD. I analyzed ST2 and REG3 concentrations by ELISA and used the validated biomarker algorithm to calculate each patient's predicted probability (pHAT).

RESULTS: Lethal GVHD within 6 months was the predicted outcome. I created receiver operating characteristic curves for clinical response and biomarker pHATs at week 4 after treatment. The areas under the curve (AUCs) were 0.78 for clinical response and 0.92 for biomarker pHATs. The sensitivity for biomarker pHAT was higher than for clinical response (94% vs 81%) as was the NPV (96% vs 90%). In both clinical responder and non-responder groups, there was a significant number of patients for whom biomarkers correctly predicted the opposite outcome to that expected by their clinical response.

CONCLUSIONS/FUTURE PLANS: These findings warrant a large project including all patients treated for GVHD. If these results extend to all patients, we might conclude that week 4 biomarker concentrations more accurately predict long term outcomes than week 4 clinical response. These studies will help to redefine the standard for clinical trials, and may accelerate the approval of new therapies for this difficult disease.

ABSTRACT 16

FITBIT PHYSICAL ACTIVITY MEASURES IN PATIENTS WHO SUFFER FROM SPINAL AILMENTS AND UNDERGO SPINAL SURGERY.

Dennis Bienstock[1], Nicole Zubizarreta[2], Wesley Bronson[3], Saad Chaudhary[3], Andrew Hecht[3], James Iatridis[3]. [1]Medical Education, [2]Population Health Science and Policy, [3]Orthopaedics. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: In patients with low back pain, accurate descriptions of movement quality are important for clinical reasoning during diagnosis and for analysis of treatment interventions. Instruments that measure patient mobility outside of the clinic could bolster outcomes data by decreasing the reliance on subjective patient reported outcomes measures (PROMs) like the Oswestry Disability Index (ODI) and Short Form-12 Physical Component and Mental Component Scores (SF-12 PCS/MCS).

HYPOTHESIS OR RESEARCH QUESTION: This study aims to determine if, for lumbar laminectomy patients, a correlation exists between patient-reported outcomes and physical activity levels during the preoperative period.

STUDY DESIGN/METHODS: This prospective study included 8 subjects (5 males and 3 females). The Fitbit Flex2 was used to continuously measure patient activity levels (median daily steps, distance travelled, and calories) for at least 2 weeks preoperatively. The subjects also recorded their pain and functional levels at enrollment using the SF-12 and ODI PROMs. A Pearson correlation test was used to assess the degree of association between preoperative activity levels and pain and function levels as measured by the aforementioned PROMs.

RESULTS: The activity measurement period ranged between 2 and 16 weeks during which median compliance was 86%. Pearson correlation tests revealed a significant correlation between ODI score and median calories burned per day ($r = -0.77$, $p = 0.02$) and strong correlations between ODI score and median distance traveled per day ($r = -0.62$, $p = 0.09$) as well as SF-12 PCS score and median calories burned per day ($r = 0.66$, $p = 0.06$).

CONCLUSIONS/FUTURE PLANS: In patients awaiting lumbar laminectomy, Fitbit measures of patient mobility are strongly correlated with ODI and SF-12 PCS scores. During the preoperative period, these PROMs are likely good representations of patient activity levels outside of the clinic. We hope to determine how well these instruments can quantify improvements in mobility and outcomes over the entire episode of care and specifically, if postoperative changes in mobility as measured by the Fitbit can be used as a proxy for function that is distinct from PROMs.

ABSTRACT 17

CHARACTERIZATION OF PSA AT DEATH IN PATIENTS WITH METASTATIC CASTRATION RESISTANT PROSTATE CANCER.

Krishna Bikkasani[1], Qian Qin[2], Matthew Galsky[2], Bobby Liaw[2], William Oh[2], Che-kai Tsao[2].
[1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Prostate Specific Antigen (PSA) is a valuable prognostic and predictive biomarker in prostate cancer (PC). Currently, the significance of PSA at death is undefined. In this single institution retrospective study, we characterize the significance of PSA at death in patients with metastatic castration-resistant prostate cancer (mCRPC).

HYPOTHESIS OR RESEARCH QUESTION: What significance does the metric PSA at death have in patients with mCRPC?

STUDY DESIGN/METHODS: We used the Mount Sinai Genitourinary (GU) Cancer Biorepository, an IRB approved single institution database containing all consented GU cancer patients seen between 2010-2018 and excluded the data of patients who had less than 3 visits to the Mount Sinai Hospital. We stratified patients into the following cohorts based on their PSA at death: < 10, 10–100, 100–1000, and > 1000 ng/ml. A descriptive analysis was performed to assess clinical characteristics of disease, treatment response, and outcomes.

RESULTS: We identified 1097 PC patients, and 101 were found to be deceased following a diagnosis of mCRPC. The 101 patients were stratified by PSA at death as follows: < 10 (n = 19), 10–100 (n = 21), 100–1000 (n = 43), and > 1000 (n = 18) ng/ml. Cohorts of higher PSA level at death were associated with: a lower Gleason score at diagnosis (8.5, 8.0, 8.0, 7.0 respectively), a longer time to castration resistance (16, 16, 17, 22 months respectively), higher burden of metastatic disease at death (non-visceral and visceral), and longer OS (65, 67, 87, 125 months respectively) in patients with mCRPC.

CONCLUSIONS/FUTURE PLANS: In this study, PSA at death is associated with several important clinical characteristics and outcome, including overall survival. These differences may be attributed to their underlying biologic behavior. These results are hypothesis generating, and larger studies will be needed to further assess the significance of these findings.

ABSTRACT 18

THE IMPACT OF SEGREGATED CARE ON MEDICAL EDUCATION AND THE ROLE OF TRAINEES IN ADVOCATING FOR CHANGE.

James Blum[1], Zina Huxley-Reicher[1], Alec Feuerbach[1], George Fox[1], Akila Pai[1], Rachel Wilkinson[1], David Muller[1], Reena Karani[1]. [1]Medical Education. [1]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: At the Mount Sinai Health System (MSHS), patients with publicly-funded Medicaid are often seen in resident-run clinics while patients with private health insurance are seen at faculty practices by attending physicians. In New York City, such segregation by insurance status is segregation by race: 25% of all New Yorkers use Medicaid, but 38% of black and 43% of Hispanic New Yorkers enroll in the public plan compared with only 18% of white New Yorkers. This is an issue of national importance. The care and health of patients with Medicaid or no insurance depends on trainees. There is a lack of literature about the impact of this practice on patient's health and on medical education.

HYPOTHESIS OR RESEARCH QUESTION: We hypothesize that medical students observe segregated care during their third-year clerkships, that this negatively impacts their education, and that documenting such observations can lead to system-wide change.

STUDY DESIGN/METHODS: A mixed qualitative/quantitative survey was designed and administered to third-year students following the completion of clerkship blocks to investigate the prevalence of segregated care, its perceived effect on patient care, and impact on student education. Simple quantitative analyses were performed alongside descriptive coding of qualitative data.

RESULTS: Segregated care was reported in every clerkship rotation. Of 78 responses, 39 individuals observed segregated care, with 11 individuals reporting differences in care based on insurance status in obstetrics and gynecology.

CONCLUSIONS/FUTURE PLANS: These data spotlight clinical areas with segregated care. Surveying medical students embedded in the clinical workplace to identify such practices is a novel method to document and highlight the impact of segregated care in places such as MSHS. Importantly, the health system can learn from these observations and drive reforms that aim to ensure all patients receive equitable medical care, improve medical education for trainees, and, ultimately, dismantle this system of segregated care.

ABSTRACT 19

ASSESSMENT OF LONG-TERM PSYCHOSOCIAL IMPACT OF ANTI-NMDA RECEPTOR ENCEPHALITIS.

Raia Blum[1], Amanda Tomlinson[1], Sylviah Nyamu[2], Churl-Su Kwon[2], Nathalie Jetté[2], Anusha Yeshokumar[2]. [1]Medical Education, [2]Neurology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Anti-NMDA receptor encephalitis (NMDARE) is characterized by autoantibodies against NMDA receptors in the brain. While literature supports 'good outcomes' for over 80% of patients, recent studies find deficits may persist years after illness, particularly in functional and cognitive.

HYPOTHESIS OR RESEARCH QUESTION: To assess long-term psychosocial outcomes of anti-NMDARE, as experienced and reported by patients.

STUDY DESIGN/METHODS: Adults who self-reported encephalitis history were invited to complete an online survey via a link distributed by the Encephalitis Society and Autoimmune Encephalitis Alliance, which included non-identifying demographics and the Patient-Reported Outcomes Measurement Information System Psychosocial Impact Illness (PROMIS PSII) Negative Short Form. Inclusion criteria were self-report of detected anti-NMDAR antibodies and clinical picture consistent with anti-NMDARE. We assessed psychosocial outcomes of anti-NMDARE as indicated by mean PROMIS Negative PSII score and examined associations between demographic/clinical variables and outcomes.

RESULTS: Sixty-one adults with anti-NMDARE were included, with a mean duration of 4.35 years since symptom onset. Participant mean PROMIS Negative PSII T-score was 60.7 (SD: 7.9), higher (indicating worse psychosocial function) than that of the given normalized population enriched for chronic illness (mean: 50, SD: 10; $p<0.001$). Logistic regression demonstrated that post-hospitalization follow-up with a psychiatrist was associated with increased odds of return to work/school after illness (OR: 8.46, 95% CI: 1.34–53.3), while misdiagnosis was associated with decreased odds of return (OR: 0.11, 95% CI: 0.02–0.79). A multiple linear regression model demonstrated an r^2 of 0.376; younger age of symptom onset (ß: -1.42, 95% CI: -1.38– -0.21) and ongoing psychiatric issues (ß: 0.43, 95% CI: 3.05–10.79) were associated with worse psychosocial outcome.

CONCLUSIONS/FUTURE PLANS: Individuals with anti-NMDARE history may have poor psychosocial outcomes, yet there is no current standard for psychosocial aftercare following acute hospitalization. The results of this study highlight the need for use of more comprehensive outcomes measures and the development of psychosocial supports and interventions to better support this population.

ABSTRACT 20

ANTENATAL TESTING FOR WOMEN WITH PREEXISTING MEDICAL CONDITIONS USING ONLY THE ULTRASONOGRAPHIC PORTION OF THE BIOPHYSICAL PROFILE.

Efrat Bruck[1], Kelly Zafman[2], Andrei Rebarber[2], Daniel Saltzman[2], Nathan Fox[2]. [1]Medical Education, [2]Obstetrics, Gynecology, and Reproductive Science. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Nearly 10% of women giving birth in the United States have a preexisting medical condition that puts them at increased risk for intrauterine fetal demise (IUFD). These women typically undergo antenatal testing in the form of a biophysical profile (BPP). The BPP is comprised of an ultrasonographic portion and a non-stress test.

HYPOTHESIS OR RESEARCH QUESTION: To report the utility of the ultrasonographic BPP, which includes all the components of a BPP minus the nonstress test, in women with indications for antepartum surveillance.

STUDY DESIGN/METHODS: We conducted a case series reviewing records of women at 32 weeks gestation with at least one indication for antenatal testing delivered by a maternal–fetal medicine practice between 2006 and 2018. Indications included diabetes, hypertension, lupus, antiphospholipid syndrome, sickle cell disease, renal disease, heart disease, hyperthyroidism, isoimmunization, inherited thrombophilia, and prior IUFD. Weekly ultrasonographic BPPs were initiated at 32 weeks gestation. We calculated the test-positive rate, the percentage of women delivered for an abnormal ultrasonography BPP, and the IUFD rate (false-negative rate).

RESULTS: Nine hundred eighty-five women underwent 3,981 ultrasonographic BPPs (4 per woman; range 1–11). Sixteen women had an abnormal ultrasonographic BPP, for a test positive rate of 1.6% (95% CI 1.0–2.6%) per woman, or 0.4% (95% CI 0.3–0.7%) per ultrasonographic BPP. Of the 16 women with abnormal ultrasonographic BPPs, 13 delivered with good outcomes and 3 had normal follow-up testing and uncomplicated subsequent deliveries. Three women had IUFD (false-negative rate of 0.3%, 95% CI 0.1–0.9%). One woman with IUFD had a factor V Leiden mutation, fetal ventriculomegaly, and fetal growth restriction. The second had advanced maternal age, a factor V Leiden mutation, and fetal growth restriction. The third had class B diabetes. All 3 IUFDs were diagnosed antepartum with an interval from normal ultrasonographic BPP to IUFD of 7, 7, and 6 days, respectively.

CONCLUSIONS/FUTURE PLANS: The use of ultrasonographic BPP in a high-risk cohort is associated with a very low test-positive rate and a very low incidence of IUFD. In women with conditions that place them at higher risk for IUFD, the ultrasonographic BPP can be used for antenatal testing.

ABSTRACT 21

CLINICAL CHARACTERIZATION OF BRAIN METASTASES FROM HEAD AND NECK SQUAMOUS CELL CARCINOMAS: A CASE SERIES EXPLORING THE ROLE OF HPV.

Oscar Carrillo[1], Corey Gill[1], Thomas Barrett[3], Melissa Umphlett[4], Mary Fowkes[5],
Richard Bakst[6], Brett Miles[7], Joshua Bederson[2], Priscilla Brastianos[8], Raj Shrivastava[2].
[1]MedicalEducation, [2]Neurosurgery, [3,7]Otolaryngology, [4,5]Pathology, [6]Radiation Oncology.
[1,2,5,6,7]Icahn School of Medicine at Mount Sinai, New York, New York,
[3]Washington University School of Medicine in St. Louis, [4]Medstar Health, [8]Massachusetts General Hospital.

BACKGROUND/RATIONALE: Few case series have investigated the clinical presentations and outcomes of patients with brain metastases (BM) from head and neck (H&N) squamous cell carcinomas (SCC's). Identification of clinical and histological risk factors presaging reduced survival could help guide patient management, particularly in the setting of rising H&N Human Papilloma Virus (HPV) prevalence in the general public. HYPOTHESIS OR RESEARCH QUESTION: In this study, we aim to characterize patient demographics, tumor histology, and clinical course of Mount Sinai patients presenting with BM from H&N SCC primary tumors. Additionally, we aim to compare clinical course in patients with HPV-positive and HPV-negative SCC primary tumors.

STUDY DESIGN/METHODS: We performed a retrospective review of the Mount Sinai Electronic Health Record from 2000-2018 of patients with confirmed diagnoses of H&N primary tumors and BM. Data related to patient demographics, diagnosis, histology, and clinical outcomes were recorded. Survival analysis was performed using the Kaplan-Meier method.

RESULTS: This study identifies a total of 22 patients with confirmed H&N primary tumors metastasizing to the brain. The most common primary tumor pathological diagnosis was SCC, accounting for 14 (10 male, 4 female) out of 22 patients. The median age at BM diagnosis for individuals with SCC primary tumors was 55 years of age (range: 43-81). Median time from primary SCC diagnosis to brain metastasis was 1.4 years (range: 0.6-5.0 years). The most common sites of SCC brain metastases were the frontal lobes and parietal lobes, present in 9 (64.2%) and 7 (50%) of confirmed SCC brain metastases, respectively. Of the 14 confirmed SCC primary tumors, 7 were confirmed HPV-positive tumors, 5 were HPV-negative tumors, and 2 were of unknown HPV status. Median survival time from date of SCC BM diagnosis was 1.1 months. Patients with HPV-positive SCC tumors had a median survival of 4.2 months after BM diagnosis while HPV-negative SCC tumors revealed a median survival of 0.6 months.

CONCLUSIONS/FUTURE PLANS: Prognoses for patients with head and neck brain metastases remains dismal, particularly in patients with HPV-negative SCC primary tumors. HPV-positive characterization appears to play a protective role in survival prognosis.

ABSTRACT 22

USE OF EMERGENCY CONTRACEPTION IN NYC SCHOOL-BASED HEALTH CENTERS.

Christina Cary[1], Geetha Fink[2], Britt Lunde[2]. [1]Medical Education, [2]Obstetrics, Gynecology, and Reproductive Science. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Adolescents in NYC can access sexual health resources, including emergency contraception (EC), at school-based health clinics (SBHCs). SBHCs provide a unique setting for health care to often underserved populations of adolescents. Few studies address factors impacting EC use and non-emergent contraception (NEC) initiation among sexually-active female patients at SBHCs.

HYPOTHESIS OR RESEARCH QUESTION: We aim to describe the use of EC and NEC by sexually active female students receiving care at SBHCs.

STUDY DESIGN/METHODS: We conducted a retrospective chart review to obtain data on demographics, sexual activity, and contraceptive use by all sexually-active female patients at Mount Sinai affiliated SBHCs during 2015 and 2016.

RESULTS: During the study period, 2177 women were seen at the three SBHC sites. Of these, 911 were sexually active and included in the study. The mean age at the first visit was 16.3 years (SD of 1.2 years). The majority (91.8%) of students had Medicaid coverage. The study population was diverse, with 22.7% identifying as Black, 11.8% White, 2.0% Asian, and 52.6% other, and 51.9% of participants were Hispanic or Latina. The most commonly used birth control methods included condoms (29.5%), EC (29.7%), oral contraceptive pills (8.0%), and injectable contraception (6.6%). We compared EC versus non-EC users by chi-squared and found no significant differences in terms of race, ethnicity, language, and insurance status, or in risk factors such as smoking status, age at coitarche or number of sexual partners. EC users were significantly more likely to use less effective primary contraceptive methods than non-EC users. Of EC users, 55% initiated NEC at the EC visit.

CONCLUSIONS/FUTURE PLANS: This study characterizes contraception usage among sexually active students in the SBHC setting. We demonstrate that EC, though rarely included in studies of contraception choice, is a frequently used primary method this population and show that SBHC visits for EC often result in initiation of NEC. The data indicates a clear role for SBHCs in providing sexual health services, including EC, and provides baseline information on service utilization as SBHCs debate offering long-term reversible contraceptive options on-site.

ABSTRACT 23

THE EFFECTS OF PATERNAL SEIZURE DISORDERS AND ANTI-SEIZURE MEDICATIONS ON OFFSPRING NEURODEVELOPMENTAL OUTCOMES.

Marc Casale[1], Svetlana Faktorovich[2], Bridget Mueller[2], Ji Yeon Yoo[2], Lara Marcuse[2], Madeline Fields[2].
[1]Medical Education, [2]Neurology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Teratogenicity and negative neurodevelopmental outcomes in the children of epileptic women on anti-seizure medications (ASMs) have previously been studied and correlated to fetal ASM exposure in utero. Scarce comparable data exist in men. However, ASMs have been shown to reduce sperm motility, alter morphology, and decrease overall count. This raises the concern that ASMs may influence fertility. It is unknown if ASM use in men with epilepsy effects conception and neurodevelopment in children.

HYPOTHESIS OR RESEARCH QUESTION: To study the effects of men with epilepsy taking ASMs at the time of conception on offspring neurodevelopmental outcomes.

STUDY DESIGN/METHODS: This is a retrospective, questionnaire-based study involving male participants over eighteen who obtain care at the Mount Sinai Epilepsy Clinic. The experimental group consists of patients previously diagnosed with epilepsy on ASMs at the time of conception. The control group contains patients receiving care for other neurological conditions. Descriptive data analyses were completed.

RESULTS: Data has been collected for 34 children conceived during paternal ASM use compared to 330 controls. Experimental group offspring were significantly more likely to be born premature than control group offspring (23.5% vs. 7.6%; OR = 3.7; $p<0.01$). Experimental group offspring had a lower average birth weight than controls: 6.60 lbs. vs 7.28 lbs. ($p>0.05$). Regarding time necessary for conception, 33.3 % of offspring born to fathers using ASMs took more than 1 year to conceive, compared to 28.3 % in the control group ($p>0.05$). No differences were observed between experimental and control group offspring regarding incidence of Autism Spectrum Disorders, birth defects, developmental/learning delays, chromosomal abnormalities, or delivery complications.

CONCLUSIONS/FUTURE PLANS: This work has been most limited by the unforeseen difficulty in recruiting fathers who conceived offspring while taking ASMs. This study will be expanded to other centers to create a larger database for continued analyses. Current results are interesting, specifically the higher incidence of premature offspring in the experimental group. Future work will focus on breaking down this risk by ASM type, which cannot be accomplished with the current limited population size.

ABSTRACT 24

CLIMATE CHANGE CURRICULUM INFUSION PROJECT.

Christian Cayon[1], Perry Sheffield[2]. [1]Medical Education, [2]Environmental Medicine & Public Health.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Climate change is considered the greatest threat and opportunity to health of the 21st century. Medical schools must investigate how to adequately teach relevant climate change competencies in an already crowded medical curriculum. This project, Climate Change Curriculum Infusion Project (CCCIP), aims to develop climate change and health course content that can be integrated into the existing pre-clinical curriculum at Mount Sinai.

HYPOTHESIS OR RESEARCH QUESTION: In an already crowded course load, is "infusion" of climate c hange concepts into existing course lectures an effective way of teaching students about the relevant health consequences of a warming world?

STUDY DESIGN/METHODS: Health-relevant climate change topics were inserted into existing presentation materials, beginning with the first year Medical Microbiology course, adding no more than 3 slides into relevant lectures. The material was evaluated using an anonymous survey of students taking the course. Faculty also provided process feedback. Findings were used to aid in curriculum refinement and integration and to evaluate effectiveness at teaching climate change and health competencies created by international climate and health consortia.

RESULTS: 87.8% of survey respondents (n=34, response rate 24.3%) agreed or strongly agreed that the infused climate change lecture material helped them better understand the links between climate change and health more clearly. 90.9% of respondents thought the content was appropriate for the class and 84.8% thought it was effectively organized. Faculty from other courses have also responded well to our initiative, expressing interest in having climate change slides infused into their lectures.

CONCLUSIONS/FUTURE PLANS: Overall, students and faculty were satisfied with the initial implementation of CCCIP. In 2018-19, content slides will be added to 3 other Mt. Sinai courses. The goal is develop a replicable CCCIP model for other medical schools interested in refining their curricula to meet the urgent needs of our time.

ABSTRACT 25

CORRELATION OF ATHEROSCLEROTIC PLAQUE FEATURES ON DUPLEX ULTRASOUND AND PET/MRI IN PATIENTS WITH CAROTID ARTERY STENOSIS.

Emily Chapman[1], Zahi Fayad[2], Nikolaos Karakatsanis[3], Jesse Weinberger[4], Qing Hao[4]. [1]Medical Education, [2]Radiology, [4]Neurology. [1,2,3,4]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Ischemic stroke affects 692,000 people annually and is a leading cause of disability in the United States. Luminal stenosis and plaque vulnerability in the carotid artery correlate with stroke risk, and Carotid Duplex (CD) and high-resolution vessel wall MRI (VWMRI) have been used for assessment. Recently PET imaging has provided data on plaque metabolism: increased 18F-fluodeoxyglucose (FDG) uptake may correlate with greater plaque macrophage activity, and 18F-sodium fluoride (NaF) binds to microcalfications of inflammation. CD is the less expensive and more convenient image modality in assessing carotid stenosis.

HYPOTHESIS OR RESEARCH QUESTION: We will assess whether plaque features on CD correlate to those on PET/MRI. We hypothesize that greater plaque burden detected on CD is significantly associated with increased FDG and NaF uptake on PET/MRI.

STUDY DESIGN/METHODS: Patients with asymptomatic stenosis in internal carotid artery (ICA) revealed on CD will be recruited to undergo PET/MRI. CD will measure ICA and common carotid artery (CCA) peak systolic velocity (PSV), mean velocity (MV), and intima-media thickness (IMT). The mean uptake of FDG and NaF in the vessel wall will be measured by target-blood ratio (TBR). The wall area and thickness, and total vessel area at the ICA bifurcation will be measured on VWMRI. Spearman rho will be used to study the correlation between the measurements on different modalities.

RESULTS: Four patients were recruited. All patients had extracranial ICA stenosis (>70% stenosis in one and 50-69% in three patients). Mean peak systolic velocity (PSV) was 202 cm/s (± 54.53) at the stenotic ICA and 78 cm/s (± 17.67) in the contralateral non-stenotic ICA. CCA PSV and MV were each significantly correlated with mean FDG TBR at ICA bifurcation ($R = 0.847$, $p = 0.033$; $R = 0.913$, $p = 0.011$; respectively). CCA IMT measured on CD was significantly correlated with the arterial wall measurements on VWMRI, including wall area ($R = 0.902$; $p = 0.002$), total vessel area ($R = 0.900$; $p = 0.002$), wall thickness ($R = 0.817$; $p = 0.013$) and SD wall thickness ($R = 0.743$; $p = 0.035$).

CONCLUSIONS/FUTURE PLANS: In this pilot study CCA PSV and MV on CD is associated with increased FDG uptake on PET. CCA IMT on CD correlated with arterial wall measurements at the ICA bifurcation on VWMRI.

ABSTRACT 26

EPIGENETIC PRECONDITIONING WITH DECITABINE SENSITIZES GLIOBLASTOMA TO TEMOZOLOMIDE VIA INDUCTION OF MLH1.

Rossana Cheng He[1], Matthew Gallitto[1], Julio Inocencio[2], Robert Sebra[3], Gintaras Deikus[3], Maya Strahl[3], Isaac Wasserman[1], Huaien Wang[4], Yizhou Zhang[4], Raymund Yong[4]. [1]Medical Education, [2,4]Neurosurgery, [3]Genetics and Genomic Sciences. [1,3,4]Icahn School of Medicine at Mount Sinai, New York, NY, [2]Albert Einstein College of Medicine, Bronx, NY.

BACKGROUND/RATIONALE: Glioblastoma (GBM) is the most aggressive primary brain tumor. Aberrant gene hypermethylation is associated with GBM tumorigenesis. Because of the inevitable failure of first-line treatment for GBM, efforts have been made to explore the efficacy of epigenetic agents for chemosensitization. Decitabine (DAC) is an FDA-approved DNA methylation inhibitor used in leukemias and may provide antitumor activity in GBM. Previous studies have shown possible synergy between DAC and temozolomide (TMZ) in GBM, but it is unknown how this effect might be mediated.

HYPOTHESIS OR RESEARCH QUESTION: TMZ exerts its cytotoxic effects by methylating purine bases of DNA, resulting in base mispairing, attempted mismatch repair (MMR), double-strand break formation, and apoptosis. MMR deficiency can lead to apoptotic escape, mutagenesis, and drug resistance. We hypothesized that DAC sensitizes a subset of GBM to TMZ through reactivation of MMR proteins via reversal of aberrant hypermethylation, restoring MMR.

STUDY DESIGN/METHODS: We examined a total of 10 human-derived GBM cell lines to assess the effects of DAC preconditioning on TMZ cytotoxicity by MTS proliferation assay. MMR protein expression was evaluated by quantitative immunoblotting.

RESULTS: DAC preconditioning sensitized 3 of 10 GBM cell lines to TMZ treatment as evidenced by a significant decrease in TMZ IC50. Concurrently, MLH1 expression increased in DAC-sensitized cell lines while the effects of DAC on the expression of MSH2 and MSH6 was more variable. Correlating the IC50 DAC-preconditioned to non-preconditioned (NP) ratios with MLH1 DAC/NP expression ratios, we found a negative correlation that trended towards statistical significance.

CONCLUSIONS/FUTURE PLANS: DAC enhances TMZ cytotoxicity in a subset of patient-derived GBM cultures. This effect may be mediated by re-activation of MLH1 expression. Further studies are needed in additional lines to definitively correlate MLH1 expression with DAC sensitization. Examination of the methylation state of the MLH1 promoter region will be also be of particular interest in developing a biomarker for TMZ sensitization.

ABSTRACT 27

THE IMPACT OF MUSIC THERAPY ON MOVEMENT DURING RADIATION THERAPY.

Aaron Cheng[1], Eli Furhang[2], Andrew Rossetti[3]. [1]Medical Education, [2,3]Radiation Oncology. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Mount Sinai Union Square, Radiation Oncology, Physics Department, [3]Department of Music Therapy, Mount Sinai Beth Israel Medical Center.

BACKGROUND/RATIONALE: Radiation therapy is a high stress procedure. In order for the radiation beams to be effective, they must be aimed at the same target for each treatment. Before initiating treatment, CT scans are taken to position and mark the proper coordinates in three dimensions for treatment. Usually, multiple scans are necessary to help read, readjust, and position the beams more accurately; these are called repeat scans or shifts. Sometimes, anxiety precipitated by the stress of the procedure can create movement in the patient, causing more scans to be needed and consequently more stress. The capability of music therapy to address this movement during CT scans in cancer patients is not well described. This study would further evaluate the impact of music therapy on movement during radiation therapy in cancer patients with newly diagnosed head and neck or breast cancer.

HYPOTHESIS OR RESEARCH QUESTION: To identify and describe the effect of music therapy on movement during radiation therapy in cancer patients (specifically head and neck or breast cancer) undergoing radiation therapy.

STUDY DESIGN/METHODS: We conducted a secondary analysis of data from 57 head and neck and breast cancer patients from a Mount Sinai study. We examined if patients had underwent an additional re-simulation to signify movement during initial simulation. We analyzed the number of repeat scans or shifts patients had for a specific type of beam compared to the number of sessions they had. We calculated this ratio to signify how often each patient shifted or had a repeat scan. We excluded day 0 imaging, which was the day of initial patient setup, in order to account for the temperature variations and staff at the LINAC and differences between simulation and LINAC. For head and neck patients, the average vector of 3D movement for CBCT scans was calculated.

RESULTS: Average ratio for music therapy H&N patients: 1.066, control H&N: .729.
Average magnitude for CBCT shift in music therapy H&N: .378cm, control H&N: .399cm.
Average ratio for music therapy breast patients: .590, control breast: .892
Total shifts/total sessions for music therapy breast patients: .628, control breast: .967

CONCLUSIONS/FUTURE PLANS: Music therapy assists breast patients more than H&N patients; this could be due to differences in freedom of range of motion during therapy.

ABSTRACT 28

AUTOMATED MEASUREMENT OF LUMBAR LORDOSIS ON RADIOGRAPHS USING MACHINE LEARNING AND COMPUTER VISION.

Brian Haejun Cho[1], Deepak Kaji[2], Jun Kim[2], Li Sun[2], Zoe Cheung[2], Ivan Ye[2], Ray Tang[2], Oscar Carrillo[2], Varun Arvind[2], Aly Valliani[2], Eric Oermann[3], Samuel Cho[2]. [1]Medical Education, [2]Orthopaedics, [3]Neurosurgery. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Spinal alignment is increasingly being recognized as a key, quantitative assessment of spinal health, and is associated with various spinal disorders. While surgeons require multiple manually acquired radiographic measurements for presurgical planning, the process is both time-consuming and prone to rater-dependent error. Numerous attempts have been made to deploy artificial intelligence and computer vision algorithms on radiographs to assess spinal alignment. However, these algorithms require surgeon input to identify key landmarks on the radiograph.

HYPOTHESIS OR RESEARCH QUESTION: This study aims to evaluate the effectiveness of a fully automated artificial intelligence and computer vision pipeline in the evaluation of lumbar lordosis.

STUDY DESIGN/METHODS: Radiographs from patients who received lateral lumbar radiographs were used to develop a segmentation neural network (n=629). After synthetic augmentation, 70% of the data was used to train the network, while the remaining 30% was used to optimize its hyperparameters. A computer vision algorithm was then deployed on the segmented radiograph to calculate a lumbar lordosis angle. The test set was used to evaluate the validity of the entire pipeline (n=151). 50 radiographs were randomly selected and manually measured for comparison using two-sample t-test.

RESULTS: The U-Net segmentation achieved a test dataset dice score of 0.821, an area under the receiver operating curve of 0.914, and an accuracy of 0.862. The computer vision algorithm was able to identify the L1 and S1 vertebrae on 84.1% of the test set with an average speed of 0.14 sec/radiograph. From the 151 test set radiographs, 50 were randomly chosen for surgeon measurement. When compared to those measurements, our algorithm achieved a mean absolute error of 8.055 degrees and a median absolute error of 6.965 degrees (not statistically significant, $p > 0.05$).

CONCLUSIONS/FUTURE PLANS: This study is the first to use artificial intelligence and computer vision in a combined pipeline to rapidly measure a spinopelvic parameter without any prior manual surgeon input. The pipeline measures angles with no statistically significant differences from manual measurements made by surgeons. Future work should focus on improving the performance of the segmentation network.

ABSTRACT 29

VIRTUAL REALITY AS NON-PHARMACOLOGIC ANALGESIA AND PATIENT EDUCATION TOOL.

David Christian[1], Mingyang Gray[2], Sean McKee[2], Alfred Iloreta[2]. [1]Medical Education, [2]Otolaryngology.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Post-operative opioid use has been associated with abuse and steep medical costs. Pain management has recently become a locus of challenge in the medical field. New technologies can be leveraged to mitigate the societal and personal costs of chronic opioid use.

HYPOTHESIS OR RESEARCH QUESTION: Based on what is known regarding gate control theory for pain, we hypothesize that virtual reality experiences can serve as a distraction analgesic during outpatient otolaryngology post-operative debridements.

STUDY DESIGN/METHODS: We performed a randomized controlled trial evaluating the effect of immersive virtual reality on pain, anxiety, and overall satisfaction during debridements following skull base or sinus surgery. Each patient underwent endoscopic debridement both with standard analgesia (i.e., aerosolized lidocaine and phenylephrine), and with an immersive virtual reality experience in addition to the standard analgesia. Patients were then asked to provide a visual analog scale (VAS) score. Therefore, we took a crossover approach. The VR experience was the game SpaceBurgers, an interactive game designed specifically to be used for distraction analgesia.

RESULTS: With 46 observations in the control (mean=1.29) and experimental (mean=1.06) arm, a paired t-test was performed, comparing log transformed visual analog scores. Calculated p-value was 3.18×10^{-17}. The sequence of control and intervention was then determined for effect. Again, the right-skewed data was log transformed. 21 patients underwent debridement in a control (mean=1.28) and then intervention (mean=0.950) sequence. Calculated p-value was 0.00644. 19 patients underwent debridement in an intervention (mean=1.16) and then control (mean=1.30) sequence. Calculated one-tail p-value was 0.241.

CONCLUSIONS/FUTURE PLANS: The aggregated data demonstrated significantly lower pain in the intervention arm. However, by analyzing the effect of sequence, it was clear that individuals who first underwent debridement with control conditions were more likely to experience less pain in the intervention. It is important to note though that median VAS scores for the 4 groups assessed for sequence effect were below 3. The results may be statistically significant, but clinically, their pain scores do not sufficiently demonstrate a different category of pain.

ABSTRACT 30

ARCUATE UTERUS AS AN INDEPENDENT RISK FACTOR FOR ADVERSE PREGNANCY OUTCOMES.

Courtney Connolly[1], Rebecca Klahr[1], Melissa Hill[1], Kelly Zafman[1], Andrei Rebarber[2], Nathan Fox[2]. [1]Medical Education, [2]Obstetrics, Gynecology, and Reproductive Science. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Mullerian anomalies are associated with adverse pregnancy outcomes. However, it is unclear if arcuate uterus, which is a milder abnormality, is also associated with adverse outcomes compared to similar controls. Furthermore, women with diagnosed uterine anomalies frequently represent a higher risk cohort at baseline as uterine anomalies aren't routinely screened for.

HYPOTHESIS OR RESEARCH QUESTION: The objective of our study is to estimate the association between arcuate uterus and adverse pregnancy outcomes using a similarly high risk control cohort.

STUDY DESIGN/METHODS: Retrospective cohort study of women with an arcuate uterus cared for by a single maternal-fetal medicine practice from 2005 to 2018. We included all women with a singleton pregnancy and an arcuate uterus and randomly selected (3:1) patients with singleton pregnancies and no uterine anomalies from the same MFM practice as controls. Baseline characteristics and pregnancy outcomes were compared between the two groups. Chi-square test, Fisher's exact test, and Student's t-test were used, as appropriate.

RESULTS: A total of 32 women with an arcuate uterus and 96 controls were included. There were no differences in baseline characteristics between the groups including maternal age, BMI, IVF, race, parity, prior cesarean delivery, medical comorbidities, fibroids, and prior LEEP or cone. Women with arcuate uterus had lower birthweights and a higher likelihood of IUGR, despite similar starting BMI and weight gain in pregnancy. There was a higher rate of malpresentation, but not an overall increased risk of cesarean delivery.

CONCLUSIONS/FUTURE PLANS: Having an arcuate uterus is significantly associated with lower birthweight and IUGR, as compared to comparable high-risk controls. This suggests that arcuate uterus is itself a risk factor for poor fetal growth, as opposed to simply being a marker for a higher risk pregnancy.

ABSTRACT 31

PREGNANCY OUTCOMES IN VIABLE PREGNANCIES WITH A SEPTATE UTERUS COMPARED TO HYSTEROSCOPIC UTERINE SEPTUM RESECTION.

Courtney Connolly[1], Melissa Hill[1], Rebecca Klahr[1], Kelly Zafman[1], Andrei Rebarber[2], Nathan Fox[2]. [1]Medical Education, [2]Obstetrics, Gynecology, and Reproductive Science. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Mullerian anomalies are associated with adverse pregnancy outcomes. In regards to uterine septum, it is unknown if septum resection improves pregnancy outcomes beyond early pregnancy loss, which is typically the indication for resection.

HYPOTHESIS OR RESEARCH QUESTION: Our objective was to compare pregnancy outcomes in women reaching at least 20 weeks gestation between those with a uterine septum and those with a septum resection prior to pregnancy.

STUDY DESIGN/METHODS: This is a retrospective cohort study of women with a uterine septum cared for by a large maternal-fetal medicine practice from 2005 to 2018. We included women with singleton pregnancies >20 weeks. Baseline characteristics and pregnancy outcomes were compared between women with a uterine septum and women with a history of a hysteroscopic uterine septum resection. Fisher's exact test and Mann Whitney U test were used for analysis, as appropriate. Regression analysis was performed to control for differences in baseline characteristics. The analysis was repeated in nulliparous women only.

RESULTS: 109 women (163 pregnancies) were included. In the entire population, pregnancy outcomes did not differ between the groups, aside from a higher rate of cesarean delivery in the resected septum group. In the 63 nulliparous women, septum resection was associated with later gestational ages at delivery (39.1 vs. 37 weeks, p=0.030), decreased preterm birth <37 weeks (4.5% vs. 31.6%, aOR 0.154 (0.027, 0.877)), and an increased incidence of cesarean delivery in women who attempted vaginal delivery (30.6% vs. 0%, p=0.012). There was no difference in the rates of small for gestational age, preeclampsia, blood transfusion, retained placenta, or morbidly adherent placenta.

CONCLUSIONS/FUTURE PLANS: In nulliparous women with viable pregnancies, hysteroscopic resection of a uterine septum is associated with a decreased incidence of preterm birth and an increased incidence of cesarean delivery. These findings need to be confirmed in a well-designed randomized trial prior to routinely recommending uterine septum resection.

ABSTRACT 32

EXPERIENCES OF GENDER-BASED VIOLENCE IN WOMEN ASYLUM SEEKERS FROM THE NORTHERN TRIANGLE.

Megan D'Andrea[1], Eileen Wang[1], Elizabeth Singer[2], Kim Baranowski[3]. [1]Medical Education, [2]Emergency Medicine, [3]Psychiatry. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Columbia University, New York, NY.

BACKGROUND/RATIONALE: Every year, thousands of women flee gender-based violence in Honduras, El Salvador, and Guatemala, countries collectively known as the Northern Triangle of Central America, in an attempt to seek asylum in the United States. Once in the United States, their lawyers may refer them for a psychological evaluation as part of their application for asylum. Licensed clinicians conduct in-depth interviews in order to document the psychological impact of the human rights violations.

HYPOTHESIS OR RESEARCH QUESTION: The purpose of this study was to identify occurrences of GBV, experienced by women asylum seekers fleeing the Northern Triangle, in order to better understand these acts of violence within the context of systemic forces leading to their escape from their home countries.

STUDY DESIGN/METHODS: Using archival data from a human rights program, this study identified the experiences of gender-based violence reported by 70 asylum-seeking women from the Northern Triangle who participated in pro-bono psychological evaluation. Descriptive data were analyzed using a modified consensual qualitative research (CQR-M) method.

RESULTS: Results showed that these asylum seekers reported severe intimate partner violence, as well as physical and sexual assaults, extortion, and threats of death by powerful gangs in their communities. Additionally, over a third of women reported experiences of violence during their migration and the majority exhibited psychological symptoms associated with anxiety (80%), depression (91%), and posttraumatic stress disorder (PTSD) (80%) related to their experiences.

CONCLUSIONS/FUTURE PLANS: The results of this study elucidate the many forms of persecution women in this region are experiencing, the physical and psychological sequelae of this violence, and the systemic forces that prevent them from remaining in their countries of origin. The results of this research also highlight the dangers associated with their migration to the United States, issues associated with their ability to effectively testify during asylum hearings, as well as factors that may contribute to their resilience in light of these human rights violations.

ABSTRACT 33

BRAIN METASTASES FROM BILIARY TRACT CANCERS: A CASE SERIES AND REVIEW OF THE LITERATURE IN THE GENOMIC ERA.

Megan D'Andrea[1], Corey Gill[1], Raj Shrivastava[2]. [1]Medical Education [2]Neurosurgery. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Biliary tract cancers (BTC) are highly fatal malignancies that comprise less than 1% of all cancers. BTC is often diagnosed at an unresectable stage; surgical resection remains the only definitive treatment and portends the best prognosis. BTC commonly invades adjacent lymph nodes and liver, and less frequently metastasizes to distant sites. Brain Metastasis (BM) is extremely rare, and few studies on patients with BM from BTC exist.

HYPOTHESIS OR RESEARCH QUESTION: The aim of this study was to identify clinical characteristics that portend worse prognosis for patients with BM from BTC.

STUDY DESIGN/METHODS: We performed a retrospective review of electronic medical records for patients with BM from BTC managed at MSH. Data on patient characteristics, MR imaging findings, treatment regimens, and clinical outcomes were extracted.

RESULTS: Nine patients comprised the sample: six intrahepatic cholangiocarcinoma, two extrahepatic cholangiocarcinoma, and one gallbladder cancer. Six (66.7%) patients underwent resection of their primary tumor. Metastatic sites prior to BM included liver, lungs, and bone. Seven (77.8%) patients received chemotherapy and three (33.3%) received radiation prior to BM. Presenting symptoms for BM included headache, dizziness, and seizure. Six (66.7%) patients had one BM, one (11.1%) patient had two BM, and two (22.2%) patients had three or more BM. Four (44.4%) patients underwent BM resection, and seven (77.8%) received BM radiation. Median overall survival from time of BM diagnosis was 3.8 months (95% CI 0.1-16.9).

CONCLUSIONS/FUTURE PLANS: Development of BM from BTC is rare; however, prognosis is less than four months. BM diagnosis can occur within 2 years of primary diagnosis. As targeted therapeutics emerge, future studies ought to focus on identifying genomic BM markers associated with BTC subtypes

ABSTRACT 34

EVOLUTION OF SKULL-BASED CSF LEAK REPAIR: A SINGLE INSTITUTION COMPREHENSIVE STUDY OF 116 CASES OVER 10 YEARS.

Jennifer Dai[1], Alfred Iloreta[2], Raj Shrivastava[3]. [1]Medical Education, [2]Otolaryngology, [3]Neurosurgery.
[1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Cerebral spinal fluid (CSF) leaks are complex, observed entities that have been classically used to describe a defect to the skull base. They have been historically difficult to diagnose and treat as the etiology can widely vary. Over time, there has been a changing paradigm of diagnosis and treatment based on better understanding of the physiology of and anatomy associated with the leaks. However, there is no clinically accepted standard due to the diversity of the patient population.

HYPOTHESIS OR RESEARCH QUESTION: This is a retrospective study that describes the diagnosis, management, and outcomes of cranial CSF leaks in patients over the past 10 years at a single institution. It also reports potential medical comorbidities and risk factors to better elucidate possible patient characteristics that may predict future CSF leaks.

STUDY DESIGN/METHODS: Patients with a diagnosis of CSF rhinorrhea or CSF otorrhea, identified through ICD10 codes, between January 2007 and October 2017 at Mount Sinai Hospital were analyzed retrospectively (n=116). Demographic information included sex, age, BMI, medical comorbidities, medical history, lab testing, CT, and MRI. Surgical treatment, length of stay, follow-up symptoms, and postoperative outcomes were also collected. t-tests and ANOVA were used for statistical analyses.

RESULTS: The location of leaks was 90 CSF rhinorrhea and 29 CSF otorrhea (3 had both). The average BMI for females was greater than males ($p = 0.0358$). The etiology of the leaks was 65 non-iatrogenic, 45 iatrogenic, and 9 traumatic. 108 of CSF leak cases resulted in surgical treatment. 69 cases involved endoscopic approaches, 42 involved open approaches, and 83 involved the placement of a lumbar drain. 18 cases had a VP shunt and 6 had a LP shunt. 78 (72.22%) cases had an associated encephalocele with the CSF leak. The average length of stay was 7.73(0.76) days. The average length of follow-up was 1.58(0.22) years. The primary repair rate was 80.17% ($n = 93$) and the overall repair outcome was 99.14% ($n = 115$).

CONCLUSIONS/FUTURE PLANS: The overall CSF repair outcome was 99.14% over 10 years at a single institution. Despite this high percentage, CSF leaks continue to be a complex problem and require vigorous multidisciplinary work with close follow-up and use of multiple imaging strategies.

ABSTRACT 35

DESIGN AND EVALUATION OF A PILOT HEALTH AND WELLNESS GROUP FOR INCARCERATED SURVIVORS OF INTIMATE PARTNER VIOLENCE.

Eva DeLappe[1], Lydia Lichtiger[2], Julia Shaw[2], Ann-Gel Palermo[1]. [1]Medical Education. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]STEPS to End Family Violence New York, NY.

BACKGROUND/RATIONALE: Incarceration and intimate partner violence (IPV) have been established as harmful and traumatizing experiences. Incarcerated female survivors of IPV report elevated disease burdens, high levels of post-traumatic stress disorder, and increased rates of health disparities outcomes compared to the general population. Based on high anecdotal evidence of these patterns, STEPS to End Family Violence's Criminalized Survivors Program asked medical students to design a pilot health & wellness group for this target population.

HYPOTHESIS OR RESEARCH QUESTION: Using a community-based participatory research approach, this project designed, implemented and evaluated a pilot health and wellness group for STEPS clients, incarcerated individuals across the gender spectrum who are survivors of IPV.

STUDY DESIGN/METHODS: Curriculum design centered on a notecard survey of 28 STEPS clients on topics of greatest interest, discussion with trauma-informed physicians, and two sessions to gauge participant's preferred learning styles and medical interests. The five-session curriculum focused on topics of greatest participant-indicated interest: exercise, nutrition, and mental health. Evaluation of the sessions utilized pre-post surveys and post-program testimony surveys with participants. Thirteen clients participated in the data collection. Participants completed a brief, anonymous survey before and after participating in each session and in a post-program survey to assess effectiveness of the pilot curriculum.

RESULTS: Pre-post test analyses indicate that clients gained moderate benefit in their ability to exercise while incarcerated, mild benefits in their ability to support others suffering mental health crises, and no change in their ability to eat nutritiously while incarcerated. Post-program testimony surveys show that clients learned "how to keep your body and mind strong." The medical student presented to STEPS staff post-program to share results as well as program evaluation and curriculum design tools.

CONCLUSIONS/FUTURE PLANS: STEPS staff utilized the survey of client interests to design and implement a sustainable wellness group. The pilot group warrants ongoing medical student and trauma-informed physician involvement in the form of a bimonthly health question and answer session with a primary care doctor.

ABSTRACT 36

REAL WORLD EFFECTIVENESS OF TOFACITINIB IN INFLAMMATORY BOWEL DISEASE: A MULTI-CENTER STUDY.

Christina Dimopoulos[1], Marc Fenster[2], Anish Patel[3], Deepak Parakkal[4], Gaurav Syal[5], Andres Yarur[6], Robert Hirten[2], George Christophi[4], Aava Khatiwada[4], Lin Bixuan[6], Jean-Frederic Colombel[2], Christina Ha[5], Roni Weisshof[7], Poonam Beniwal-Patel[6], Benjamin Cohen[2], Joel Pekow[7], Ryan Ungaro[2]. [1]Medical Education, [2,3,4,5,6,7]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [4]Washington University in St. Louis, [5]Cedars-Sinai, [6]Medical College of Wisconsin, [7]University of Chicago.

BACKGROUND/RATIONALE: Inflammatory bowel disease (IBD) is subdivided into ulcerative colitis (UC) and Crohn's; it can be medically managed with biologic agents, such as anti-TNFs (i.e., infliximab) and vedolizumab. Certain patients, however, have biologic refractory IBD. Tofacitinib is a small molecule that inhibits JAK-1 and 3, which was approved for UC in May 2018. In clinical trials, tofacitinib has been effective in patients who are biologic refractory.

HYPOTHESIS OR RESEARCH QUESTION: What percentage of patients achieve >50% symptom reduction (based on global physician assessment) after 8 weeks of therapy?

STUDY DESIGN/METHODS: A retrospective chart review was performed on 123 patients from 6 tertiary IBD centers in the US. The inclusion criteria were patients with UC taking 10mg BID tofacitinib for active disease. The primary outcome was >50% symptom reduction at week 8, based on global physician assessment. Descriptive statistics and Fisher exact tests were performed. Logistic regression assessed predictors of week 8 response.

RESULTS: 123 UC patients were included with a median age of 38 years (IQR 27-46) and 5 years disease duration (IQR 2-9). 56.1% were men, 60.2% had pancolitis, 28.5% had not taken a prior biologic, and 40.7% had taken both anti-TNFs and vedolizumab (VDZ). 96 patients completed 8 weeks of tofacitinib; 60.8% had clinical response and 13.5% achieved clinical remission. Biologic naïve patients had higher rates of response than patients who had biologic exposure (either anti-TNF or VDZ). Patients who had taken only one class of biologic had higher rates of response than patients exposed to both anti-TNF and VDZ. Biologic naïve patients and those with higher albumin had greater week 8 response; pancolitis, baseline endoscopic Mayo score 3, steroids at start tofacitinib, and male gender were associated with lower response.

CONCLUSIONS/FUTURE PLANS: Tofacitinib is effective at inducing clinical response at week 8 in a real-world setting, with prior biologic exposure being associated with reduced chance of response.

ABSTRACT 37

REAL WORLD SAFETY OF TOFACITINIB IN INFLAMMATORY BOWEL DISEASE: A MULTI-CENTER STUDY.

Christina Dimopoulos[1], Marc Fenster[2], Deepak Parakkal[3], Aava Khatiwada[3], George Christophi[3], Andres Yarur[4], Lin Bixuan[4], Matthew Ciorba[3], Anish Patel[5], Geoffrey Bader[5], Gaurav Syal[6], Robert Hirten[2], Jean-Frederic Colombel[2], Christina Ha[6], Roni Weisshof[7], Joel Pekow[7], Benjamin Cohen[2], Poonam Beniwal-Patel[4], Ryan Ungaro[2].
[1]Medical Education, [2,3,4,5,6,7]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Washington University in St. Louis, [4]Medical College of Wisconsin, [6]Cedars-Sinai, [7]University of Chicago.

BACKGROUND/RATIONALE: Tofacitinib is a small molecule that inhibits JAK-1 and 3, which was approved for ulcerative colitis in May 2018.

HYPOTHESIS OR RESEARCH QUESTION: What adverse events (AEs) are seen with tofacitinib use?

STUDY DESIGN/METHODS: 140 patients from 6 tertiary IBD centers in the US underwent retrospective chart review. Inclusion criteria were patients with UC (125), Crohn's (11), or IBD-U (4) taking 10mg BID tofacitinib. Serious AEs were those that caused disability, tofacitinib discontinuation, hospitalization, or threat to life. Abnormal lipid values (in mg/dl) were: total cholesterol ≥200, LDL ≥130, HDL <40 or TGs ≥150. The Clavien-Dindo Classification and Comprehensive Complication Index were used to classify surgical complications.

RESULTS: 140 IBD patients were included with median age 36 years (IQR 26-46) and follow up of 75.5 days (IQR 49.8-124.5). 19 patients experienced AEs, 8 (42.1%) of which required tofacitinib discontinuation. These 8 serious AEs were herpes zoster (5), leukopenia (2), and urinary incontinence (1). Median time from starting to tofacitinib to developing HZ was 7 weeks (range 5-24); none of these 5 patients received Shingrix and 3 were on concomitant steroids. 9 of 49 patients with a normal lipid panel prior to starting tofacitinib had elevated lipids 8 weeks out; 4 required a statin. 14 of 140 patients required surgery within a month of their last tofacitinib dose; 10 (71.4%) had at least one Clavien-Dindo complication. 5 required re-admission within 30 days of surgery, and 4 had surgical site infections. 2 of 3 patients with organ space infections had taken another biologic in addition to tofacitinib within 8 weeks of surgery. There was no significant difference in proximity of tofacitinib to surgery in patients that had infection and/or readmission to those that did not have such complications.

CONCLUSIONS/FUTURE PLANS: The safety data is consistent with what has been observed in clinical trials. Tofacitinib's association with post-operative complications requires further investigation.

ABSTRACT 38

NARROWING THE LENS: A NEIGHBORHOOD-FOCUSED EXPLORATION OF MENTAL HEALTH RESOURCES IN EAST HARLEM.

Katherine Donovan[1], Ray Cornbill[2], Ann-Gel Palermo[1]. [1,2]Medical Education. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]East Harlem Community Health Committee.

BACKGROUND/RATIONALE: East Harlem had the highest number of psychiatric hospitalizations in NYC as of 2015. Mental health statistics in East Harlem are likely rooted in systemic disparities, specifically decreased access to outpatient care and thus an increased reliance on emergency systems. Furthermore, the interplay between mental and physical health has been widely demonstrated, and it is pertinent to consider populations that are physically less healthy through the lens of their ability to attain both mental and physical care.

HYPOTHESIS OR RESEARCH QUESTION: This project aims to understand more thoroughly the resources available for mental health in East Harlem. We will also narrow the lens of city-wide initiatives such as the ThriveNYC program to assess sustainability of partnerships and initiatives in East Harlem.

STUDY DESIGN/METHODS: We will conduct our work through qualitative interviews.

RESULTS: Several interviews were conducted over the summer, giving us a more complete understanding of the models at work in East Harlem. Three major types stood out: integrated primary care-mental health, partnerships with community based organizations and mental health providers, and novel stand-alone practices aimed at addressing disparities in care. Numerous barriers to care became evident through our research including wait time for appointments, insurance acceptance by providers, and stigma.

CONCLUSIONS/FUTURE PLANS: The landscape of mental healthcare in East Harlem is diverse and fluid. The most important finding of our work was that there is a lack of planning for future continuation of programs that were set up through ThriveNYC. There need to be concrete arrangements to ensure that care for the people of East Harlem will not lapse. Our future work will center on determining the efficacy of existing programs as well as their concordance with the needs of the community. We also plan to continue efforts to understand the diversity of resources offered. We hope to contribute to a conversation around the importance of thoughtful design of mental healthcare systems.

ABSTRACT 39

MAJOR DIFFERENCES IN EXPRESSION OF INFLAMMATORY PRODUCTS IN SKIN FROM DIFFERENT BODY SITES OF HEALTHY INDIVIDUALS.

Celina Dubin[1], Ester del Duca[2], Emma Guttman[3]. [1]Medical Education, [2,3]Dermatology. [1,3]Icahn School of Medicine at Mount Sinai, New York, New York, [2]University of Rome Tor Vergata, Italy.

BACKGROUND/RATIONALE: The steady-state inflammatory milieu in normal human skin ensures a constant cross talk between the body and the outside environment. However, the complex cellular repertoire that maintains immune balance in healthy skin is incompletely understood.

HYPOTHESIS OR RESEARCH QUESTION: Understanding differences across different body locations is imperative for evaluating deviations from steady state in different disease scenarios.

STUDY DESIGN/METHODS: To understand these differences, we compared skin from four representative regions (interscapular upper back, inner upper arm, outer upper thigh, abdomen) of 24 healthy individuals. Each participant was randomized to have biopsies in two of the four locations (total of 48 biopsies; 12 per location). Immunohistochemistry was used to evaluate cellular infiltrates and qRT-PCR was performed for gene-expression analyses across different body sites.

RESULTS: We found significant differences across various body sites in epidermal thickness, hair follicle counts, cellular infiltrates and inflammatory markers. Overall, the back showed the highest epidermal thickness, follicular counts, and dendritic and Langerhans cell infiltrates ($p<0.05$). Th2/Th17/22 and Treg markers were significantly increased in the back compared to other body regions, with parallel decreases in negative regulators ($p<0.05$).

CONCLUSIONS/FUTURE PLANS: This is the first study that evaluates the tissue-specific inflammatory and regulatory milieuin normal human skin, with important implications for disease-specific and tolerogenic mechanisms.

ABSTRACT 40

EXPLORING THE RELATIONSHIP BETWEEN EMOTION PROCESSING DEFICITS AND ANGER ACROSS THE PERSONALITY DISORDERS.

Jarrett Fastman[1], M. Mercedes Perez-Rodriguez[2]. [1]Medical Education, [2]Psychiatry.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Personality disorders (PDs) carry a heightened risk for self-harm, suicide, and impulsive and aggressive behaviors. While deficits in emotion-processing and interpersonal/behavioral difficulties are common features of PD, it remains unclear how these two symptom domains are related. No studies have directly examined how an impaired ability to process and understand one's emotions (alexithymia) contributes to feelings of anger and aggressive behaviors in PD. This study aims to clarify the relationship between alexithymia, anger and aggressive behaviors in PD, and determine how this relationship differs between 3 disorders representing the diagnostic clusters of PD.

HYPOTHESIS OR RESEARCH QUESTION: How does the relationship between alexithymia and anger/aggression differ in patients with schizotypal (SPD, cluster A), borderline (BPD, cluster B), and avoidant (AvPD, cluster C) PDs?

STUDY DESIGN/METHODS: The sample for this study consists of patients who received a PD diagnosis after being evaluated as part of a clinical research protocol under the Mood and Personality Disorders Research Program at ISMMS. I used a large database containing patient responses to a wide range of well-validated self-report questionnaires.
SPD (n=24), BPD (n=18), and AvPD (n=43) groups were created via exclusion of subjects who met diagnostic criteria for >1 PD or had a comorbid schizoid personality disorder diagnosis.

RESULTS: In SPD, alexithymia is associated with intensity of feelings related to aggressive behavior ($p=.01$), internalization of anger ($p<.01$), and substance abuse and dependence ($p<.01$ for EtOH, cannabis). In BPD, alexithymia is negatively correlated with ability to control inward and outward expression of anger ($p<.01$). In AvPD, alexithymia is associated with intensity of angry feelings ($p=.018$), desire to express anger ($p<.01$), angry temperament ($p=.014$) and reactionary anger ($p=.033$). Alexithymia severity did not differ significantly between groups ($p=.38$).

CONCLUSIONS/FUTURE PLANS: Alexithymia is associated with different manifestations of anger and aggression in SPD, BPD and AvPD. Future studies will need to include additional PD groups to determine whether the results found for each group hold for their respective diagnostic clusters, as well as explore the impact of alexithymia on clinical outcomes.

ABSTRACT 41

EFFICACY OF ANTITHROMBOTIC AGENTS IN PREVENTING VENOUS THROMBOEMBOLIC EVENTS FOLLOWING ORTHOPEDIC SURGERY.

Christopher Ferrer[1], Meredith Bartelstein[2], Ilya Iofin[3]. [1]Medical Education, [2,3]Orthopaedics. [1,3]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Memorial Sloan Kettering Cancer Center, New York, NY.

BACKGROUND/RATIONALE: Cancer patients are at increased risk for developing venous thromboembolism (VTE), comprising pulmonary embolism (PE) and deep vein thrombosis (DVT), following orthopedic surgery. While current guidelines recommend the use of low-molecular-weight heparin (LMWH) monotherapy for the prevention of VTE in cancer patients, evidence suggests that traditional anticoagulants (AC) do not decrease the risk of DVT or PE following orthopedic oncologic surgery. Furthermore, studies have shown no significant differences in efficacy when using alternate forms of VTE prophylaxis such as intermittent pneumatic compression devices (IPCD) when compared to ACs such as warfarin and heparin. These findings are of concern because cancer patients who develop VTEs are at an increased risk for major bleeding are more likely to develop recurrent thromboembolic complications when receiving AC therapy.

HYPOTHESIS OR RESEARCH QUESTION: This study investigates the efficacy of using chemical AC in addition to IPCDs in preventing VTE following orthopedic oncologic surgery. We believe that the use of chemical AC in addition to IPCDs will not be associated with decreased rates VTE.

STUDY DESIGN/METHODS: A retrospective review of 156 patients (18 - 90 years of age), undergoing orthopedic oncologic surgery at an urban tertiary medical center between 2010 and 2017 was conducted. Type of VTE prophylaxis and VTE rates were collected using electronic medical records and analyzed using a chi-squared test.

RESULTS: There was no difference in the rates of VTE in patients who received both chemical AC and IPCD compared to those who received IPCD alone (N=42, N=114, p=0.061). There was, however, a significant difference in the rates of VTE in patients undergoing surgery for pathologic fractures and those who were not (N=71, N=85, p=0.033) controlling for differences in chemical AC (p=0.766).

CONCLUSIONS/FUTURE PLANS: This study suggests that the use of chemical AC in patients placed on IPCDs following orthopedic oncologic is not associated with a decreased risk for the occurrence of a thromboembolic event. Furthermore, patients undergoing surgery for pathologic fracture were at increased risk for developing V TE compared to non-fracture patients.

ABSTRACT 42

LOWERING THE THRESHOLD TO TEST FOR HYPOPHOSPHATASIA: MUTATIONS, SIGNS AND SYMPTOMS THAT SHOULD NOT BE MISSED.

Harper Gany-Beitler[1], Ron Do[2], Arden Moscati[2], Girish Nadkarni[2]. [1]Medical Education, [2]Medicine.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Hypophosphatasia(HPP) is a rare genetic disorder due to ALPL gene loss-of-function mutation(s), causing a deficiency in bone mineralization enzyme alkaline phosphatase(AlkPhos). Signs of HPP include low AlkPhos, hypercalcemia, slow-healing fractures, osteopenia, short stature, and/or bowed legs. Patients can remain undiagnosed into adulthood, but early intervention with enzyme replacement therapy can dramatically improve outcomes.

HYPOTHESIS OR RESEARCH QUESTION: We hypothesize that 1) within Mount Sinai's BioMe Biobank, there are patients with a pathogenic mutation who have HPP but remain undiagnosed due to absent or subtle symptoms and/or provider lack of awareness, and 2) certain mutations carry a higher risk of having low AlkPhos.

STUDY DESIGN/METHODS: We identified all Mount Sinai BioMe BioBank patients with a pathogenic Mornet-database-identified ALPL gene mutation, then performed chart abstractions to ascertain if: 1) AlkPhos had been ordered, 1a) it was low, 2) there were noted HPP signs/symptoms, including low BMI, short stature, muscle weakness, gait abnormality, joint/bone pain, frequent fractures, hypomineralization, rickets, osteomalacia/osteopenia, respiratory insufficiency, hypercalcemia, renal damage, tooth loss, 3)patients carried an HPP diagnosis, and 4) particular mutations were more likely to be diagnosed, and cause signs/symptoms.

RESULTS: There were 49 people with ALPL mutations out of over 40,000 Biobank specimens; 19 mutations were identified, all heterozygous. AlkPhos had been ordered in 38/49 people (77.55%), all adults, of whom 12 (31.57%) had low levels; 5(41.67%) had at least one HPP consistent sign/symptom. No charts noted HPP. Group 2 mutations were most common(N=19); 8 mutations carried at least a 50% chance of low AlkPhos, although the N for each mutation was quite small.

CONCLUSIONS/FUTURE PLANS: Future studies should include a larger pooled multibiobank sample to analyze potential predictive factors of low AlkPhos and HPP diagnosis, including mutation type, symptom severity, and treatment location. Providers should be educated about signs/symptoms to improve our recognition of this treatable disease.

ABSTRACT 43

EXPLORING PROVIDER PERSPECTIVES ON THE FEASIBILITY AND ACCEPTABILITY OF MEDICATION ADHERENCE SUPPORT SERVICES FOR HYPERTENSION AT A PRIVATE HOSPITAL IN KAMPALA, UGANDA.

Evan Garden[1], Rachel Wilkinson[1], Rose Clarke-Nanyonga[2], Allison Squires[3], David Heller[4]. [1]Medical Education, [4]Medicine. [1,4]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Clarke International University, Kampala, Uganda, [3]NYU Rory Meyers College of Nursing, New York, NY.

BACKGROUND/RATIONALE: Hypertension is the most common non-communicable disease (NCD) in Uganda. Poor medication adherence is a barrier to hypertension control. Our group has identified several impediments to medication adherence for hypertensive patients at the private International Hospital Kampala (IHK), including lack of symptoms, lack of information, and financial obstacles. Several interventions to improve NCD medication adherence in sub-Saharan Africa (SSA) have been piloted in similar settings, but insufficient literature exists on the feasibility and acceptability of these options for hypertensive patients, especially within the private sector.

HYPOTHESIS OR RESEARCH QUESTION: We explored provider perspectives on the feasibility and acceptability of various forms of medication adherence support for hypertension. These included but were not limited to: daily SMS reminders; educational materials on hypertension; monthly "adherence clubs" led by patients or providers; one-on-one appointments with providers; and modifying drug dispensing at the hospital pharmacy.

STUDY DESIGN/METHODS: Key informant interviews with 15 providers (8 medical officers, 7 nurses) were conducted, probing potential advantages and disadvantages of various forms of adherence support; inquiring a bout these interventions' potential for enabling facilitators and mitigating barriers to medication adherence; and exploring the feasibility of different interventions in the current clinical landscape. Interviews were recorded and coded for key themes.

RESULTS: Providers identified barriers to adherence centered on patient access (i.e. cost, distance from care centers) and patient engagement (i.e. lack of knowledge of hypertension and medications, misunderstanding care, lack of support systems). Most providers expressed optimism regarding the efficacy of at least one proposed intervention. The most well-received interventions – namely, adherence clubs and educational materials – were centered on addressing the aforementioned issues regarding access and engagement.

CONCLUSIONS/FUTURE PLANS: These findings indicate strong provider support for adherence support programs at IHK and will serve as the foundation for future work in intervention design and implementation.

ABSTRACT 44

COMMUNITY HEALTH OFFICER INSIGHTS INTO THE DESIGN AND IMPLEMENTATION OF AN INTERVENTION TO SCREEN AND TREAT CARDIOVASCULAR DISEASE USING THE COMMUNITY-BASED HEALTH PLANNING AND SERVICES (CHPS) INITIATIVE IN NAVRONGO, GHANA: A QUALITATIVE STUDY.

Katherine Garvey[1], Ethan Wood[2], Edith Dambayi[3], Denis Awuni[3], Raymond Aborigo[3], Elizabeth Jackson[4], James Phillips[4], Abraham Oduro[3], David Heller[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Navrongo Health Research Center, Navrongo, Ghana, [4]Columbia University Mailman School of Public Health.

BACKGROUND/RATIONALE: Cardiovascular disease (CVD) is the leading cause of morbidity and mortality worldwide. CVD prevalence is rising in Ghana, and the shift in burden from communicable to non-communicable diseases poses a great challenge to fragile health systems in rural areas like Navrongo. The Community-Based Health Planning and Services (CHPS) initiative uses community clinics and home visits to improve maternal-child health but does not currently screen or treat CVD or its risk factors. Previous research in Navrongo identified lack of transportation, equipment, medicines and knowledge as barriers. The goal of this study was to interview CHPS Community Health Officers (CHOs) to determine how to act on these data to decrease CVD morbidity and mortality in Navrongo, Ghana.

HYPOTHESIS OR RESEARCH QUESTION: How can the CHPS initiative adapt to address the aforementioned barriers to CVD screening and treatment?

STUDY DESIGN/METHODS: We conducted semi-structured interviews with 21 CHOs from the Kassena-Nankana District. CHOs were asked to share their thoughts and opinions regarding a proposed intervention. The interviews were audio recorded, transcribed, coded and analyzed for themes. Coding was completed using NVivo software.

RESULTS: CHOs offered valuable insights into intervention design and implementation. Respondents described training CHOs on CVD and its risk factors and treatment; workforce augmentation; community education through outreach; as well as funding for and access to necessary resources (such as sphygmomanometers, medications and motorbikes) as important aspects of an intervention. Provision of resources and training were consistently mentioned as most crucial. CHOs were excited by the prospect of being able to screen and treat CVD and its risk factors.

CONCLUSIONS/FUTURE PLANS: These interviews revealed the necessary components of an intervention to address CVD in Navrongo, Ghana. This work will inform the design of an intervention to allow CHPS to screen and treat CVD and potentially serve as a model for other low- and middle-income countries who similarly rely on non-physicians to deliver care to rural communities. Future work will develop and test the efficacy of such an intervention.

ABSTRACT 45

REAL-TIME ASSESSMENT OF RESIDENTS' PERCEPTIONS OF INAPPROPRIATE NEUROLOGY CONSULTS.

Caroline Gentile[1], Emma Loebel[1], Charles Sanky[1], Stephen Krieger[2]. [1]Medical Education, [2]Neurology.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Our previous research demonstrated discordant knowledge expectations between neurology and medicine residents, potentially influencing consultation appropriateness.

HYPOTHESIS OR RESEARCH QUESTION: We hypothesized that neurology residents (NRs) would be more likely to rate a neurology consult as more inappropriate and less urgent than consulting providers (CPs). We expected NRs to feel and express high resistance to inappropriate consults.

STUDY DESIGN/METHODS: Student investigators were embedded in the Mount Sinai neurology consult service for four weeks in May/June 2018. For each consecutive neurology consult (n=69), the NR's real-time attitudes toward the consult were evaluated with a questionnaire using Likert scales. A similar survey was immediately administered to the CP who called the consult. Response scores for each attribute were dichotomized and data were analyzed using Mann-Whitney U tests in SPSS.

RESULTS: Consults were called by 19 departments, most commonly the ED, Medicine, OB, Oncology, and Rehab; the most common consults were seizure, altered mental status, headache, weakness, and dizziness. NRs rated 38% of consults as less appropriate than CPs (p=0.084). When NRs perceived a consult as inappropriate, they felt more resistant (r=-0.79). NRs felt more resistant when they thought that the CP could have cared for the patient without the consult (r=0.79). NRs felt high resistance for 22% of consults, but expressed high resistance for7.2%. CPs rated the resistance they received from NRs as high for only 3.1% of consults. NRs rated consults as significantly less urgent than CPs (p=0.03).

CONCLUSIONS/FUTURE PLANS: This study demonstrates that NRs have different perceptions of consult inappropriateness and urgency than CPs. Despite these discordances, NRs expressed much less resistance towards inappropriate consults than they felt. This delta can be considered a measure of professionalism in interdisciplinary care. Our data support the development of educational interventions to help CPs gauge the urgency and appropriateness of a neurology consult, improving the consult process and furthering patient care. Additional analyses will evaluate demographic, disease-state, and medicolegal contributors to perceived consult inappropriateness.

ABSTRACT 46

PRIMARY CARE TRANSFORMATION: COHORT ANALYSIS OF OPERATIONS IN MOUNT SINAI PRIMARY CARE PRACTICES.

Brooke Gogel[1], Stella Safo[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Mount Sinai Health System is undertaking a major transformation effort to make primary care the foundation of population health management. To enable such changes, Mount Sinai is providing each practice in the ambulatory network with a practice facilitator, a trained individual who will engage each practice in improvement activities. Baseline assessments conducted for this study provide an important tool for practice facilitators by presenting information that can establish expectations, guide the content of transformation activities, and help assign facilitators to sites.

HYPOTHESIS OR RESEARCH QUESTION: The purpose of this study is to understand the current state of operations at specific sites in Mount Sinai's primary care network to establish a baseline reference, capture common challenges, and determine practice's readiness for transformation activities.

STUDY DESIGN/METHODS: We developed an assessment tool to capture the qualitative data needed to accurately portray each practice site in Cohort 1, with an emphasis on key areas of improvement such as physical space, technology, population health, access, culture of transformation, staffing/flow, and patient experience. Cohort 1 sites (the first 8 of 47 practices to undergo redesign) were chosen based on leadership dyad strength, access to EPIC, and geographic location. Assessments were administered by the authors over 2 hour visits at 5 sites through a series of observations and key informant interviews with practice leadership and staff. We performed a thematic analysis of interview notes.

RESULTS: The results indicate that while each practice faces unique challenges, there are many cohort wide difficulties that practice facilitation efforts must address, including ambiguity regarding afterhours care, limited workflow standardization, staffing vacancies, inadequate EHR training, minimal attention to population health tools, and inconsistencies in quality improvement engagement.

CONCLUSIONS/FUTURE PLANS: These results make the argument for primary care redesign all the more compelling. Given how widespread these pain points are, it is imperative that practice facilitation address these issues and provide sustainable solutions. Furthermore, the data serves as an important preliminary reference point to ensure accountability moving forward.

ABSTRACT 47

PHYSICIAN BURNOUT (BO) IN PEDIATRIC HEMATOLOGY-ONCOLOGY (PHO) PROVIDERS.

Eliana Goldberg[1], Alex Sarosi[2], Andrea Weintraub[2]. [1]Medical Education, [2]Pediatrics. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Physician Burnout (BO) is chronic occupational distress characterized by emotional exhaustion, feelings of depersonalization, and career dissatisfaction.

HYPOTHESIS OR RESEARCH QUESTION: We hypothesize that PHO providers are at risk for BO due to repeated exposure to patient/family distress and difficult decision-making in the clinical practice of PHO. This study aims to determine the prevalence and potential predictors of BO in PHO providers.

STUDY DESIGN/METHODS: A modified Compassion Fatigue and Satisfaction Self-Test for Helpers (CFST) and a questionnaire of professional and personal characteristics were distributed anonymously and electronically to a list of over 2000 PHO providers. Hierarchical linear regression models for BO as a function of potential risk factors significant at $P < 0.05$ in bivariate analyses were constructed.

RESULTS: The survey response rate was 28%. In the complete study population of PHO providers, the prevalence of BO was 22%. Distress about "administrative burden/academic stress" and/ or "coworkers", not working on the d ay of survey, and longest consecutive hours of patient care were each significant determinants of higher BO scores, whereas a high compassion satisfaction (CS) score was a significant determinant of lower BO score in the final six-block hierarchical linear regression model (total variance 2% ($F [37, 251] = 7.33$, $P < 0.000$)).

CONCLUSIONS/FUTURE PLANS: Identification of risk factors associated with physician BO may help pinpoint potential interventions to reduce CF and augment CS amongst PHO providers.

ABSTRACT 48

RISK OF READMISSION INJURY IN PATIENTS WITH EPILEPSY IN THE US.

Jonathan Goldstein[1], Churl-Su Kwon[2], Parul Agarwal[2], Mandip Dhamoon[2], Madhu Mazumdar[2], Nathalie Jetté[2]. [1]Medical Education, [2]Neurology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Injury risk is higher in persons with epilepsy than in persons without epilepsy. The objective of this research is to determine 30-day injury readmissions risk amongst persons with epilepsy compared to individuals without epilepsy using a nationally representative US database. To our knowledge, this is the first study to use the Nationwide Readmissions Database (NRD) to assess the risk of injury readmissions after an epilepsy index hospitalization.

HYPOTHESIS OR RESEARCH QUESTION: What is the 30-day injury readmissions risk amongst persons with epilepsy compared to individuals without epilepsy in the United States?

STUDY DESIGN/METHODS: Individuals of all ages with epilepsy as the primary diagnosis were identified using validated ICD-9-CM codes in the 2014 NRD. 1:4 matching on propensity scoring (by age, sex, Elixhauser comorbidity index) was performed to compare persons with epilepsy versus controls. Primary outcome was 30-day readmission for an injury defined by ICD-9-CM diagnosis codes following discharge from the index hospitalization. Logistic regression was conducted to examine factors associated with readmissions.

RESULTS: There were 66,339 unique persons with epilepsy (mean age 42.2 years, female 48.9%) and 331,695 without epilepsy (mean age 43.9 years, female 48.0%). 177 (0.25%) persons with epilepsy and 639 (0.23%) persons without epilepsy were readmitted for an injury. Statistically significant differences (p-value <0.05) in baseline demographics in persons with vs. without epilepsy included: Medicaid insurance (30.7 vs. 27.1%), discharge to a facility (16.4 vs. 12.4%), and hospital bed size (63.1% vs. 58.0%). In the multivariate analysis the following factors were associated with injury readmissions in persons with epilepsy: 1) Medicare (OR 2.8 95%CI 1.8-4.4) and Medicaid (OR 2.0 95%CI 1.2-3.6) vs. other insurance status; 2) discharge to a facility other than home (OR 1.5 95%CI 1.0-2.1).

CONCLUSIONS/FUTURE PLANS: Higher proportions of 30-day injury readmissions were observed in persons with epilepsy vs. without epilepsy. Our findings suggest that it may be important to further optimize discharge planning in persons with epilepsy on Medicare, Medicaid or being discharged to a facility, as their risk of injury appears to be greater.

ABSTRACT 49

METRICS OF RETENTION IN HIGH-RISK POPULATIONS: DECREASING "NO-SHOW" APPOINTMENTS THROUGH BEHAVIORAL ECONOMICS.

Phillip Groden[1], Erica Levine[2], Bernard Ortega[2], Sandeep Kishore[3]. [1]Medical Education, [2]Arnhold Institute for Global Health, [3]Medicine. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Studies have shown that a minority of the U.S. population— those often disconnected from care and beset with multiple chronic conditions— accounts for a substantial portion of annual healthcare costs. Interventions for these high-risk populations, such as Mount Sinai's intensive primary care program Peak Health, aim to improve patient outcomes while reducing overall costs and utilization. "No-show" appointments directly oppose these goals by increasing the likelihood of hospital utilization and predictors of poor health. High-risk interventions could benefit from reducing no-show appointments by improving rates of patient retention. Peak Health partnered with ValHealth, a behavioral economics firm focused on healthcare solutions, to design a clinic-based intervention to improve patient retention by decreasing rates of "no-show" appointments within their practice.

HYPOTHESIS OR RESEARCH QUESTION: The aim of this study is to ascertain whether the intervention had an appreciable effect on patient retention rates at the Peak Health clinic.

STUDY DESIGN/METHODS: The intervention consisted of appointment reminder cards and clinic signage designed to improve the likelihood of successful patient encounters. Practice-wide encounter adherence rates were compared 6 months before, 3 months after, and 6 months after the interventions were introduced. At 6 months post-intervention, the content of the appointment reminder cards was transitioned to an electronic format, to be included within the patients' printed "after visit summary", to improve adoption of this portion of the intervention.

RESULTS: The encounter adherence rate over the 6-month period before the interventions were introduced was 74.7% (1282/1716); following the deployment of the intervention, the encounter adherence rate at 3 months improved to 78.5% (647/824) and regressed to 74.7% (655/877) at 6 months post-intervention.

CONCLUSIONS/FUTURE PLANS: The behavioral economics intervention designed by ValHealth did not appear to sustainably increase patient retention in the first six months of its deployment. This lack of effect could be attributed to a low adoption of the paper-based appointment reminder cards, which will be assessed by comparing encounter adherence data from the 6 months after the transition to electronic appointment reminders.

ABSTRACT 50

A NOVEL APPROACH TO ADVANCING HEALTHCARE QUALITY: THE PRODUCTION AND IMPLEMENTATION OF A COMMUNITY-BASED EDUCATIONAL FILM ON INFLUENZA VACCINATION IN A FREE CLINIC WAITING ROOM IN EAST HARLEM.

Jennifer Grom[1], Caroline Gentile[2], Michelle Lai[2], Julio Ramos[2], Ethan Wood[2], Yasmin Meah[3]. [1]Medical Education, [2]Family Medicine and Community Health, [3]Medicine. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Promoting patient health literacy through educational videos within clinic waiting rooms has been correlated with greater satisfaction, improved patient-physician communication and enhanced shared decision-making. Additionally, such films have the potential to expedite provider-patient discussions on preventative healthcare, improve waiting times, and enhance counseling quality. Extended waiting room times are especially prevalent in clinics that care for more vulnerable populations, such as non-English speaking and geriatric populations, as well as, in trainee clinics. Unfortunately, increased waiting room times, are linked with a decline in patient adherence to treatment, health outcomes, clinic return rates, and satisfaction ratings, all of which contribute to health disparities.

One health challenge East Harlem Health Outreach Partnership (E.H.H.O.P.) clinic patients face is very low rates of flu vaccination. Among uninsured patients in the United States, influenza vaccination coverage was 14.4%, compared with 70% to attain herd immunity.

HYPOTHESIS OR RESEARCH QUESTION: Does producing and implementing a community-based, culturally competent, educational film (CBCCEF) waiting room program about influenza vaccination, improve (1) clinic vaccination rates, (2) patient vaccination promotion factors, (3) patient perception of service quality at EHHOP?

STUDY DESIGN/METHODS: After producing a film starring EHHOP patients, we assess its impact by offering each waiting-room participant a pre-survey, the film showing, and then an immediate post-survey following the film to assess the impact on participants' knowledge, attitudes, beliefs, as well as, perceptions of quality of care.

RESULTS: First, following the focus group, recorded transcription will be analyzed using the Dedoose program. Second, survey data collected from January to March 2019 will be analyzed using STATA.

CONCLUSIONS/FUTURE PLANS: We aim to show that the model of producing and implementing a community-based educational film program in the waiting room, (1) is an evidence-based method for flu vaccine education and uptake and (2) improves perceived quality of care. This model can then be expanded to waiting rooms of other clinics that serve vulnerable populations to sustainably combat health disparities and improve health literacy.

ABSTRACT 51

VALIDATION OF A RISK-ASSESSMENT TOOL FOR PREDICTING HIGH COST IN ELDERLY HIP FRACTURE PATIENTS.

Jordan Hall[1], Jessica Mandel[2], Kenneth Egol[3], Sanjit Konda[3]. [1]Medical Education, [2,3]Orthopaedics. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]University of Florida College of Medicine, Gainesville, FL, [3]NYU Langone Orthopedic Hospital, New York, NY.

BACKGROUND/RATIONALE: The Score for Trauma Triage in the Geriatric and Middle Aged (STTGMA) is a validated risk-assessment tool with excellent utility in predicting inpatient mortality risk in older orthopedic trauma patients. Recent investigations have explored the potential extension of the tool to the assessment of inpatient care cost. The current study aims to internally validate the capability of a cost score derived from the mortality risk tool within a cohort of hip fracture patients.

HYPOTHESIS OR RESEARCH QUESTION: To determine whether a novel inpatient cost score derived from a validated inpatient mortality risk tool has utility in predicting the risk of high inpatient cost for operative hip fracture patients.

STUDY DESIGN/METHODS: All patients ≥ 55 years old who sustained hip fractures and were operatively treated at one academic medical center from 2016 to 2018 were included. Each patient's demographics, injury severity, and functional status were utilized to calculate a STTGMA score at time of admission. Direct total inpatient cost data was retrieved from the hospital financial department. The STTGMA cost score was developed via multivariate logistic analysis to the dichotomous dependent variable of "high cost," which is defined as being within the top 5% of costly inpatient hip fracture cases and corresponds to ≥$50,000. A risk stratification scheme was developed with an estimated risk ≥0.12 (12%) defined as predictive of high cost. Discrimination of the model was determined via AUROC analysis.

RESULTS: A cohort of 306 operative hip fracture patients was included. The mean age was 78.2 years and the mean total inpatient cost was $28,310 ± $14,244. The sensitivity, specificity, positive predictive value, and negative predictive value of the cost score model were 73.7%, 98.9%, 63.6%, and 98.2%, respectively. AUROC was 0.888 (95% CI: 0.793 – 0.983).

CONCLUSIONS/FUTURE PLANS: STTGMA has demonstrated excellent utility in predicting risk of inpatient mortality and good utility for predicting risk of high total inpatient cost for hip fracture patients. Use of this tool at time of admission can certainly provide physicians with valuable information regarding the identification of patients at high-risk of inpatient cost and morbidity for effective resource utilization and development of specialized care pathways.

ABSTRACT 52

A COMPREHENSIVE GENE PROFILING OF LESIONAL SKIN FROM LIMITED AND DIFFUSE SYSTEMIC SCLEROSIS PATIENTS DEMONSTRATES DYSREGULATION OF ECM AND VASCULAR GENES WITH VARIABLE IMMUNE ACTIVATION.

Joseph Han[1], Helen He[2], Saakshi Khattri[2], Emma Guttman[2]. [1]Medical Education, [2]Dermatology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Systemic sclerosis (SSc) is a debilitating disease of unknown etiology that manifests as diffuse fibrosis and vascular abnormalities in the skin, joints, and internal organs. SSc is divided into two main subtypes: limited (lcSSc) and diffuse (dcSSc) cutaneous systemic sclerosis, based on distribution of skin lesions and extent of internal organ involvement. To date, most SSc studies have been limited to only dcSSc patients, a small sample size, or a limited set of biomarkers.

HYPOTHESIS OR RESEARCH QUESTION: To determine a comprehensive molecular profile of lcSSc and dcSSc and compare the two subtypes in Asian patients with SSc via RNA sequencing (RNA seq) with validation of markers below threshold of detection by reverse transcription polymerase chain reaction (RT-PCR).

STUDY DESIGN/METHODS: RNA-sequencing was performed on 17 Asian patients with SSc (10 lcSSc, 7 dcSSc) and 15 healthy controls. Genes below the threshold of detection were validated by RT-PCR. The modified Rodnan skin score/mRSS is a commonly used severity score for SSc measuring skin thickness.

RESULTS: Using a criteria of fold-change>1.5 and false discovery rate<0.05, we identified 842 differentially expressed genes. The common phenotype of SSc includes increases in Th2 (IL-4/6/13, CCL2/13/18, OX40, OX40L) and activated protein-1 transcription factor family (activating transcription factor 3) genes, along with decreases in lipid metabolism genes (galanin, ELOVL fatty acid elongase 3). DcSSc patients had higher expression of Th1/interferon-induced (IFN-gamma, CXCL9/10/11), Th17 (CXCL1, CCL20), T regulatory/Treg (IL-10), myeloid cell activation, and collagen synthesis/extracellular matrix remodeling markers. LcSSc was distinguished by decreased vascular genes and increased epidermal genes (late cornified envelope 1D/6A). MRSS correlated significantly and positively with multiple Th1/Th2/Th17 markers and genes involved in TGF- signaling.

CONCLUSIONS/FUTURE PLANS: Dysregulation of immune and TGF- signaling genes was more pronounced in dcSSc compared to lcSSc. Further identification of biomarkers and dysregulated immune axes can lead to more personalized therapeutic advances for patients with systemic sclerosis.

ABSTRACT 53

GENOME-WIDE DNA METHYLATION PROFILING REVEALS NOVEL CANDIDATE EPIGENETIC GATEKEEPERS IN HEPATOCARCINOGENESIS.

Gabriela Hernandez Meza[1], Johann Von Felden[2], Amanda Craig[2], Sergi Sayols[3], Anna Portela[4], Manel Esteller[4], Myron Schwartz[5], Vincenzo Mazzaferro[6], Josep Llovet[2], Augusto Villanueva[2]. [1]Medical Education, [2,3,4,6]Oncological Sciences, [5]Surgery. [1,2,5]Icahn School of Medicine at Mount Sinai, New York, NY, [3]Institute of Molecular Biology, Mainz, Germany, [4]IDIBELL Bellvitge Biomedical Research Institute, Spain, [6]Fondazione IRCCS Istituto Nazionale dei tumori, Italy.

BACKGROUND/RATIONALE: Epigenetic deregulation is a critical event in human malignancies. Besides mutations in TERT promoter, found in 20% of dysplastic nodules, little is known about the key molecular alterations driving early hepatocarcinogenesis.

HYPOTHESIS OR RESEARCH QUESTION: The aims of this study were: 1) to analyze DNA methylation changes during the transition from preneoplastic lesions to early hepatocellular carcinoma (HCC), and 2) to identify candidate epigenetic gatekeepers in the transition between dysplasia and early tumors.

STUDY DESIGN/METHODS: Methylome profiling was done with Illumina HumanMethylation450. We evaluated differentially methylated CpG sites between groups using an F-test. To detect novel epigeneticgatekeepers, we defined hypermethylation as a B value higher than 0.5. We profiled fresh-frozen tissues from resection or liver transplant specimens resulting in: 16 normal livers, 139 cirrhosis, 8 dysplastic nodules and 227 HCC samples. Correlation between methylation and RNA expression (n= 361) was quantified with the Pearson's coefficient.

RESULTS: Patients were mostly male (76%), with a median age of 66, and with underlying liver disease mainly due to hepatitis C (43%) and B (23%). There were 43 tumors below 2 cm in diameter. A phylo-epigenetic tree derived from the euclidean distances between differentially DNA methylated sites (n=421,997) reveals a gradient of methylation changes that spans normal, cirrhotic, dysplastic nodules and HCC. Epigenetic analysis confirmed closer proximity of dysplasia to HCC than to cirrhotic tissue. Focusing on CpG sites located in promoter regions (i.e., TSS200, TSS1500, 5'UTR, and 1st exon), we selected candidates hypermethylated in less than 1% of normal and cirrhotic tissue, in all high grade dysplastic nodules, and in more than 50% of small HCC nodules (<2 cm). When we integrated DNA methylation and gene expression we found a significant (all P<0.001) inverse correlation in TSPYL5 (r=-0.31), KCNA3 (r=-0.33), LDBH (r=-0.46) and SPINT2 (r=-0.43).

CONCLUSIONS/FUTURE PLANS: Whole-genome DNA methylation profiles accurately discriminate between different histological lesions along the human hepatocarcinogenesis spectrum. We report novel epigenetic gatekeepers in the transition between dysplastic nodules and early HCC.

ABSTRACT 54

COMBINING THE SHOCK INDEX WITH LACTATE DOES NOT IMPROVE PREDICTION OF NEED FOR INTERVENTION IN TRAUMA PATIENTS WITH OCCULT SHOCK.

Derek Hilgers[1], Peter England[2], Megha Rajpal[2], Sam Schuberg[2], Kaushal Shah[2]. [1]Medical Education, [2]Emergency Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: In the United States, trauma is the leading cause of death amongst people in their first four decades of life. Occult shock, defined as systemic hypoperfusion in the setting of a normotensive patient, can be difficult to predict and its timely identification can reduce morbidity and mortality in trauma patients. Shock Index (SI), the heart rate divided by the systolic blood pressure, and serum lactate level are both rapid assessment tools that have been demonstrated to predict occult shock. However, each has limitations in certain patient populations and disease contexts. Combining SI and serum lactate may improve rapid identification of occult shock compared to either assessment alone.

HYPOTHESIS OR RESEARCH QUESTION: We aimed to determine whether the use of shock index (SI) combined with elevated serum lactate (>4) could improve the identification of patients with occult shock that required massive transfusion protocol (MTP) or operative intervention in the first 24 hours.

STUDY DESIGN/METHODS: A retrospective chart review of the Elmhurst Hospital Center trauma registry from 1/1/2014 to 12/31/2014 was performed. We queried all trauma patients with a serum lactate level obtained on presentation and for each patient, we calculated the SI. Charts were then reviewed for operative intervention or MTP activation within the first 24 hours. We then performed logistic regression analysis using SI alone, lactate alone, and SI and lactate together as independent variables.

RESULTS: 1854 patients were identified from the trauma registry and 1095 met inclusion criteria for analysis. Of the 1095 patients, 57 (5.2%) patients with occult shock required either massive transfusion or operative investigation within the first 24 hours. The odds ratio of abnormal SI alone associated with requirement of intervention in the presence of occult shock was 3.08 (1.61-5.91, p = 0.001). The odds ratio of abnormal lactate alone was 3.97 (1.98 - 7.94, p .001). The addition of abnormal lactate to an abnormal SI showed an odds ratio of 5.194 (2.60 - 10.37, p = 0.001). The combined odds ratio was not significantly different from either individual test.

CONCLUSIONS/FUTURE PLANS: The combination of SI and lactate together was not more predictive of requirement of intervention in occult shock than either variable alone.

ABSTRACT 55

HIGH-NORMAL BLOOD PRESSURE AS A PREDICTOR OF PREECLAMPSIA IN TWIN PREGNANCIES.

Melissa Hill[1], Courtney Connolly[1], Rebecca Klahr[1], Andrei Rebarber[2], Nathan Fox[2]. [1]Medical Education, [2]Obstetrics, Gynecology, and Reproductive Science. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Although blood pressure is routinely measured at every prenatal visit, the value itself, if normal, is rarely used for the prediction of preeclampsia. Prior research examining blood pressure throughout twin pregnancies defined the 95th percentile for SBP and DBP for gestational age (120 systolic and 80 diastolic prior to 30 weeks; 130 systolic and 84 diastolic after 30 weeks).

HYPOTHESIS OR RESEARCH QUESTION: Our objective was to determine if women with twin pregnancies and blood pressure above the 95th percentile (but normal, i.e. less than 140 SBP and 90 DBP) are at increased risk of preeclampsia.

STUDY DESIGN/METHODS: Retrospective cohort study of all women with twin pregnancies being cared for by a single MFM practice from 2012 to 2018. We identified all women with a SBP or DBP above the 95th percentile but less than 140 systolic and 90 diastolic at any point during pregnancy. We excluded women diagnosed with chronic hypertension either before or during pregnancy (140/90 at <20 weeks gestation). The primary outcome was the development of preeclampsia, as defined by ACOG. Chi square testing was used and logistic regression was used to control for maternal age, prepregnancy BMI, and IVF.

RESULTS: A total of 457 patients met the inclusion criteria, of whom 109 (23.9%) had either a SBP or DBP above the 95th percentile (but normal) at any time during pregnancy. These women were significantly more likely to develop preeclampsia than those who did not have any readings above the 95th percentile (30.3% vs. 12.6%, p<0.001, aOR 3.0 (1.7, 5.1)). Patients with a DBP reading above the 95th percentile had the highest risk of developing preeclampsia (42.9% vs. 14.2%, p<0.001, aOR 4.2 (2.1, 8.4)). A SBP or DBP above the 95th percentile was a significant predictor of preeclampsia (AUC 0.61, 95% CI 0.54, 0.69, p=0.002).

CONCLUSIONS/FUTURE PLANS: In women with twin pregnancies, a normal SBP or DBP that is above the 95th percentile (120 systolic and 80 diastolic prior to 30 weeks; 130 systolic and 84 diastolic after 30 weeks) is associated with significantly increased risk of preeclampsia. A DBP above the 95th percentile has the strongest association, with 42.9% developing preeclampsia. Women with twin pregnancies and normal BP above the 95th percentile should be observed closely for development of preeclampsia.

ABSTRACT 56

A COMPARISON OF QUALITY OF LIFE MEASUREMENTS IN NON-SMALL CELL LUNG CANCER PATIENTS BEFORE, DURING, AND AFTER SURGERY OR RADIOTHERAPY.

Stephanie Hojsak[1], Keith Sigel[2]. [1]Medical Education, [2]Medicine.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Lung cancer is the leading cause of cancer death in both men and women in the US. It is also a disease of the elderly, with 70 years being the average age at the time of diagnosis. Non-small cell lung cancer (NSCLC) accounts for a vast majority, about 80-85%, of these lung cancers. Treatment options for NSCLC include surgery and radiation, which are both highly intensive therapies that can lead to major complications. Frailty is also common in elderly NSCLC patients and is likely to impact outcomes, particularly quality-of-life (QOL).

HYPOTHESIS OR RESEARCH QUESTION: To investigate the influence of frailty and other predictors of poorer QOL in patients receiving surgical or radiation treatment for NSCLC before, during, and after undergoing treatment.

STUDY DESIGN/METHODS: We analyzed data from the national Surveillance, Epidemiology, and End Results-Medicare Health Outcomes Survey (SEER-MHOS) database. We collected baseline and clinical cancer characteristics from SEER cancer data. We estimated QOL using SF-36 measurements present in SEER-MHOS and frailty using a recently validated frailty measure. We fit multiple polynomial curves (LOESS) to model the trajectory of QOL before and after cancer therapy by treatment type and further stratified by tertiles of frailty scores.

RESULTS: In our cohort of 1,891 NCSLC patients mean pretreatment QOL was 0.759 and post treatment mean QOL was 0.680, a 9.1% decrease ($p<0.05$). NSCLC patients with and without major comorbid conditions had similar relative changes in QOL before and after treatment (9.3% versus 9.0%) In reviewing the LOESS curves for all 3 treatments, significant QOL decreases were experienced immediately after cancer treatment, with gradual improvements over the following 12 months, to levels slightly below pretreatment levels. When comparing QOL trajectory by frailty tertile we found increasing frailty was associated with lower overall QOL before and after cancer treatment. Frailty was also more strongly associated with QOL after cancer surgery than major comorbidities.

CONCLUSIONS/FUTURE PLANS: NSCLC treatment was associated with decreases in QOL. Frailty may be a clinical predictor of worse QOL after NSCLC treatment; we will continue to explore the use of this risk factor to guide treatment decisions.

ABSTRACT 57

ELEVATED SUPAR PREDICTS DEVELOPMENT OF KIDNEY DISEASE IN ACUTELY HOSPITALIZED MEDICAL PATIENTS.

Esben Iversen[1], Morten Houlind[2], Thomas Kallemose[2], Line Jee Hartmann Rasmussen[2], Mads Hornum[3], Salim Hayek[4], Ove Andersen[2], Jesper Eugen-Olsen[2]. [1]Medical Education. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Copenhagen University Hospital, Hvidovre, Denmark, [3]Rigshospitalet, Copenhagen, Denmark, [4]University of Michigan, Ann Arbor, Michigan, USA.

BACKGROUND/RATIONALE: Acutely hospitalized medical patients are at risk of developing kidney disease, and kidney filtration markers such as creatinine are poor predictors of kidney disease progression. Soluble urokinase plasminogen activator receptor (suPAR) is a commercially available biomarker associated with chronic inflammation and kidney function decline. However, it is unknown whether suPAR is simply another filtration marker, or if it plays an active role in the pathogenesis of kidney disease.

HYPOTHESIS OR RESEARCH QUESTION: In an unselected cohort of acutely hospitalized medical patients, is elevated suPAR at hospital admission associated with future development of a chronic kidney disorder?

STUDY DESIGN/METHODS: Patients were admitted to the Hvidovre Hospital Emergency Department from November 2013 to March 2017 and followed for disease development until June 2017, with median follow-up period of 2 years. Chronic kidney disorder was defined by ICD-10 codes for chronic dialysis, chronic kidney disease (CKD), glomerular disease, tubulointerstitial disease, and renal disease not otherwise specified. Association of suPAR with development of kidney disease was determined by Cox regression adjusted for age, sex, CRP, and eGFR at index admission.

RESULTS: In total, 28,728 patients were admitted during the study. Patients with a prior history of kidney disease (n=3,019) were excluded, resulting in a study population of 25,709 acute medical patients. During follow-up, 1,032 patients (4.0%) developed kidney disease: 868 patients (3.4%) developed a chronic kidney disorder, while 241 (0.9%) patients developed acute kidney injury or required acute dialysis. In multivariable Cox analysis, a doubling in suPAR at index admission was associated with a hazard ratio of 2.03 (95% CI: 1.94–2.11) for developing a chronic kidney disorder during follow-up.

CONCLUSIONS/FUTURE PLANS: In an unselected cohort of acutely hospitalized medical patients, suPAR was associated with future development of a chronic kidney disorder independent of age, sex, CRP, and eGFR at index admission. These findings highlight the prognostic value of suPAR in kidney disease and its potential to be used in combination with GFR and proteinuria to monitor and prevent the development of kidney disease.

ABSTRACT 58

ORAL MICROBIOTA IN FOOD ALLERGY.

Oranicha Jumreornvong[1], Hsi-en Ho[2], Supinda Bunyavanich[2]. [1]Medical Education, [2]Genetics and Genomic Sciences. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Food allergy is a major health problem in the US with an estimated 5% of adults and 8% of children affected. Epidemiological data have suggested that microbial exposure is a key environmental risk modifier for oral tolerance. There is evidence of dysbiosis in human food allergy, which may precede the onset of disease. Murine models suggest that the host microbiome exerts immunodulatory effects on the mucosal immune system and affects the propensity for oral tolerance vs. food allergy. However, there is a lack of functional profiling of microbiota in humans that mechanistically links dysbiosis to immune regulation of food allergy.

HYPOTHESIS OR RESEARCH QUESTION: Oral microbiota differs in subjects with food allergy vs. controls.

STUDY DESIGN/METHODS: 60 pediatric subjects were recruited from the Jaffe Food Allergy Institute and Mount Sinai Allergy/Immunology and Pediatric clinics, including 1) food allergy subjects, 2) atopic control subjects without food allergy, and 3) non atopic controls. Subjects were asked to complete questionnaires addressing medical, dietary and lifestyle histories were administered. Unstimulated oral saliva samples were collected. DNA isolation and bacterial 16S rRNA sequencing of these samples were then performed.

RESULTS: 60 subjects were recruited from Jaffe Food Allergy Institute and Mount Sinai Allergy/Immunology and Pediatric clinics, encompassing 20 subjects per targeted study group. The mean age of the recruited cohort was 12.5 years (SD 8.2), with no significant difference in age or sex between the food allergic, atopic control and nonatopic control groups. The most prevalent food allergy was peanut (85.6%). DNA isolated from saliva samples had a mean yield of 85.9 ng/ul sample (SD 44.7) with DNA quality assessed by Nanodrop measurement (mean 260/280 = 2.4, SD 1.7). Amplification of genomic DNA with user defined forward and reverse primers yielded a single 550bp products by Tapestation. Following PCR, libraries were normalized, pooled, and sequenced on the MiSeq system using v3 reagents.

CONCLUSIONS/FUTURE PLANS: Subject recruitment, DNA isolation, and 16S rRNA sequencing of oral saliva samples were successfully performed. Future objectives include completion of analyses to compare diversity measures between subjects with and without food allergy.

ABSTRACT 59

EXPLORING INTERVENTIONS: MANAGING COMPASSION FATIGUE (CF) AND BURNOUT (BO) IN PEDIATRIC SUBSPECIALISTS.

Samuel Kase[1], Jeanie Gribben[1], Elisha Waldman[2], Andrea Weintraub[3]. [1]Medical Education, [2,3]Pediatrics. [1,3]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Lurie Children's Hospital of Chicago.

BACKGROUND/RATIONALE: CF and BO impact emotional wellbeing and professional performance of physicians. While essential for physicians to engage in self-care outside of work, it is vital for organizations to offer structured support for wellbeing.

HYPOTHESIS OR RESEARCH QUESTION: To compare institutional wellness offerings to offset CF and BO with (1) physician participation in programming and (2) what physicians wish could be implemented.

STUDY DESIGN/METHODS: A survey of personal/professional characteristics was distributed to pediatric subspecialists. Descriptive statistics were calculated. Bivariate analyses were performed using chi square tests or independent t –tests. Multivariable logistic regression models for categories of institutional programming as a function of potential predictors of utilization were performed. Qualitative content analysis was performed for responses to what programs/supports participants wish were available to them.

RESULTS: 60% of respondents participated in an array of institutional offerings for self-care. Participants' "wish lists" to combat CF and BO were coded into 4 categories: social/emotional support (SES), improved leadership/mentorship (LM), organizational change (ORG), and improved physical work environment (PHYS). While there were statistically significant differences in specific programs available/utilized by participants across subspecialties, there were no significant differences in the 4 "wish list" categories across subspecialties. Independent spiritual practice as self-care, "sympathetic/empathic" personality trait, and junior faculty level were each significant predictors of desire for SES ($p< 0.03$). Desire for improved LM was significantly associated with current use of "debriefs" ($p=0.015$) and/or Schwartz Rounds ($p=0.033$). Independent spiritual practice and "conscientious/in control" personality trait were both independent predictors of desire for ORG ($p<0.05$).

CONCLUSIONS/FUTURE PLANS: While there is universal need for wellness offerings to offset CF and BO, a one-size-fits-all approach is unlikely to succeed for pediatric subspecialists. Lack of awareness of what providers truly want and barriers to participation perpetuate underutilized interventions. As leadership design new wellness initiatives, individualized wellness plans are warranted.

ABSTRACT 60

A PREDICTIVE NOMOGRAM FOR SMALL INTESTINE NEURO-ENDOCRINE TUMORS (NETS).

Susheian Kelly[1], Jeffrey Aalberg[2], Michelle Kim[3], Celia Divino[2]. [1]Medical Education, [2]Surgery, [3]Medicine.
[1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Small Intestine NETs are concerning due to their high rate of metastasis and the associated poor survival with metastatic disease. Prognostication is challenging due to inconsistencies in currently available grading and staging systems. Nomograms and prognostic scores are being proposed to address these limitations. However, none is specific to the US population. This study aimed to develop a nomogram for small intestine NETs which includes a parsimonious inventory of routinely available prognostic factors and is developed using United States population based data.

HYPOTHESIS OR RESEARCH QUESTION: The SEER nomogram, a new prognostic tool for small intestine neuroendocrine tumors, is an accurate and clinically useful prognosticator.

STUDY DESIGN/METHODS: Patients diagnosed with small intestine NETs between 2004 and 2015 were selected from the Surveillance, Epidemiology, and End Results (SEER) database. The covariates analyzed were age, sex, race/ethnicity, tumor grade, primary tumor size, depth of invasion (T), regional lymph node (N) and distant metastasis (M). Cox regression was used to generate nomogram scores and calculate 5 and 10 year disease specific survival. Internal validation was done on a randomly selected subset of the data.

RESULTS: A total of 2,734 small intestine NET patients who underwent surgery were selected: 2,050 for nomogram development and 684 for internal validation. On multivariate analysis, age ($p<0.0001$), primary tumor size (>3 cm) ($p=0.0022$), tumor grade (I, II, III, IV) ($p<0.0001$), depth of invasion (≥T3- extends beyond the muscularis propria) ($p<0.0001$), and distant metastasis ($p=0.028$) were found to be statistically significant in regression analysis and were included in the nomogram. Nomogram scores ranges from 10-80 points with an AUC of 0.76 which remained consistent in internal validation (AUC =0.75).

CONCLUSIONS/FUTURE PLANS: This small intestine NET nomogram, developed using US population based data, contains a parsimonious list of routinely available prognostic factors and maintained high predictive accuracy during development and internal validation.

ABSTRACT 61

MALPRACTICE LITIGATION IN BRAIN TUMOR SURGERY: A 31-YEAR ANALYSIS OF CAUSATIVE FACTORS IN THE UNITED STATES.

Remi Kessler[1], Deborah Benzil[2], Joshua Loewenstern[1], Alan Scarrow[3], Constantinos Hadjipanayis[4], Raj Shrivastava[4]. [1]Medical Education, [2,3,4]Neurosurgery. [1,4]Icahn School of Medicine at Mount Sinai, New York, New York, [2]The Cleveland Clinic, Cleveland, OH, [3]Mercy Health System, St. Louis, MO.

BACKGROUND/RATIONALE: Medical malpractice litigation is an issue of major concern in neurosurgical practice, with 19.1% of neurosurgeons facing a claim annually. Neurosurgery possesses the greatest cumulative risk of malpractice of any specialty, likely due to the complex clinical environment and severity of disease.

HYPOTHESIS OR RESEARCH QUESTION: Despite the significant threat of malpractice, few studies have analyzed litigation related to the management of brain tumors. In this study, the authors characterize such litigation to determine the most common factors that compel plaintiffs to file these claims.

STUDY DESIGN/METHODS: WestLawNext, a legal database, was utilized to identify all malpractice cases from 1985 to 2016 related to brain tumors. In total, 193 cases were identified and each case was analyzed for litigation causes (multiple causes were permitted). Since many have more than one ground for litigation, reported percentages were based on total counts of litigation rather than on number of cases. Demographic information was also collected on each case including location (state), tumor type, and physician specialty.

RESULTS: The cases were distributed across 36 states: California (n=38, 21%) and New York (n=25, 14%) had the highest number of malpractice cases. The top reasons for litigation were: failure to diagnose in a timely manner (n=93, 26%), failure to treat (n=58, 16%), procedural error (n=55, 15%), and failure to refer diagnostic tests (n=50, 14%). The most common classification of brain tumor diagnoses included: pituitary adenoma (n=28, 15%), acoustic neuroma (n=27, 14%), meningioma (n=23, 12%), and other/not specified (n=64, 33%). Neurosurgery (n=74, 33%), Neurology (n=27, 12%), and Family Medicine (n=25, 11%) were the most common defendant physician specialties.

CONCLUSIONS/FUTURE PLANS: Malpractice litigation contributes to high overhead and physician burnout while also escalating cost of patient care through defensive medicine. This study reveals that the brain tumor litigation profile is not intuitive as benign brain tumors are the most common in litigation and that surgical issues accounted for only a small percentage. Unlike in other studies of litigation patterns, these results do not suggest an easy remedy for addressing these types of cases.

ABSTRACT 62

LONG-TERM OUTCOMES OF RADIOFREQUENCY ABLATION OF HIGH-GRADE SQUAMOUS INTRAEPITHELIAL LESIONS.

Murad Khan[1], Justin Im[2], Stephen Goldstone[3]. [1]Medical Education, [2,3]Surgery.
[1,3]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Laser Surgery Care, New York, NY.

BACKGROUND/RATIONALE: Anal HSIL targeted ablation presumably decreases progression to cancer. However, recurrence is high, primarily from development of metachronous HSIL. Previous trials demonstrated that wide-field hemi-circumferential and circumferential RFA of anal canal HSIL reduced recurrence in treated areas during 12-month follow-up. Esophageal RFA often requires multiple treatments to fully ablate disease over 12 months and recurrence is counted after these treatments.

HYPOTHESIS OR RESEARCH QUESTION: Does wide-field RFA of anal canal HSIL reduce long-term recurrence?

STUDY DESIGN/METHODS: A retrospective analysis of long-term treatment results in participants returning for follow-up HRA after completing hemi-circumferential and circumferential RFA trials. Participants had to have an HRA >1-year post-completion of initial RFA trials. A non-HSIL biopsy or no lesion on HRA without biopsy was considered no recurrence. Recurrence was counted beginning at 6 months post-initial treatment.

RESULTS: Of 22 participants who underwent hemi-circumferential and 10 participants who underwent circumferential RFA, 15 (63%) and 9 (90%), respectively returned for follow-up. Twenty-three (96%) were male and 8 (33%) were HIV-positive. The median age was 52.5 years.

No participants developed HSIL in RFA-treated areas after completion of initial trials and median disease free duration was 3.2 (range 1.0 – 4.5) years. One participant treated with hemi-circumferential RFA developed metachronous HSIL in the non-ablated area at 3.4 years while another had recurrence at 12 months and was retreated with targeted cautery ablation, remaining disease-free for an additional 2.5 years. Only one participant had LSIL on biopsy. Six of 13 (46%) participants cleared high-risk HPV by last follow-up. No long-term adverse events related to the procedure were identified.

CONCLUSIONS/FUTURE PLANS: Wide-field RFA safely and effectively treats anal HSIL with reduced long-term recurrence.

ABSTRACT 63

THE IMPACT OF OBESITY IN PATIENTS UNDERGOING ROBOTIC PARTIAL NEPHRECTOMY.

Yongkyum Kim[1], Daniel Rosen[2], Muthumeena Kannappan[2], David Paulucci[2], Alp Beksac[2], Ronney Abaza[3], Daniel Eun[4], Akshay Bhandari[5], Ashok Hemal[6], James Porter[7], Ketan Badani[2]. [1]Medical Education, [2,4,5,6,7]Urology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]OhioHealth Dublin Methodist Hospital, Columbus, OH, USA, [4]Temple University School of Medicine, Philadelphia, PA, USA, [5]Columbia University at Mount Sinai, Miami Beach, FL, USA, [6]Wake Forest School of Medicine, Winston-Salem, NC, USA, [7]Swedish Medical Center, Seattle, WA, USA.

BACKGROUND/RATIONALE: As the prevalence of obesity increases worldwide, an increasing proportion of surgical candidates have an elevated BMI, with associated metabolic syndrome, diabetes, and hypertension. Yet there exists limited evidence regarding the effect of elevated BMI on surgical outcomes in patients undergoing robotic surgery. We examined whether obese patients had worse perioperative and postoperative renal function outcomes following robotic partial nephrectomies (RPN).

HYPOTHESIS OR RESEARCH QUESTION: Patients with elevated BMI will have worse postoperative renal function and perioperative outcomes following robotic partial nephrectomies.STUDY DESIGN/METHODS: We performed a multi-institutional analysis of 1,770 patients who underwent RPN between 2008 and 2015. Association between BMI with perioperative outcomes, acute kidney injury (AKI, >25% reduction in eGFR) at discharge, and change in eGFR per month was analyzed (range 3-24). BMI was evaluated as a continuous and categorical variable (Normal: < 25, Overweight: 25-29.99, Obese: 30-39.99, Morbidly Obese ≥ 40). AKI was evaluated using multivariable logistic regression models and eGFR over time was evaluated using multivariable linear mixed effects models; both of which were adjusted for confounding variables including age, Charlson comorbidity index, tumor size, and the identity of the operating surgeon.

RESULTS: 45.2% (n=529) of patients were found to be obese, with a greater prevalence of hypertension and diabetes in overweight and obese patients. Obese patients were more likely to have malignant tumors (>77% vs. 68%, p<.001) and trended towards having larger tumors (3.0cm vs. 2.8cm; p=0.061). Obese patients required longer operative times, though equivalent warm ischemia times. Obesity did not correlate with an increased complication rate (p>.05). On multivariable analysis, obesity (OR=1.81; p=0.031), male sex (OR=1.54; p=0.028), and larger tumor size (OR=1.23; p<0.001) were associated with a significant increase in the likelihood of AKI at discharge. BMI above normal weight was not associated with greater eGFR decline per month post-RPN.

CONCLUSIONS/FUTURE PLANS: Obesity was associated with equivalent perioperative and long term renal function outcomes. RPN appears to be an equally safe operative option for patients regardless of obesity status.

ABSTRACT 64

LONGITUDINAL ENGAGEMENT IN PRIMARY CARE SERVICES AMONG PEOPLE WHO HAVE EXPERIENCED SEX TRAFFICKING.

Yonina Kirsch[1], Eve Waltermauer[2], Anita Ravi[3]. [1]Medical Education, [2,3]Family Medicine and Community Health. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Institute for Family Health 2006 Madison Ave, New York, NY 10035, [3]PurpLE Clinic 230 West 17th Street, New York, NY 10011.

BACKGROUND/RATIONALE: People who have experienced sex trafficking have multiple chronic and acute medical conditions, yet there is limited data on long-term primary care for this population. The PurpLE Clinic, launched in 2015 by the Institute for Family Health, a Federally Qualified Health Center network based in New York City, offers a rare opportunity to study primary care engagement for survivors of sex trafficking over time. Informed by survivors and community partners, the clinic was designed to be trauma-informed and address barriers to primary care for a wide range of intersectional issues. As a result, PurpLE Clinic allows for an in-depth understanding of this population, particularly through the three critical elements of: physical, mental and socioeconomic health.

HYPOTHESIS OR RESEARCH QUESTION: What are the patterns of engagement in healthcare services among sex trafficking survivors who initiate care at PurpLE Clinic? How does the physical, mental, and socioeconomic health of this population change over time?

STUDY DESIGN/METHODS: We conducted a retrospective medical chart review for all PurpLE Clinic patients who received care between July 1, 2015 and Jan 31, 2018 who are identified as having experienced sex trafficking and at least 18 years of age at the time of their first visit.

RESULTS: Of the 78 patients who met the criteria for inclusion, the average age was 34 (range 19-66), 18% identified as transgender women, and 33% had a non-English primary language. Seventy percent of patients had at least two office visits. Nearly all patients received preventive care services and chronic disease management; referrals to mental health and case management services were also common. Eighty-three percent of patients were screened at least once using the PHQ-9, of whom 18.5% had scores consistent with moderate depression, 30.8% had scores consistent with moderately severe depression, and 9.2% had scores consistent with severe depression. In addition, 26.2% of patients screened reported suicidal ideation in the preceding two weeks.

CONCLUSIONS/FUTURE PLANS: This study elucidates physical, mental, and social needs of sex trafficking survivors seeking to connect with medical services and can inform design and delivery of care in primary care settings.

ABSTRACT 65

LIKELIHOOD OF VASA PREVIA RESOLUTION ACROSS GESTATION.

Rebecca Klahr[1], Nathan Fox[2], Kelly Zafman[1], Melissa Hill[3], Courtney Connolly[1], Andrei Rebarber[2].
[1]Medical Education, [2]Obstetrics, Gynecology, and Reproductive Science.
[1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Vasa previa (VP) is a rare obstetric condition defined by the presence of fetal blood vessels overlying or close to the internal cervical os.

HYPOTHESIS OR RESEARCH QUESTION: The purpose of this study was to identify the resolution rate of vasa previa across gestation and to determine clinical and sonographic factors that are predictive of VP resolution.

STUDY DESIGN/METHODS: Retrospective cohort study of women diagnosed with VP in a single ultrasound unit between 2005 and 2018. VP was defined as a fetal vessel within 2 cm of the internal cervical os on transvaginal ultrasound. The primary outcome was VP resolution, defined as migration of the VP to >2cm away from the internal os. All images were re-reviewed. Chi-square, student t-test and logistic regression analysis was performed to determine variables significantly associated with VP resolution.

RESULTS: 100 women with VP were included, diagnosed at a mean GA of 22.8 +/- 4.9 weeks (mean +/- SD). 39 women (39.0%) had resolution of VP at a mean gestational age of 28.6 +/- 4.7 weeks. Factors associated with VP resolution on univariate and regression analysis were earlier GA at diagnosis (aOR 6.10, 95% CI 1.92-19.40), VP not covering the internal os at diagnosis (aOR 8.29, 95% CI 2.79-24.62) and VP not being the result of a resolved placenta previa (aOR 2.85, 95% CI 1.01-8.03). Factors not associated with VP resolution were maternal age, parity, IVF, number of fetuses, vessel type (artery, vein, or both), CL at diagnosis, velamentous cord insertion, 2-vessel umbilical cord, succenturiate lobe, uterine anomalies, and fibroids. One woman with twin pregnancy and VP resolution (at 31 weeks, 2.8cm from the internal os) presented at 33 weeks with massive bleeding and fetal demise of twin A. It was unclear if the demise was related to VP or placental abruption.

CONCLUSIONS/FUTURE PLANS: 39% of vasa previas will resolve over the course of pregnancy. Earlier GA at diagnosis, VP not covering the internal os, and not having a resolved placenta previa are all independently associated with an increased likelihood of VP resolution. Women with VP should be followed serially to assess for VP resolution, as many will resolve in the third trimester.

ABSTRACT 66

EVALUATING PATIENT'S KNOWLEDGE, ATTITUDES, AND BELIEFS TOWARDS CLINIC FLOW, OPERATIONS, AND INFRASTRUCTURE AT THE KORLE-BU TEACHING HOSPITAL OUTPATIENT CLINIC.

Benjamin Kornbluth[1], Lara Sokoloff[2], Stella Safo[2], Adwoa Agyei-Nkansah[3]. [1]Medical Education, [2,3]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Korle-Bu Teaching Hospital Accra, Ghana.

BACKGROUND/RATIONALE: Extensive research suggests that patient engagement leads to improvement in patient health outcomes across a variety of measures. This reciprocal partnership is particularly important in ambulatory care. Patient engagement and its impact on health is often underappreciated in the global setting, where resources may be limited and primary care infrastructure spotty.

HYPOTHESIS OR RESEARCH QUESTION: We will examine participant feedback on clinic flow, infrastructure and operational methodology in the Korle-Bu Teaching Hospital Outpatient Clinic in Accra, Ghana.

STUDY DESIGN/METHODS: Forty qualitative interviews were conducted in the Outpatient Medical Clinic at the Korle Bu Teaching Hospital in Accra, Ghana. Patients and caregivers were selected at random by clinic staff. After written informed consent was obtained, participants completed a 20-30 minute semi-structured qualitative interview. Interviews were transcribed from audio recordings and manually coded to generate a list of codes for themes. At the study's completion, the researchers iteratively coded interviews according to topics covered. Further data analysis using Nvivo coding software was completed by the researchers and one independent coder with no prior affiliation with this study.

RESULTS: Major themes participants voiced concerns about were inefficient clinic logistics: long wait times to see the doctor (N=26); disorganized clinic flow with excessively long lines (N=20); and difficulty locating their medical records (N=6). Suggestions for improvements include: a desire to increase the number of doctors (N=14); a desire for care with the same clinician (N=14); and improved direction signs to help navigate the clinic (N=9).

CONCLUSIONS/FUTURE PLANS: Findings suggest immediate steps can be taken to improve patient experience at Korle-Bu's Outpatient clinic, such as improving signage and clinic flow, as well as establishing continuity of care with providers. In the future, these recommendations will be made to Korle Bu management in the effort to begin implementing some suggested changes.

This study is limited in that we only worked in one clinic, at one hospital in Accra, but given that Korle Bu is the major teaching hospital in Ghana and one of the main tertiary care centers in West Africa, we believe these results to be significant.

ABSTRACT 67

OCULAR SYPHILIS: CLINICAL MANIFESTATIONS AND VISUAL OUTCOMES.

Merav Koschitzky[1], Kunyong Wu[2], Szilard Kiss[2]. [1]Medical Education, [2]Ophthalmology. [2]Weill Cornell Medicine. [1,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Limited studies in the United States have characterized ocular syphilis, a rare complication of syphilis infection that may lead to vision loss and blindness. With the rate of syphilis increasing, it is imperative to describe the signs and symptoms of ocular syphilis for prompt identification and treatment.

HYPOTHESIS OR RESEARCH QUESTION: What are the clinical manifestations and treatment outcomes of ocular syphilis?

STUDY DESIGN/METHODS: This is a retrospective review of eight ocular syphilis patients (13 eyes) who presented to Weill Cornell Ophthalmology from 2013-2018. Demographic information, presenting symptoms, ocular exam findings, fluorescein angiography (FA), and optical coherence tomography (OCT) were collected. Best Corrected Visual Acuity (BCVA) was converted to the logarithm of the minimum angle of resolution (LogMAR). Outcomes were measured by BCVA at follow-up visit after standard neurosyphilis treatment.

RESULTS: Patients were predominantly male (87.5%), and mean age was 48 years (range 37-60). 62.50% of patients presented with bilateral ocular involvement. Coinfection with HIV occurred in 50% of patients, and 50% were men who had a history of sex with men (MSM). The most common complaints at presentation were vision loss and photopsia (75%), followed by pain and light sensitivity (37%), followed by headaches, redness, and scotoma (all 25%). Upon examination of 13 eyes, the most common findings included vitreous cells (100%), anterior chamber flare (61%) and cells (49%), and optic disc hyperemia (58.33%, n=12). Additional findings included disc edema (41.67%, n=12), vasculitis and choroidal lesions (both 41.67%, n=12), corneal keratic precipitates (30.77%), and retinal pigment epithelium mottling or irregularity (33.33%, n=12). On OCT and FA, the most common findings were an ill-defined junction of the photoreceptor inner and outer segments (25%, n=12), and retinal vascular leakage (50% n=10), respectively. Mean visual acuity upon presentation was 0.74 +/- 0.9 (mean+/- SD, LogMAR), and significantly improved to 0.32 +/- 0.8 after treatment (p=0.0223).

CONCLUSIONS/FUTURE PLANS: Ocular syphilis presented with a wide spectrum of clinical manifestations and involved a variety of ocular structures. Treatment improved visual outcomes.

ABSTRACT 68

SELF-REPORTED MILD BEHAVIORAL IMPAIRMENT CHECKLIST.

Hannah Krystal[1], Judith Neugroschl[2], Carolyn Zhu[2], Mary Sano[3]. [1]Medical Education, [2]Geriatrics and Palliative Medicine, [3]Psychiatry. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Neuropsychiatric symptoms (NPS) may be an early sign of or precursor to cognitive impairment and dementia. The Mild Behavioral Impairment Checklist (MBI-C) was created to capture these symptoms. Specifically, the MBI-C captures decreased motivation, emotional dysregulation, impulse dyscontrol, social inappropriateness, and abnormal perception or thought content.

HYPOTHESIS OR RESEARCH QUESTION: To use the MBI-C to characterize NPS in non-demented research participants by identifying associations between NPS and other established clinical and demographic features.

STUDY DESIGN/METHODS: Within 6 months of a diagnostic visit, non-demented participants in the ADRC were approached by phone or in person to complete the MBI-C. The MBI-C questionnaire was structured as a series of 34 yes/no questions; if yes, participants were asked to rank severity on a Likert scale of 1 to 3. Checklist data were summarized to create a single score ranging from 0-102. Data from the most recent diagnostic visit was used to examine relationships with clinical and demographic variables. The MBI was then compared to other tasks previously completed by the patients, such as MMSE and MoCA.

RESULTS: We collected data from 17 patients with mild cognitive impairment (MCI) and 84 normal controls (NC) using phone or in person interviews. The MBI total score was significantly different between cohorts (Mean±SD MCI 13.24 +/- 21.38, NC 5.19 +/- 7.97 p=0.03), particularly the domains of mood (Mean±SD MCI 4.06 +/- 6.53 NC 1.70 +/- 3.37 p = 0.05) and interest (Mean MCI 3.06 +/- 4.58, NC 1.01 +/-1.87 p = 0.04). Within the CN subgroup, the MBI-C was correlated with presence of depression (p<0.0001), but not with cognitive ability (MoCA score) or functional impairment. In the MCI cohort, the MBI was correlated with the MoCA (p=0.016), as well as the score on a depression screen (p=0.001) and functional ability, as assessed with a caregiver (FAQ) (p=0.006).

CONCLUSIONS/FUTURE PLANS: This version of the MBI-C captured symptoms associated with depression, cognition, and functional disability, suggesting that these symptoms may have important consequences in the earliest transition from normal to cognitive impairment.

ABSTRACT 69

FAMILY CAREGIVING NETWORKS IN THE CONTEXT OF HOSPICE USE.

Vedika Kumar[1], Katherine Ornstein[2]. [1]Medical Education, [2]Geriatrics and Palliative Medicine.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Hospice care confers well-documented benefits to patients and their families, but it is notoriously underutilized. Unpaid family caregivers comprise the majority of caregivers, yet knowledge about how the family unit influences hospice enrollment at the end of life is limited.

HYPOTHESIS OR RESEARCH QUESTION: Here, we assess how amount of family caregiver support before death affects hospice utilization. We hypothesize that increased family support (measured by total hours of unpaid care) is associated with increased hospice use.

STUDY DESIGN/METHODS: This is a prospective cohort study using data drawn from the National Health and Aging Trends Study (NHATS) waves X-Y, linked to Medicare claims data. NHATS drew a random sample of individuals ages 65 years and older, representing 96% of all older adults in the U.S. The analysis examined the association between total hours of unpaid care received and likelihood of hospice use using a multivariable logistic regression model adjusting for key demographic, clinical and functional characteristics. Analyses were conducted for all individuals who received help before death and stratified by disease type.

RESULTS: We identified 1,532 individuals who died within 1 year and received help with self-care, mobility, medical, or household activities from any type of caregiver. Decedents who did not use hospice reported a mean of 2.21 caregivers in their network, while those who did reported 2.43. Our unadjusted model showed an association between receipt of 40+ hours of unpaid care and subsequent hospice use (OR 1.453, 95% CI 1.120-1.884), but this relationship was no longer significant in adjusted models. Among decedents with a cancer diagnosis, 40+ hours of unpaid care was associated with subsequent hospice use (OR 1.837, 95% CI 1.062-3.179).

CONCLUSIONS/FUTURE PLANS: Other than those individuals with cancer, we did not see an association between caregivers support and subsequent hospice use, suggesting that family caregiver support is not driving hospice use overall. Future research should examine what other aspects of caregiver network and availability may be associated with hospice use. Better understanding of disparities in hospice use can facilitate timely access to care for older adults with serious illness who can benefit from hospice at end of life.

ABSTRACT 70

PHYSICIAN AND PARENT COMFORT, AWARENESS, BARRIERS, AND IMPLEMENTATION OF THE GUIDELINES FOR THE PREVENTION OF PEANUT ALLERGY.

Michelle Lai[1], Scott Sicherer[2]. [1]Medical Education, [2]Pediatrics.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: In 2017, guidelines for prevention of peanut allergy were published by an Expert Panel convened by the NIAID, suggesting early peanut introduction based primarily on the Learning Early About Peanut Allergy (LEAP) study results. Various concerns about implementation of the guidelines have been voiced in the literature, but there is a paucity of investigations concerning potential barriers and opportunities.

HYPOTHESIS OR RESEARCH QUESTION: To explore stakeholder comfort with and adherence to the guidelines, and to determine potential barriers and improvements regarding implementation.

STUDY DESIGN/METHODS: Surveys were administered to a convenience sample of physicians (50 [90% pediatricians]) and parents (100) of infants under age 1 year in multiple practice settings in NYC. Surveys described the guidelines.

RESULTS: Most physicians (84%) were guideline-aware, most commonly via colleagues and the AAP newsletter. Physicians' mean comfort was 4.1 (5-point Likert scale, 5 = very comfortable to 1 = very uncomfortable). Among guideline-aware physicians, 60% followed them as written; the remainder modified the approach regarding testing, referrals, introduction time, or patient selection. The greatest physician-perceived implementation barriers were parental acceptance (60%), fear of giving peanut early (46%), and access to allergists (24%). Physicians identified patient handouts (78%) and more infant-safe forms of peanut (52%) as needed resources. For parents, 58% were guideline-aware, and 90% indicated comfort with early introduction. Among parents with infants over 6 months, peanut-feeding rate was 37% total; among guideline-aware parents in this group, feeding rate was 100%. Pediatricians, internet and friends were the most common sources of information for parents. The greatest parent-identified barriers were fear of reaction (36%), choking (11%), and lack of infant-safe forms (6%). Parents identified a need for more physician advice (44%), brochures (24%) and allergist access (18%).

CONCLUSIONS/FUTURE PLANS: Guideline awareness and comfort was high among physicians in this cohort, but many modified the approach. Physicians perceived parental acceptance as a major barrier, yet almost all parents reported comfort. Physician advice and written materials were highlighted as needed resources.

ABSTRACT 71

ASSESSING COST AND EPISODE-BASED OUTCOMES BETWEEN SURGICAL SPECIALTIES PERFORMING ANTERIOR LUMBAR INTERBODY FUSIONS.

Marcus Laroche[1], Brian Deutsch[2], Sean Neifert[2], Samuel Hunter[3], Luke Hermann[4], Samuel DeMaria[3], Jonathan Gal[3], John Caridi[2]. [1]Medical Education, [2]Neurosurgery, [3]Anesthesiology, [4]Emergency Medicine. [1,2,3,4]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Anterior lumbar interbody fusion (ALIF) is performed to treat various spinal pathologies. The potential implementation of episode-based bundled payments to ALIF warrants analysis of efficiency with all aspects of the care episode. Both neurological and orthopedic surgeons perform the procedure, creating a possible factor for outcome and cost discrepancies.

HYPOTHESIS OR RESEARCH QUESTION: To determine if surgical specialty plays a role in episode-based outcomes or cost for patients undergoing ALIF.

STUDY DESIGN/METHODS: This retrospective study included 497 patients who underwent ALIF at a single institution from 2006 – 2016. All ALIF procedures were queried and confirmed by the CPT code: 22558. All patients that underwent ALIF performed by a spine surgeon were placed into two different cohorts based on the primary surgeon, with patients having a primary non-spine surgeon being excluded. Both univariate and multivariate logistic regression models were used to analyze the impact of surgical service on demographics, cost, length of stay, readmissions, discharge disposition, and emergency department (ED) visits.

RESULTS: 129 patients underwent ALIF from a neurological surgeon and 368 from an orthopedic surgeon. The neurosurgery cohort had a significantly higher percentage of patients with an ASA Class greater than 2 (45.74% vs. 26.83%, $p<0.0001$). In addition, the neurosurgery cohort had a significantly higher unadjusted rate of ED visits within 30 days (6.20% vs. 2.17%, $p=0.03$) and 90 days (8.53% vs. 2.44%, $p=0.002$) of the operation. After adjustment, 90-day ED visits remained significantly higher in the neurosurgery cohort, with orthopedics as reference (3.614[1.43-0.15], $p=0.0067$). After adjustment for patient-level and resource utilization variables, there were no differences in neurosurgical costs when compared to orthopedic costs (-$904; 95% CI: -$3,558 – $1,750; $p=0.50$).

CONCLUSIONS/FUTURE PLANS: Reducing 90-day ED visits may be a target for quality improvement between specialties; however, the present results suggest few differences in outcomes between neurosurgery and orthopedics for patients undergoing ALIF. One limitation of this study remains the patient population being pulled from a single institution, necessitating further analysis to determine their generalizability.

ABSTRACT 72

MODIFYING FACTORS FOR CONCUSSION INCIDENCE AND SEVERITY IN PROFESSIONAL FOOBALL.

Adam Li[1], Jennifer Dai[2], Tanvir Choudhri[2]. [1]Medical Education, [2]Neurosurgery.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Increasing efforts have been made to reduce concussion incidence and severity in high contact sports due to their short- and long-term effects. Despite this, there is a relative lack of knowledge regarding modulating factors affecting concussion injury.

HYPOTHESIS OR RESEARCH QUESTION: Do game characteristics and outcomes significantly influence concussion incidence and severity?

STUDY DESIGN/METHODS: PBS FRONTLINE Concussion Watch was used to collect concussion injury data from National Football League (NFL) regular season games from 2012 to 2015. Game characteristic variables were collected from ESPN for each game. Data analysis included descriptive statistics, ANOVA, t-tests, and correlation tests.

RESULTS: Our data set identified 558 concussions. Away teams demonstrated higher concussion incidence per game than home teams (0.32 per game vs. 0.26 per game, $p = 0.0108$). Losing teams were found to have higher concussion incidence per game than winning teams (0.32 per game vs. 0.26 per game, $p = 0.0166$). Being both the away team and the losing team appeared to have an additive effect; away teams during losses had the highest concussion incidence and significantly higher concussion incidence than home teams during wins (0.35 per game vs. 0.24 per game, $p = 0.0011$). Home vs. away (0.25 per game vs. 0.35 per game, $p = 0.0025$) and win vs. loss (0.23 per game vs. 0.36 per game, $p < 0.0001$) effects were significant for offensive but not defensive positions. 626 games were missed from the reported concussions. Away teams had significantly more games missed due to concussion when they lost (1.42 per concussion vs. 0.95 per concussion, $p = 0.0392$). There was no significant difference between a player's average playing time per game before a concussion and upon return after recovery. Other game characteristic variables did not significantly affect concussion frequency and intensity.

CONCLUSIONS/FUTURE PLANS: Position, game location, and game outcome were found to affect concussion incidence for professional football players. In a subset of analyses, the number of games missed was correlated with concussion incidence, but it appears to be an imperfect measure. These findings highlight new factors that may modulate concussion incidence and merit further study on how they may influence concussion evaluation.

ABSTRACT 73

EVALUATION OF A MALNUTRITION OUTREACH EDUCATION PROGRAM CONDUCTED BY SOFT POWER HEALTH IN RURAL UGANDA.

Letitia Li[1], Emily Hertzberg[2], Jessie Stone[3], Roberto Posada[2]. [1]Medical Education, [2]Pediatrics. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Soft Power Health Allan Stone Community Health Center Kyabirwa, Uganda.

BACKGROUND/RATIONALE: Malnutrition is the attributable cause for almost 50% of all deaths of children younger than 5 worldwide. Operating in the village of Kyabirwa, Uganda, Soft Power Health (SPH) provides nutritional interventions in the form of interactive lectures in villages throughout Jinja district.

HYPOTHESIS OR RESEARCH QUESTION: SPH malnutrition outreaches are effective in increasing nutritional knowledge among villagers in Jinja district.

STUDY DESIGN/METHODS: Matched surveys of 445 individuals from 25 villages in Jinja district were analyzed retrospectively for correct responses just prior to outreach and during follow-up one year later.

RESULTS: There was a 24% absolute relative risk (ARR) increase, from 2% to 26%, in correct identification of the causes of malnutrition one year following malnutrition outreach (95% CI, .20 to .29). Prior to outreach, 84% could name at least one symptom of malnutrition and 76% correctly indicated that infants under 6 months should receive only breast milk. Post-intervention, the percentage of correct responses to the above questions rose to 98%. ARR increases were 14% (95% CI, .10 to .18) and 22% (95% CI, .17 to .26) respectively. Finally, 38% of subjects correctly matched three foods with their respective food groups at baseline as compared to 90% during follow-up, an ARR increase of 51% (95% CI, .45 to .56). There was an increase of 1.11 correct responses to the survey post-intervention as compared to pre-intervention ($p<0.001$). A descriptive analysis of the most common foods fed to children was also completed.

CONCLUSIONS/FUTURE PLANS: SPH malnutrition outreaches are effective in educating villagers about the causes and signs of childhood malnutrition along with what constitutes proper nutrition for children and infants. Knowledge gained from these interventions is retained for at least one year. Further analysis is required to explore whether increased nutritional knowledge is associated with decreased childhood morbidity and mortality attributable to malnutrition within the region served by SPH.

ABSTRACT 74

CEREBRAL VENOUS ANATOMY MODELING FOR ENDOVASCULAR BRAIN STIMULATION.

Adam Lieber[1], Christopher Kellner[2]. [1]Medical Education, [2]Neurosurgery.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Modeling of the cerebral veins to demonstrate their morphology, as well as their proximity to deep brain stimulation targets, can establish the feasibility of navigating through these vessels with catheters to reach brain stimulation targets such as the globus pallidus, subthalamic nucleus, and others.

HYPOTHESIS OR RESEARCH QUESTION: What is the anatomy and inter-individual variation of the deep cerebral venous system? What is the relationship between the deep cerebral veins and various brain stimulation targets?

STUDY DESIGN/METHODS: First, Brainlab software was used to measure deep cerebral veins in 20 patients who underwent MRI at MSH. Primary endpoints were means and standard deviations of the diameter of the deep cerebral veins. Second, the MNI (Montreal Neurological Institute) Brain, a composite of 152 co-registered T1/T2/Proton Density (PD) MRI scans of non-pathologic patients were normalized to a x/y/z (x=right/left, y=ant./post., z=sup./inf.) coordinate map in Slicer. Secondary endpoints were venous coordinates determined in relation to the anterior commissure and brain stimulation foci.

RESULTS: In phase 1 (Brainlab analysis) the average diameter of the straight sinus was 3.96+/-0.45 mm at its most anterior portion. The average diameter of the Vein of Galen was 2.93+/-0.98 mm at its most anterior portion. The average diameter of the right internal cerebral vein was 2.25+/-0.23mm and the left cerebral vein was 2.24+/-0.21mm. In phase 2, the MNI-152 was analyzed in Slicer. The most anterior point of the following vessels were as follows: straight sinus: x/y/z = 0mm/-47.5mm/16.4mm; Vein of Galen: x/y/z=0mm/-43.1mm/6.3mm; L/R thalamostriate vein: x/y/z=±6.0mm/-4.4mm/15.8mm; L/R anterior septal vein: x/y/z=±17.9mm/32.3mm/2.0mm; L/R internal cerebral vein: x/y/z=- ±1.9mm/6.2mm/15.8mm.

CONCLUSIONS/FUTURE PLANS: Of the veins studied in Brainlab, the diameter of the Vein of Galen is most variable. Through Slicer analysis, the thalamostriate veins, anterior septal veins, and internal cerebral veins are most proximate to brain stimulation targets of interest.

ABSTRACT 75

LONG-TERM CARDIOVASCULAR RISK FOLLOWING RADIATION THERAPY IN LUNG CANCER.

Benjamin Liu[1], Keith Sigel[2], Juan Wisnivesky[2]. [1]Medical Education, [2]Medicine.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Radiation therapy (RT), using either stereotactic body radiation therapy (SBRT) or conventional fractionation are alternative therapies for early stage non-small cell lung cancer (NSCLC) patients who cannot undergo surgical resection. We used population-based lung cancer data to evaluate cardiovascular risks in stage I NSCLC patients who received SBRT and conventional RT, comparing outcomes for left versus right sided tumors as treatments would have different cardiac radiation exposure.

HYPOTHESIS OR RESEARCH QUESTION: Do patients receiving radiation to the left lung will have a higher incidence of cardiovascular events than those treated in the right lung?

STUDY DESIGN/METHODS: The study was conducted with data from the Surveillance, Epidemiology, and End Results (SEER) registry linked to Medicare to examine 3,943 patients with Stage I NSCLC and treated with either SBRT (n=1,506) or conventional 3D-RT/intensity modulated RT (IMRT; n=2,437). We used diagnostic and procedure codes to identify cardiovascular outcomes. We then fit Cox regression models to determine the association of left versus right sided treatments with adverse cardiac outcomes and stratified by tumor location (upper/lower) and size.

RESULTS: We found no significant differences in cardiac complications for patients treated with SBRT for left-sided tumors compared to right-sided tumors ($p>0.05$ for all comparisons). However, patients with left sided tumors who received conventional RT had an increased risk for acute pericarditis (hazard ratio [HR]: 4.03, 95% confidence interval [CI]: 1.33-12.25) and subsequent PTCA (HR: 1.96, 95% CI: 1.10-3.50). In stratified analyses, patients who received SBRT for left upper lobe tumors had an increased risk of atrial fibrillation (HR: 1.36, 95% CI: 1.00-1.89). Among 3DRT/IMRT patients with left upper lobe tumors, there was an increased risk of PTCA (HR: 1.99, 95% CI: 1.01-3.92). Additionally, 3DRT/IMRT patients with 21-30mm tumors had an elevated risk for cardiovascular death (HR: 1.82, 95% CI: 1.04-3.20) when comparing left to right sided tumors.

CONCLUSIONS/FUTURE PLANS: In our population-based study of Stage I NSCLC patients, left-sided SBRT was not associated with increased long-term risk of cardiovascular adverse events compared to patients with right sided treatment.

ABSTRACT 76

ANALYSIS OF ENDOSCOPY TIMING ON DAY OF WEEK AND LENGTH OF STAY FOR PATIENTS HOSPITALIZED WITH GASTROINTESTINAL HEMORRHAGE AT A TERTIARY MEDICAL CENTER.

Emma Loebel[1], Jason Chalil[2], Andrew Dunn[2], Aveena Kochar[2], Hyung Cho[2]. [1]Medical Education, [2]Medicine.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Gastrointestinal bleed (GIB), also known as gastrointestinal hemorrhage, accounts for over 500 thousand admissions annually in the US[1] and often requires endoscopic intervention. Little is known of the impact on length of stay (LOS) on whether the endoscopic procedure occurred during weekdays versus weekends. The purpose of this study was to investigate the timing of procedure during weekday compared to weekend and its correlation with LOS.

HYPOTHESIS OR RESEARCH QUESTION: How can hospitalized patients presenting with GIB be most effectively managed throughout the week to minimize procedure wait time and LOS?

STUDY DESIGN/METHODS: We reviewed all cases of GIB [MS-DRG (ICD-10) code 377, 378, or 379] discharged by hospitalists from 1/1/2017 - 12/31/2017, at Mount Sinai Hospital. Data were collected through Premier Inc. database. GIB cases were divided between those who received upper endoscopy [(UE) esophagogastroduodenoscopy, small bowel enteroscopy], lower endoscopy [(LE) colonoscopy, sigmoidoscopy], or no procedure. Wilcoxon statistical analysis was performed to evaluate dependency of LOS outcomes and procedures taking place on Monday vs. following days of the week (Tuesday-Sunday). We used LOS observed: expected ratio when examining total duration of hospitalization and raw days when examining the pre- and post-procedure periods.

RESULTS: There were a total of 212 procedures (133 UE and 79 LE), with 206 procedures occurring during the weekday (0.79 procedures/day) and only 6 occurring on the weekend (0.057 procedures/day). Mondays saw the highest number of procedures, totaling 65 (1.3 procedures/day). The mean LOS O/E was higher when the procedure occurred on Monday vs. following days of the week (1.4 vs 1.1; $p=0.0028$). The mean pre-procedure LOS was also highest when it took place on Monday (2.7 vs 1.4; $p<0.0001$), but there was no difference in post-procedure LOS for the same comparison (2.4 vs 2.6; $p=0.36$).

CONCLUSIONS/FUTURE PLANS: Our analysis shows that the number of procedures for GIB is highest on Mondays and having a procedure on Monday is associated with a higher total and pre-procedure LOS, likely due to fewer procedures occurring on the weekend. Additional support, such as increased staffing, for weekend procedures has the potential to shorten wait times, lower LOS, and decrease costs.

ABSTRACT 77

VIRTUAL REALITY MEDITATION AND RESIDENT WELLNESS: A STUDY ON EFFICACY AND IMPLEMENTATION.

Adam Lupicki[1], Ryan Tufts[2], Alfred Iloreta[3]. [1]Medical Education, [2]Anesthesiology, [3]Otolaryngology.
[1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Due to the demanding nature of their work, physicians can often experience burnout that leads to significant effects on their personal lives, their careers, and on patient care. Virtual reality (VR) and paced breathing exercises are forms of effective stress management for some people. In this clinical trial, we will explore the effect of using VR paced breathing exercises on burnout in anesthesia residents.

HYPOTHESIS OR RESEARCH QUESTION: Does the use of the Coresights VR meditation have an effect on anesthesia resident burnout scores as measured by the Maslach Burnout Index (MBI) or on anxiety levels as measured by the State-Trait Anxiety Inventory (STAI)?

STUDY DESIGN/METHODS: The first-year anesthesia residents (n=26) were assigned into two groups. The treatment group (n=12) underwent Coresights VR meditation following twice-weekly simulated learning sessions over a course of 4 weeks. The control group (n=14) did not undergo VR meditation during this time. MBI and STAI scores were collected pre-treatment, post-treatment, and 3 months post-treatment. Additionally, subjective VR experience surveys were administered post-treatment.

RESULTS: MBI scores were compared across 6 different categories: emotional exhaustion, depersonalization, personal achievement, exhaustion, cynicism, and professional efficacy. The treatment group and the control group did not show significant differences in categorical scores at the pre-treatment time point and did not show significant differences in score changes at post-treatment and 3 months post-treatment time points. STAI scores were compared using state-anxiety and trait-anxiety scores. The treatment group and the control group did not show significant differences in both state-anxiety and trait-anxiety scores at the pre-treatment time point and did not show significant differences in score changes at post-treatment and 3 months post-treatment time points.

CONCLUSIONS/FUTURE PLANS: The use of Coresights VR meditation sessions did not lead to statistically significant differences between changes in burnout or anxiety scores in first year anesthesia residents as measured by the MBI and STAI; however, a subjective post-intervention survey on the coresights system suggests the feasibility of incorporating VR meditation as a resident wellness tool.

ABSTRACT 78

A REPORT ON POST-OPERATIVE OUTCOMES AT THE PRE-ANESTHESIA EVALUATION CLINIC.

Jacob Lurie[1], Marc Casale[2], Maryna Khromava[2], George Silvay[2]. [1]Medical Education, [2]Anesthesiology.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: In 2007, the Mount Sinai Hospital established a pre-anesthesia evaluation clinic (PEC) for day-admission cardiac patients. We evaluated 196 patients seen in the PEC for pre-surgical dental clearance. While it was recommended that all patients obtain pre-operative dental clearance, only slightly more than half (52%) obtained this clearance. The literature suggests dental infections are associated with an increased risk of endocarditis in surgical patients, but some studies report no increased risk of cardiac infections in patients forgoing such dental screenings.

HYPOTHESIS OR RESEARCH QUESTION: We sought to elucidate whether patients seen at the PEC who obtained pre-surgical dental clearance experienced improved outcomes compared to those who did not receive dental clearance prior to their surgical interventions.

STUDY DESIGN/METHODS: In order to evaluate a possible pre-surgical dental clearance and infection association, we reviewed the medical records of 196 consecutive patients who were seen at the PEC prior to elective cardiac surgery from July 2017 to late January 2018. 102 patients had dental clearance, while 94 did not have dental clearance (mean age 59 years old vs 61 years old, p=0.28, 41% vs 40% female, p=0.92, ASA class 3.02 vs 3.07, p=0.14). In our population, 50 patients underwent aortic valve replacement (AVR), 3 underwent AVR and CABG, 1 underwent AVR, CABG, and mitral valve replacement (MVR), 4 underwent AVR and MVR, 38 underwent CABG, 9 underwent CABG and MVR, 72 underwent MVR, and 19 had other procedures. Preoperative demographic and comorbidity data were analyzed using independent t-tests.

RESULTS: We found no significant differences between the pre-dental clearance group and those who did not receive pre-dental clearance in terms of post-operation infections (zero instances vs one instance, p>0.05), length of ICU stay (2 days vs 2 days, p=0.815), or mortality associated with elective cardiac procedures (zero instances).

CONCLUSIONS/FUTURE PLANS: In this group of patients evaluated at the pre-anesthesia evaluation clinic, there were no major post-operative infections that can be associated with any dental pathology. Our findings are in accordance with other recent work on this topic. Further evaluation of pre-operative dental clearance and post-operative infections is warranted.

ABSTRACT 79

MENTAL HEALTH OF CHILDREN HELD AT A UNITED STATES IMMIGRATION DETENTION CENTER.

Sarah MacLean[1], Priscilla Agyeman[2], Joshua Walther[3], Elizabeth Singer[1], Kim Baranowski[1], Craig Katz[1].
[1,3]Medical Education, [2]Global Health. [1,2]Icahn School of Medicine at Mount Sinai, New York, NY,
[3]UT San Antonio, San Antonio, TX.

BACKGROUND/RATIONALE: Children held in immigration detention may be at risk for mental health disorders due to the impacts of their experience of human rights abuses in their home countries, their displacement from their home countries, their journey between countries, and the conditions of their detention. Limited research has demonstrated high rates of clinical depression, post-traumatic stress disorder (PTSD), and anxiety disorders among children held in immigration detention.

HYPOTHESIS OR RESEARCH QUESTION: This cross-sectional study assessed the mental health of children held at a US immigration detention center.

STUDY DESIGN/METHODS: Mothers of children age 4-17 completed the Parent-Report Strengths and Difficulties Questionnaire (SDQ) and a subset of children age ≥9 completed the UCLA Post-Traumatic Stress Disorder Reaction Index (PTSD-RI).

RESULTS: Among the 425 children studied, many demonstrated abnormal scores for emotional problems (32%), peer problems (14%) and total emotional or behavioral difficulties (10%) on the SDQ. Younger children (age 4-8 years) had significantly more abnormal conduct problems, hyperactivity problems, and total difficulties (all $p<0.001$). Children who had been separated from their mothers had significantly more abnormal emotional difficulties (49%, $p=0.003$) and total difficulties (15%, $p=0.015$). Of the 150 children who completed the PTSD-RI, 17% had a probable diagnosis of PTSD. In all, nearly half (44%) of all children demonstrated at least one emotional or behavioral concern, including abnormal emotional or total difficulties or probable PTSD.

CONCLUSIONS/FUTURE PLANS: These data demonstrate that children being held in immigration detention experience high levels of mental health distress. The results suggest that more comprehensive mental health screening of children is needed in immigration detention centers as well as essential mental health care that is specialized for the needs of this population.

ABSTRACT 80

THE EFFICACY OF PHOTODYNAMIC THERAPY IN COMBINATION WITH CHEMORADIATION IN A THERAPY-RESISTANT RODENT GLIOBLASTOMA MODEL.

Kevin Mahmoudi[1], Alexandros Bouras[2], Dominique Bozec[2], Joe Gerald Jesu Raj[2], Constantinos Hadjipanayis[2]. [1]Medical Education, [2]Neurosurgery.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Radiation therapy combined with chemotherapy (temozolomide; TMZ), known as chemoradiation (CRT), has provided the greatest survival benefit to glioblastoma (GBM) patients in combination with surgery. Photodynamic therapy (PDT) involves administration of a photosensitizer followed by tumor illumination with a specific wavelength of non-ionizing light to trigger oxidative photodamage and subsequent tumor cell death. 5-Aminolevulinic acid (5-ALA) was used in this study due to its preferential uptake by GBM cells and conversion to the photosensitizing metabolite, protoporphyrin IX (PpIX). In this experiment, the efficacy of 5-ALA PDT+CRT was studied in an experimental GBM model.

HYPOTHESIS OR RESEARCH QUESTION: We hypothesized that craniotomy, followed by PDT, would not result in any side effects. Additionally, we hypothesized that PDT would enhance the therapeutic effects of CRT on orthotopic GBM tumors in mice.

STUDY DESIGN/METHODS: A safety study was performed in healthy mice (n=5) which underwent intracranial 5-ALA (200mg/kg IP) PDT (20J, 635nm). An efficacy study was performed on an invasive, EGFRvIII-expressing radioresistant GBM mouse model (n=5/group) using PDT, and/or fractionated CRT (5mg/kg TMZ IP; 3Gyx2 whole-brain RT). Tumor volume quantification was performed through weekly MRI volumetric measurements, and the mice were monitored for signs of tumor growth.

RESULTS: Healthy mice receiving PDT did not show any short- or long-term side effects. In the efficacy study, the last measured mean tumor volumes in the control and PDT groups were 154.5±65.4mm^3 (day 14) and 114.3±102.9mm^3 (day 21), respectively. At day 28, the mean tumor volumes for the CRT and PDT+CRT group were 197.5±82.7mm^3 and 68.3±86.7mm^3, respectively. One-way ANOVA compared tumor volumes per group on days 7 ($p>0.05$), 14 ($p<0.05$; Tukey $p<0.01$ for control versus all groups), and 21 ($p>0.05$). An unpaired two-tailed t-test was conducted to compare the mean tumor volumes of the CRT and PDT+CRT groups on day 28 ($p>0.05$).

CONCLUSIONS/FUTURE PLANS: 5-ALA PDT is a safe procedure in mice. A marked decrease in tumor growth rate was observed after PDT+CRT in a therapy-resistant GBM mouse model. These preliminary results form the basis for further exploration of the efficacy of PDT+CRT in GBM therapy.

ABSTRACT 81

PEDIATRIC TRAINEE EDUCATION ON POSITIVE PARENTING BEHAVIOR AND CHILD DEVELOPMENT: THE EFFECT OF A NOVEL MEDICAL SCHOOL ELECTIVE ON KNOWLEDGE AND ATTITUDES.

Allie Mahon[1], Anna Zelig[2], Blair Hammond[2]. [1]Medical Education, [2]Pediatrics.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: The medical home is increasingly seen as a crucial site of preventive interventions promoting positive parenting behavior and child development. Recent research has demonstrated the benefit of programs targeting parenting behaviors on children's health outcomes and development. However, there is a lack of information on effective educational practices to prepare pediatric trainees to fill this role.

HYPOTHESIS OR RESEARCH QUESTION: The objectives of this study were to 1) create a clinical 'Parenting and Child Development' elective utilizing an innovative online curriculum, and 2) evaluate whether medical students who participated would demonstrate improved knowledge and attitudes on positive parenting behaviors and child development, and believe that the experience was useful to their training as a future pediatrician.

STUDY DESIGN/METHODS: Fourth year medical students applying into pediatrics participated in the 'Parenting' elective that included clinical activities and an online curriculum. The innovative 'Keystones of Development' curriculum contains information about positive parenting behaviors, child development, and demonstrated how pediatricians could incorporate this information into well child visits. Medical student knowledge and attitudes were assessed using a pre- and post-test survey. All students participated in a post-elective feedback interview.

RESULTS: 10 of 11 fourth year students applying into pediatrics chose to participate in the elective. There was a statistically significant improvement in the mean 'knowledge' score between the pre and posttest. All students not only agreed that the elective was useful to their career as a future pediatrician, but also remarked upon the need for this type of training in undergraduate medical education, and stated that parts of the curriculum should be integrated into standard preclinical or clinical pediatric training in medical school.

CONCLUSIONS/FUTURE PLANS: This pilot study demonstrates the efficacy of a new clinical elective utilizing the 'Keystones of Development' curriculum in improving parenting and child development knowledge in medical students pursuing pediatrics. Medical Student feedback demonstrated the need for this kind of training as well as more research in medical education for pediatric trainees on parenting behaviors.

ABSTRACT 82

FUNCTIONAL MRI SHOWS ALTERED TASK-INDUCED DEACTIVATION OF THE DEFAULT MODE NETWORK IN GLIOMA PATIENTS.

Yash Maniar[1], Kyung Peck[2], Mehrnaz Jenabi[2], Madeleine Gene[2], Andrei Holodny[2]. [1]Medical Education. [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]Radiology. [2]Memorial Sloan Kettering Cancer Center, New York, NY.

BACKGROUND/RATIONALE: The default mode network (DMN), consisting of the medial prefrontal cortex (mPFC), posterior cingulate cortex (PCC), and bilateral inferior parietal lobules (RIPL and LIPL), is a functional brain network that normally deactivates during tasks requiring external attention. Although many neurological conditions disrupt this pattern, no studies have examined task-based deactivation of the DMN in glioma patients.

HYPOTHESIS OR RESEARCH QUESTION: We investigated DMN deactivation with task-based functional MRI (tb-fMRI) and DMN connectivity with resting-state fMRI (rs-fMRI) in glioma patients, including the effects of tumor location, hemisphere, and grade on DMN deactivation and connectivity.

STUDY DESIGN/METHODS: We retrospectively analyzed 10 healthy controls and 30 glioma patients, separated by tumor location (posterior DMN=14, anterior DMN=8, outside the DMN=8), hemisphere (right-sided=7, left-sided=23), and grade (II=11, III=7, IV=12). Seed-based correlation analysis was performed on each subject's language tb-fMRI data. The region of the PCC negatively correlated with the task paradigm was used to generate tb-fMRI and rs-fMRI correlation maps in order to measure functional connectivity between the PCC and the other DMN regions. We statistically compared average correlation values in each DMN region between patients and controls using the Mann-Whitney U test.

RESULTS: PCC deactivation was significantly decreased with posterior DMN tumors ($p<0.0001$) and tumors outside the DMN ($p=0.04$), but not with anterior DMN tumors ($p=0.15$). mPFC connectivity was significantly decreased with anterior (tb-fMRI $p<0.001$, rs-fMRI $p<0.01$) and posterior (tb-fMRI $p=0.03$, rs-fMRI $p=0.03$) DMN tumors, but not with tumors outside the DMN (tb-fMRI $p=0.08$, rs-fMRI $p=0.25$). RIPL connectivity was significantly decreased only with right hemisphere tumors (tb-fMRI $p=0.04$, rs-fMRI $p=0.03$); LIPL connectivity was significantly decreased with left hemisphere tumors in tb-fMRI only ($p=0.04$). No significant effect was observed between grades II and III/IV.

CONCLUSIONS/FUTURE PLANS: The location-dependent decrease in task-based DMN deactivation and functional connectivity in glioma patients suggests that tumors in posterior DMN regions have a greater impact on the DMN.

ABSTRACT 83

ENDOSCOPIC VERSUS MICROSCOPIC MIDDLE EAR SURGERY: A META-ANALYSIS OF OUTCOMES FOLLOWING TYMPANOPLASTY AND STAPES SURGERY.

Sayan Manna[1], Vivian Kaul[2], Mingyang Gray[2], George Wanna[2]. [1]Medical Education, [2]Otolaryngology.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Tympanoplasties and stapes surgeries are two extremely common procedures in the field of otology. Traditionally, these surgeries have been performed under operating microscope. In recent years, minimally invasive, endoscopic approaches have been gaining traction.

HYPOTHESIS OR RESEARCH QUESTION: Does the current literature regarding microscopic versus endoscopic approaches to tympanoplasty and stapes surgery reveal any trends in terms of outcome and safety between these two techniques?

STUDY DESIGN/METHODS: A comprehensive electronic search of Pubmed/MEDLINE, Scopus, Web of Science and Cochrane Library was conducted for studies published before June 2018. Article selection and screening proceeded according to the PRISMA statement. Studies were assessed for quality via the Newcastle-Ottawa Scale and the Jadad scale depending on the presence of randomization. For each outcome measure, a forest plot was generated.

RESULTS: 21 studies met the inclusion criteria, 16 regarding tympanoplasty (1323 ears) and 5 regarding stapes surgery (283 ears). The non-randomized studies scored moderately well but the randomized studies were of low quality. With respect to tympanoplasty, statistical analysis demonstrated that patients undergoing endoscopic tympanoplasty had significantly lower canalplasty rates (RR: 0.06; 95% CI: 0.02 to 0.22, p<0.0001), fewer self-reported "poor" cosmetic outcomes (RR: 0.07; 95% CI: 0.02 to 0.27; p<0.0001), and shorter operative times (MD: -14.93; 95% CI: -26.32 to -3.53; p=0.01). The methods were similar in terms of audiological outcome, graft success and complication rates. Among stapes surgeries, the endoscopic approach demonstrated significantly decreased incidence of postoperative pain (RR: 0.27; 95 % CI: 0.07 to 1.02; p = 0.05) and chorda tympani injury (RR: 0.36; 95% CI: 0.19 to 0.71; p=0.003) but was similar to the microscopic approach with respect to audiological outcome, postoperative dizziness and operative time.

CONCLUSIONS/FUTURE PLANS: There are still concerns regarding the efficacy and safety of endoscopy. An analysis of the current literature suggests that audiological, functional and safety outcomes are similar, if not superior, for the endoscopic approach to both tympanoplasty and stapes surgery compared to the microscopic approach.

ABSTRACT 84

GLOBAL CHARACTERIZATION OF FOXA2 LINEAGE TRACING.

Tucker Matthews[1], Nicole Dubois[2]. [1]Medical Education, [2]Developmental and Regenerative Biology.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Roughly, one in four deaths in the U.S. can be attributed to heart disease. Fortunately, our understanding of cardiac development has improved immensely due to scientific research. Cardiac development research can aid us in better understanding, and ultimately treating congenital heart defects. Additionally, it can assist us in developing cardiac regenerative therapies for patients with acquired heart diseases. One current barrier in cardiac development research is the lack of known chamber-specific gene markers. Recently, however, Foxa2, a member of the forkhead box family of transcription factors, has been shown to be a cardiac ventricular cell lineage marker. Foxa2 is expressed in numerous endoderm- and ectoderm-derived tissues, and Foxa2 knockout mice are embryonically lethal, with a greatly deformed embryo, providing evidence for Foxa2's widespread expression during development. Most existing Foxa2 research has utilized inducible mouse models, so a broad characterization of Foxa2 expression has not been performed. With the recent development of a Foxa2-cre mouse, however, it will be important for future researchers to know which cell types express Foxa2.

HYPOTHESIS OR RESEARCH QUESTION: Our goal in this study was to determine the expression pattern of Foxa2, in addition to searching for other cell types where Foxa2 expression may serve as a useful lineage marker.

STUDY DESIGN/METHODS: We used a Foxa2 lineage-tracing mouse model wherein endogenous Foxa2 expression produces a recombination event yielding constitutive YFP expression. E15.5 embryos were isolated, fixed, and both sagittal and transverse sections were obtained. Additionally, 12-week adult mice were sacrificed, and internal organs were fixed and sectioned. Immunohistochemistry was performed on the sections, using antibodies for the lineage-tracing YFP, and endogenous Foxa2.

RESULTS: Preliminary results confirmed lineage-positive cells in cardiac ventricular cells, pancreatic endocrine cells, and hepatocytes. Additional lineage-positive cells were noted in the kidney and developing bone.

CONCLUSIONS/FUTURE PLANS: Further work is needed to more definitively determine Foxa2 expression patterns in mice.

ABSTRACT 85

A RANDOMIZED PLACEBO-CONTROLLED SINGLE CENTER PILOT STUDY OF THE SAFETY AND EFFICACY OF APREMILAST IN SUBJECTS WITH MODERATE TO SEVERE ALOPECIA AREATA.

Daniela Mikhaylov[1], Ana Pavel-Brandusa[2], Christopher Yao[2], Grace Kimmel[2], John Nia[2], Peter Hashim[2], Anjali S. Vekaria[2], Mark Taliercio[2], Giselle Singer[2], Rachel Karalekas[2], Danielle Baum[2], Yasaman Mansouri[2], Mark G. Lebwohl[2], Emma Guttman[2]. [1]Medical Education, [2]Dermatology.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Alopecia areata (AA) is a common autoimmune disease that results in non-scarring hair loss. AA pathogenesis is thought to involve multiple inflammatory cytokines. Apremilast is a phosphodiesterase 4 (PDE4) inhibitor that reduces pro-inflammatory cytokine production. Recent studies demonstrate upregulation of PDE4 in human scalp lesions of AA patients and hair regrowth in a humanized AA mouse model upon apremilast treatment, suggesting a possible potential of apremilast in AA.

HYPOTHESIS OR RESEARCH QUESTION: We hypothesized that apremilast may have a potential theurapeutic role in AA.

STUDY DESIGN/METHODS: To assess the efficacy and safety of apremilast in AA, we conducted a double-blind, placebo-controlled single center pilot study in 30 moderate-to-severe AA patients (≥50% scalp involvement) that were randomized 2:1 to receive apremilast (n=20) or placebo (n=10) orally for 24 weeks. The primary endpoint was the percentage of patients achieving 50% reduction in Severity of Alopecia Tool (SALT) score ($SALT_{50}$) at 24 weeks compared to baseline, and the secondary endpoints included the percent change in SALT score at Week 24 and 48.

RESULTS: Eight patients in the apremilast arm withdrew prior to Week 24 along with 2 patients in the placebo group, mostly due to lack of efficacy and adverse events. At 24 weeks, only 1 of 12 apremilast-treated subjects achieved $SALT_{50}$, and similarly 1 of 8 placebo-treated subjects achieved $SALT_{50}$. The difference between the mean percent improvement in SALT score at Week 24 compared to baseline of the two study arms was not statistically significant ($p=0.38$).

CONCLUSIONS/FUTURE PLANS: The lack of treatment response in most of our patients argues against a pathogenic role for PDE4 in AA and suggests that other treatment options should be pursued. However, future larger studies may be needed to conclude apremilast's lack of efficacy in AA.

ABSTRACT 86

WHY THEY GO BACK: INDICATIONS AND RISK FACTORS FOR UNPLANNED REOPERATION AND READMISSION IN THE CROHN'S POPULATION.

Michael Miller[1], Alexandra Agathis[1], Jeffrey Aalberg[2], Celia Divino[2]. [1]Medical Education, [2]Surgery.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Previous research has identified a number of patient and operative characteristics associated with unplanned reoperation and unplanned readmission following colectomy. However, a study that examines these factors, along with indications for reoperation or readmission, in the Crohn's population is lacking.

HYPOTHESIS OR RESEARCH QUESTION: The purpose of this study was to determine rates, indications, and risk factors for unplanned reoperation and unplanned readmission in patients with Crohn's disease undergoing colectomy.

STUDY DESIGN/METHODS: We performed a retrospective complete-case analysis of patients who underwent colectomy for Crohn's disease between 2012 and 2015 from the American College of Surgeons National Surgical Quality Improvement Program database. Indications for reoperation and readmission were determined using ICD 9 codes, while multivariate logistic regression was applied to determine risk factors. Subgroup analysis was performed for patients seen at Mount Sinai Hospital.

RESULTS: The overall unplanned reoperation rate was 4.67% while the overall unplanned readmission rate was 12.29%. Mount Sinai Hospital had lower rates of unplanned readmission (5.80%) but a similar rate of reoperation (5.07%). The most common indication for reoperation was anastomotic complications (14.72%). Infection was the most common indication for readmission (33.01%). In multivariate analysis, pre-operative steroids (OR 1.55; CI 1.14-2.12), smoking (OR 1.81; CI 1.34-2.46), and intra-operative transfusion (OR 2.93; CI 2.04-4.21) were significant predictors of unplanned reoperation ($p<0.01$). Pre-operative steroids (OR 1.27; CI 1.05-1.54), ASA score (OR 1.29; CI 1.06-1.56), smoking (OR 1.29; CI 1.05-1.58), pre-operative hypertension (OR 1.45; CI 1.14-1.85), chemotherapy (OR 2.46; CI 1.08-5.65), open vs. laparoscopic approach (lap = reference, OR 1.45; CI 1.19-1.76) and wound class (Class 1&2 = reference, Class 3 OR 1.33; CI 1.06-1.66, Class 4 OR 1.43; CI 1.12-1.83) were significant predictors of unplanned readmission ($p<0.05$).

CONCLUSIONS/FUTURE PLANS: Using a large national database, this study identified indications and risk factors for unplanned reoperation and readmission in surgical patients with Crohn's disease.

ABSTRACT 87

IMPACT OF SUBSTANCE USE DISORDER IN CERVICAL MYELOPATHY SURGICAL PROCEDURES.

Rocco Morra[1], Brian Deutsch[1], Sean Neifert[1], John Caridi[2]. [1]Medical Education, [2]Neurosurgery.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Cervical myelopathy is a common spinal pathology that is often treated surgically. Substance use disorder is a health concern that is rapidly growing in visibility at the national level, but its impact on patients undergoing spine surgery has not been extensively studied.

HYPOTHESIS OR RESEARCH QUESTION: Does substance abuse affect post-operative outcomes in patients undergoing surgical treatment for cervical myelopathy?

STUDY DESIGN/METHODS: The Healthcare Cost and Utilization Project (HCUP) National Inpatient Sample (NIS) database 2013-2014 was queried for hospitalizations with a diagnosis of cervical myelopathy based on International Classification of Diseases ninth revision clinical modification (ICD-9-CM) code 721.1. Substance use comorbidities included opioid, cocaine, cannabis, and amphetamine dependence, among others. Multivariate analysis was used to identify the impact of this comorbidity for various outcomes.

RESULTS: 18,335 hospitalizations met the inclusion criteria. Of these, 389 (2.1%) had substance use disorder. Hospitalizations with this comorbidity tended to be younger (54.9 vs 61.1 years, $p<0.0001$), less female (36.8% vs. 44.6%, $p=0.003$), have more concomitant diagnoses (13.5 vs. 8.7, $p<0.0001$), and have higher rates of a number of comorbidities. Regression models controlling for demographic and comorbidity variables revealed that substance use disorder only significantly predicts a longer length of hospital stay, albeit with a small effect size (Regression coefficient=0.21 days, 95% Confidence Interval (CI)=[0.0003, 0.4 days]). Substance use disorder did not significantly predict differences in the other outcomes examined: non-home discharge (Odds ratio (OR)=0.8, CI=[0.6, 1.2]), any complication (OR=0.8, CI=[0.5, 1.2]), death (OR=0.9, CI=[0.2, 5.3]), and total hospital charges (regression coefficient=$10,666, CI=[–$461, $21,792]).

CONCLUSIONS/FUTURE PLANS: Hospitalizations with substance use disorder undergoing surgery for cervical myelopathy have a significantly increased length of stay, but no significant differences in post-operative complications, mortality, non-home discharge, or total hospital charges. In conclusion, these results do not imply that patients with substance use disorder are worse candidates for cervical spine surgery than patients without this disorder.

ABSTRACT 88

A PREDICTIVE ANALYSIS OF INFLAMMATORY BOWEL DISEASE MARKERS AND OUTCOMES BASED ON RESILIENCE AND OTHER ASSOCIATED VARIABLES.

Udit Nangia[1], Priya Sehgal[2], Laurie Keefer[2]. [1]Medical Education, [2]Medicine.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Resilience is described as one's ability to overcome adversity. Resilience is positively associated with higher global health in Inflammatory Bowel Disease. Data has been collected on patients between 18 and 65 years old with endoscopy confirmed Crohn's disease (CD) or ulcerative colitis (UC).

HYPOTHESIS OR RESEARCH QUESTION: While resilience is negatively associated with IBD disease markers, there has not been a model developed to predict IBD outcomes based on resilience. The question we are attempting to answer is which variables within the dataset help best predict an individual IBD patient's outcomes. The outcomes of interest include HBI and Mayo. We also sought to investigate how resilience is related to psychosocial metrics including depression and anxiety.

STUDY DESIGN/METHODS: Several distinct models were generated.
An outline for what was done for each outcome:

1. Modification of the existing dataset
2. Selection of a population, whether looking at outcomes in UC, CD, or Non-IBD patients.
3. Creation of a basic regression model for each predictive variable.
4. Determining which variables from the basic models were significant ($p < 0.2$)
5. Generating a multivariate model, using forward selection practices with Akaike Information Criterion (AIC). Each variable was added to the multivariate model in order of significance (most significant being incorporated first). If there was a reduction in AIC score with the addition of a variable, the variable was deemed useful in the multivariate model. If not, the variable was not included and no other variables were evaluated.
6. Checking multicollinearity
7. Interpretation

RESULTS: We generated 11 useful models from the dataset. These included models in which resilience and other psychosocial metrics (anxiety and depression) were used to predict UC and CD activity. We also created models in which resilience was able to predict anxiety and depression in CD, UC, and Non-IBD cohorts.

CONCLUSIONS/FUTURE PLANS: This project sought to describe the association between resilience and IBD disease activity, as well as anxiety and depression. The findings support the use of resilience as a potentially modifiable tool for disease activity prediction. Further investigation can be done to determine the etiologies of the associations described in the predictive models.

ABSTRACT 89

COMPARING HPV SCREENING KNOWLEDGE AND PREFERENCES OF WOMEN IN MONROVIA, LIBERIA.

Reema Navalurkar[1], Molly Lieber[2], Omara Afzal[2], Sayeeda Chowdhury[1], Lucy O'Shaughnessy[1], Andrew Dottino[2], Wilhemina Jallah[3], Ann Marie Beddoe[2]. [1]Medical Education, [2,3]Obstetrics, Gynecology, and Reproductive Science. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Republic of Liberia.

BACKGROUND/RATIONALE: Cervical cancer (CC) is the second most common cause of cancer-related death in women worldwide. Persistent infection with high-risk HPV has been implicated in >99% of CC cases. High-risk HPV DNA obtained from vaginal swabs has high screening sensitivity for cervical intraepithelial neoplasia. Critical to areas with few healthcare workers, these swabs can be provider- or self-collected, helping to increase screening coverage.

HYPOTHESIS OR RESEARCH QUESTION: Studies have shown that majority of women prefer provider-collected samples, citing effectiveness concerns and distrust in results. Our objective was to study existing CC knowledge and identify collection preferences to inform future screening programs in Monrovia, Liberia.

STUDY DESIGN/METHODS: A cross-sectional study examining collection acceptability was conducted in Liberia in 2017. Participants (ages 18-78, M=40 years) were surveyed following a provider- or self-collected cervicovaginal sample for HPV DNA; 116 participants underwent physician-collection at clinic A and 54 participants self-collected at clinic B. They were then interviewed about demographics, CC knowledge, sexual/medical history, and acceptability.

RESULTS: Clinic A participants scored significantly higher in CC knowledge (M=4.40, SD=1.98) compared to participants at clinic B (M=1.52, SD=1.02), ($t(168)=10.05$, $p=0.00$). Chi-square tests of independence examined the relationship between self-versus provider collection preference and self-collection exposure. Women who completed self-collection were significantly more likely, compared with those who had provider-collected screening, to opt for performing the test at home, when given the option to perform at home or not at all ($x^2(2)=69.210$, $p=0.000$). Furthermore, when asked for self-versus provider preference, those who completed self-collection were more likely to choose to do the test themselves ($x^2(2)=39.741$, $p=0.000$).

CONCLUSIONS/FUTURE PLANS: Exposure to self-collection methodology was associated with a significant increase in its acceptability, overcoming differences in CC knowledge between groups. Thus, exposure may alleviate women's validity concerns. Future programs should account for these results as self-collection increases women's access to HPV screening, possibly reducing CC burden in developing countries.

ABSTRACT 90

THE BURDEN OF MULTIPLE CHRONIC CONDITIONS IN NEW YORK STATE, 2011-2016.

Daniel Newman[1], Erica Levine[2], Sandeep Kishore[3]. [1]Medical Education, [3]Medicine.
[1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: With the national and global incidence of chronic disease increasing, there has been a concomitant rise in the prevalence of patients living with multiple chronic conditions (MCC).

HYPOTHESIS OR RESEARCH QUESTION: The objective of this research is to describe the prevalence and distribution of multiple chronic conditions (MCC) in New York State.

STUDY DESIGN/METHODS: We used data from the Behavioral Risk Factor Surveillance System (BRFSS) from 2011 through 2016 for New York adults (n=76,186). We analyzed the self-reported prevalence of individuals having 0, 1, 2, or 3 or more chronic conditions by sex, race/ethnicity, age, health insurance type, annual household income, and whether respondents lived inside New York City. We also examined the most common condition dyads and triads. Finally, we assessed the prevalence of MCC (2 or more chronic conditions) by county across New York State, and neighborhood within New York City.

RESULTS: During 2011-2016, 25.2% of adults in New York State had zero chronic conditions, 24.1% had 1 condition, 18.4% had 2 conditions, and 32.4% had 3 or more. The most prevalent dyad was hypertension and high cholesterol in 17.0% of individuals. The most prevalent triad was hypertension, high cholesterol, and arthritis in 4.5% of individuals. County prevalence of MCC ranged from 42.6% in Westchester County to 66.1% in Oneida County. The prevalence of MCC in New York City neighborhoods ranged from 33.5% in Gramercy Park - Murray Hill to 60.6% in High Bridge - Morrisania.

CONCLUSIONS/FUTURE PLANS: This research contributes to the field's understanding of multiple chronic conditions and allows policy and public health leaders in New York to better understand the prevalence and distribution of MCCs. Future studies could build on this work by understanding the impact of risk factors on MCCs in New York State, attempting to understand why differences among subgroups exist. Additionally, there are opportunities in the BRFSS data set to understand the effects of MCCs on quality of life and overall health. Future studies will also include comparisons between multiple states.

ABSTRACT 91

PERORAL ENDOSCOPIC MYOTOMY USING MULTIPURPOSE ELECTROSURGICAL KNIFE.

Jeremy Nussbaum[1], Nikhil Kumta[2]. [1]Medical Education, [2]Medicine.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Peroral endoscopic myotomy (POEM) is an endoscopic procedure used in the treatment of achalasia as an alternative to surgical Heller myotomy. The technique involves creating a mucosal incision, injection and dissection of the submucosal space, and myotomy of the lower esophageal sphincter. Multipurpose electrosurgical knives have been developed that incorporate these functions, allowing for POEM to proceed without changing catheters and tools.

HYPOTHESIS OR RESEARCH QUESTION: The hypothesis is that use of multipurpose electrosurgical knives for POEM procedure improves outcomes of patients, including procedure time, adverse event rates, and clinical improvement of achalasia.

STUDY DESIGN/METHODS: This is a retrospective analysis of data from Mount Sinai patients between February 2017 and August 2018. Previously acquired clinical, demographic, radiographic, and treatment data were analyzed to investigate safety and outcomes of patients who received POEM as treatment at Mount Sinai. The outcomes analyzed were procedure time, change in Eckardt score, adverse events, and post-procedure GERD. The electrosurgical knives used include the Erbe HybridKnife T-Type and the Olympus DualKnife J.

RESULTS: A total of 16 patients underwent POEM procedures with multipurpose electrosurgical knives. Myotomy was technically successful in 100% of the cases. Clinical success (post-operative Eckardt score ≤ 3) was achieved in 100% of the procedures. The mean difference between pre- and post-operative Eckhardt score was 6.3 ($P<0.01$). The mean procedure time for POEM in this study was 84min compared to a mean of 132min found reported in a metanalysis of 197 procedures. In terms of adverse effects, 4 patients (16%) had capnoperitoneum requiring needle decompression, 1 patient (6.3%) had a mucosotomy defect requiring hemostatic clip closure, and 2 patients (12.5%) had post-operative GERD symptoms.

CONCLUSIONS/FUTURE PLANS: In conclusion, peroral endoscopic myotomy is a safe and efficacious treatment for achalasia, with 100% clinical success and no major adverse events in this study. Using specialized electrosurgical knives appears to shorten procedure times without any negative tradeoffs.

ABSTRACT 92

HOW A POPULATION HEALTH FRAMEWORK MAY EXACERBATE HEALTH INEQUITIES AND DISPARITIES?

Rinas Osman[1], Stella Safo[2]. [1]Medical Education, [2]Population Health Science and Policy.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Like many academic medical centers around the U.S., Mount Sinai has made efforts to move from volume to value-based care to achieve better health outcomes. Nationwide, evidence of the effectiveness of pay-for-performance (P4P) has been inconclusive, with multiple provider concerns about unintended consequences.

HYPOTHESIS OR RESEARCH QUESTION: How do health practitioners address the possible worsening of health gaps in a value-based payment system.

STUDY DESIGN/METHODS: Eight healthcare professionals participated in 40-minute semi-structured interviews. That included six primary care physicians and two population health administrators in ambulatory practices. Data analysis included extracting themes from interviews.

RESULTS:
SUCCESSES: Providers highlighted the importance of incentivizing team-based care to help close care gaps. For example, diabetes and hypertension control saw improvements because the entire care team was involved in post-clinic care.

CHALLENGES: Providers lacked resources to deliver team-based care consistently and effectively. As a result, providers were putting in more time coordinating care and filling care gaps themselves, increasing risk for burnout.

Missing in Quality Metrics: Many providers noted current metrics evaluating providers are too narrow and may fail to consider the role of social determinants of health and patient autonomy on health outcomes. Additionally, the metrics do not reflect providers' time and effort increasing patient access to care.

Barriers to Completing Metrics: Many physicians' reimbursement contracts remain under Fee-For-Service.

Therefore, providers felt they needed to maintain high patient volumes and short appointments to secure baseline reimbursements, while also changing workflows to meet incentives in P4P programs.

SUGGESTIONS: Provide risk-adjusted metrics that are valuable to patient populations and providers. Allow equitable distribution of time with patients to meet needs of diverse patient populations.

CONCLUSIONS/FUTURE PLANS: We found P4P has placed additional burdens on providers in the effort to improve quality. Currently, some P4P metrics may risk disadvantaging providers working with high-risk, high-needs patients because of time constraints. Future research should focus on provider-suggested metrics that better address health gaps.

ABSTRACT 93

THE ROLE OF CARDIAC STRAIN DETECTION BY ECHOCARDIO-GRAPHY IN BREAST CANCER PATIENTS.

Arence Paasewe[1], Sean Kotkin[2], Stephen McCullough[3], Saad Mahmood[3], Lori Croft[2].
[1]Medical Education, [2,3]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York,
[3]Weill Cornell Medicine NYC, NY.

BACKGROUND/RATIONALE: Anthracyclines and trastuzumab are mainstays of breast cancer therapy; however, these chemo agents can be cardiotoxic. Changes in cardiac function are monitored using left ventricular (LV) ejection fraction (EF) measurements, but detection of decreased LVEF by conventional 2D imaging often occurs too late to benefit patients. Recently global longitudinal strain imaging (GLS), which measures myocardial deformation, has been utilized to detect subclinical LV systolic dysfunction. Currently, the American Society of Echocardiography recommends starting heart failure treatments when a notable decrease in GLS is detected; however, the effectiveness of these interventions has not been investigated.

HYPOTHESIS OR RESEARCH QUESTION: In the absence of cardiovascular risk factors and disease, patients with abnormal GLS who are treated with heart failure medicine will improve their GLS measurements and or EF compared to patients not receiving treatment.

STUDY DESIGN/METHODS: We retrospectively identified in Mount Sinai Hospital's transthoracic echocardiogram database patients with non-metastatic breast cancer between age 27 and 94 years old who had at least two echos performed at least 3 months apart. Patients with a history of cardiovascular risk factors or disease, or decreased LV function at baseline were excluded. Data was collected on EF, GLS, BSA, dose of Adriamycin, trastuzumab status, and whether patients were on beta blockers or ACE inhibitors.

RESULTS: 197 patients, mean age 55 years, were identified. A third of patients (n=64) had >=1% drop in GLS after breast cancer therapy. Patients with GLS drop also had higher rate of LVEF reduction (>=5%) compared to those with preserved GLS (67% vs 41%, p=0.001), and the mean starting LVEF was lower amongst patients with GLS drop (LVEF 58% vs 63%, p=0.001).

The rate of trastuzumab treatment was higher amongst patients with GLS drop (80% vs 62%, p=0.02), while the mean anthracycline dose was lower in those who had drop in GLS. More patients with GLS drop were on beta blockers and ACE inhibitors.

CONCLUSIONS/FUTURE PLANS: Patients who experienced drop in GLS after breast cancer therapy had higher rate of trastuzumab therapy, but also had higher rate of being started on beat blockers and ACE inhibitors reflecting initiation of heart failure therapy.

ABSTRACT 94

INCREASING AMOUNT OF INFORMATION TRANSFER DURING PATIENT HANDOFF FROM EMS PERSONNEL TO ED PHYSICIANS.

Samuel Paci[1], Kevin Munjal[2]. [1]Medical Education, [2]Emergency Medicine.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: The handoff of patient care from EMS personnel to ED physicians is an essential moment of transition in which responsibility for patient care and critical information regarding the patient is transferred. Previous studies have identified a low amount of transmission of critical components of the patient handoff. There is a significant need to implement practice changes to increase the amount of information transmission during handoff. Gathering an ED team (defined as at least two members of the ED staff including nurse, attending, resident) with EMS at the patient's bedside for handoff is one example. Herein, we assess its efficacy on information transmission during patient handoff.

HYPOTHESIS OR RESEARCH QUESTION: We hypothesize that gathering an ED team at the patient's bedside with EMS will lead to a higher amount of information transferred from EMS to ED personnel during the handoff of critically ill and injured patients.

STUDY DESIGN/METHODS: Attendings, residents, and nurses at an urban academic hospital were trained to gather around the patient's bedside with EMS for patient handoff. Handoff's in the resuscitation area were audio-recorded by trained research assistants. All EMS and ED providers were blinded to study design.

Audio recordings were abstracted and coded on a standardized form. Variables were coded as "transferred" or "not transferred". Data were analyzed to compare amounts of information transferred when ED team assembly for handoff occurred and when it did not. Statistical analysis using SAS University Edition.

RESULTS: 31 patient handoffs were of adequate quality for evaluation. Across 27 categories, the overall amount of information transfer was 18.5% [95% CI=13.3-23.7] When ED team assembled for handoff, amount of information transfer was 30.9% [95% CI=19.6-42.2] compared to 13.5% [95% CI=9.2-17.8] when ED team did not assemble for handoff. Correlation analysis yielded a Pearson correlation coefficient $r=0.54$ ($p<0.05$) between ED team assembly for handoff and amount of information transfer.

CONCLUSIONS/FUTURE PLANS: We have herein demonstrated that assembly of an ED team as defined above significantly improves the amount of information transfer during patient handoff, offering a promising new strategy to avoid medical error in the Emergency Department during transfer of care.

ABSTRACT 95

ACCURACY AND INCIDENCE OF SUB-CLINICAL SEIZURE DETECTION IN POST-OPERATIVE BRAIN TUMOR PATIENTS.

Akila Pai[1], William Shuman[1], Megan D'Andrea[1], Kaitlin Reilly[2], Neha Dangayach[2], Raj Shrivastava[3].
[1]Medical Education, [2]Neurology, [3]Neurosurgery. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Accurate diagnosis and treatment of post-operative sub-clinical seizures are clinically complex and unresolved. The standardization of continuous electroencephalography (cEEG) has helped the detection of sub-clinical seizures.

HYPOTHESIS OR RESEARCH QUESTION: The purpose of this study was to determine the efficacy of cEEG in the setting post-neurosurgical brain tumor patients and elucidate which patients are at higher risk for seizures.

STUDY DESIGN/METHODS: All patients who underwent craniotomy from 2015-2018 for either benign or malignant tumor and subsequently received cEEG monitoring were retrospectively reviewed. Patient demographics, past medical history, neurological examination, post-operative, radiographic, and cEEG data were collected from the medical record.

RESULTS: 41 patients received cEEG post-operatively for tumor resection. Only 3 patients had documented sub-clinical seizures (7.32%). On average, these patients were older (70 vs. 60; p <.0005), had a higher BMI (32.53 vs.27.52; p=0.053), and were more likely to have had a surgical complication such as a subdural hematoma, hemorrhage, or infection (p= .009). Prior seizure history, diabetes status, tumor volume and grade were not statistically different between patients with or without sub-clinical seizures. Duration of time from end of procedure to start of cEEG monitoring was not significantly different patients of both cohorts, however, nine patients who received cEEG had already demonstrated post-operative clinical seizures prior to monitoring (21.95%). Incidence of sub-clinical seizures, or abnormal epileptiform discharges such as general or lateralized periodic discharges and rhythmic delta activity was not significantly different between patients who had a post-operative clinical seizure prior to monitoring with those who did not.

CONCLUSIONS/FUTURE PLANS: cEEG monitoring for sub-clinical seizures may have benefit in older patients, with a higher BMI, with known surgical complications who have unexpected neurological examination after brain tumor surgery. The overall rate of sub-clinical seizures detection however is low and may indicate an inadequate diagnostic tool with low sensitivity.

ABSTRACT 96

IDENTIFICATION OF INTRAOPERATIVE BLEEDING AT THE LOCATION OF A SPOT SIGN DURING INTRACEREBRAL HEMORRHAGE (ICH) ENDOSCOPIC EVACUATION.

Jonathan Pan[1], Rui Song[2], Adam Lieber[1], Alexander Chartrain[2], Jacopo Scaggiante[2], J Mocco[2], Christopher Kellner[2]. [1]Medical Education, [2]Neurosurgery.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Intracerebral hemorrhage (ICH) is a devastating disease with the worst morbidity and mortality of all the stroke subtypes. A predictor of hematoma expansion and poor functional outcome is the spot sign, a small enhancing focus within the hematoma that can be visualized on computed tomography angiography (CTA). A number of minimally invasive surgical (MIS) techniques have emerged to treat ICH, including MIS endoscopic ICH evacuation. However, there is limited literature correlating intraoperative bleeding with the location of the spot sign. The goal of this study is to determine if intraoperative bleeding at the location of a spot sign could be regularly detected and treated.

HYPOTHESIS OR RESEARCH QUESTION: The spot sign detected through CTA can be regularly identified intraoperatively as a bleeding vessel and be treated with irrigation or cautery.

STUDY DESIGN/METHODS: A retrospective analysis on prospectively collected data was performed on ICH patients who received MIS endoscopic evacuation from December 2015 to June 2018. Patients qualified for MIS evacuation with hematoma volume ≥15cc, National Institute of Health Stroke Scale ≥6, Glasgow Coma Scale (GCS) ≥4, and baseline modified Rankin Score ≤ 2.

RESULTS: Of the 100 ICH patients who received endoscopic evacuation, 15 had a spot sign. The average age of these patients was 62.5 (SD: 16.7) and 14 (93%) were male. The average pre-operative, post-operative volume, and evacuation rate was 62.5 mL (SD: 31.0), 10.4 mL (SD: 15.6), and 81% (SD 33.7%) respectively. Intraoperative bleeding was reported in 9 (60%) cases, treated with irrigation in 2 (22%) cases and irrigation with cautery in 7 (78%) cases. Postoperative rebleeding within 24 hours occurred in 2 (13%) patients. 7 out of the 15 (47%) patients who had a spot sign also had a bleeding vessel identified at the same location as the spot sign. The average 30-day mRS was 3.6 (SD: 1.3).

CONCLUSIONS/FUTURE PLANS: MIS endoscopic ICH evacuation reveals a bleeding vessel in spot sign patients in approximately 50% of cases. Evacuation of these hematomas carries a higher risk of encountering a bleeding vessel during the procedure but in all cases bleeding was effectively managed. Future studies will be necessary to determine the impact of this procedure on long-term functional outcomes.

ABSTRACT 97

INITIAL EXPERIENCE COMPARING ARTEMIS AND APOLLO ASPIRATION SYSTEMS FOR INTRACEREBRAL HEMORRHAGE (ICH) EVACUATION.

Jonathan Pan[1], Rui Song[2], Adam Lieber[1], Alexander Chartrain[2], Jacopo Scaggiante[2], J Mocco[2], Christopher Kellner[2]. [1]Medical Education, [2]Neurosurgery.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Intracerebral hemorrhage (ICH) is the subtype of stroke with the worst morbidity and mortality and few treatment options. A number of minimally invasive surgical (MIS) techniques are currently under investigation in clinical trials. Endoscopic evacuation is a form of MIS ICH evacuation which can be performed using the Apollo/Artemis System (Penumbra Inc., Alameda, CA). This system consists of a suction wand connected to an aspiration pump. The suction wand fits down the working channel of an endoscope and together they are inserted inside a 19-French Sheath for hematoma removal under direct visualization. The Artemis system is the second generation aspiration system released in 2017 and is promoted to have improved aspiration and morcellation capabilities. These changes arguably improve operative performance but no studies have compared the second generation Artemis Aspiration System with the first generation Apollo System. This study aims to compare the operative results of ICH evacuation using these two devices.

HYPOTHESIS OR RESEARCH QUESTION: Artemis device will perform better intraoperatively compared to the Apollo device.

STUDY DESIGN/METHODS: Retrospective analysis on prospectively collected data was performed for ICH patients who received MIS ICH evacuation from December 2015 to July 2018. Demographic, clinical, and radiographic variables were collected and examined. Univariate analysis was performed where appropriate.

RESULTS: Of 100 ICH patients who received endoscopic evacuation, 24 were performed with Artemis and 76 with Apollo. The average age of the Artemis and Apollo patients was 58.5 (SD 13.9) and 62.3 (SD 14.2) respectively. There were no significant differences between the groups in terms of age, gender, hypertension, diabetes, anticoagulation use, smoking, alcohol use, antiplatelet use, ICH location, IVH frequency, baseline mRS, admission NIHSS, admission GCS, pre-op volume, post-op volume, evacuation rate, and time to evacuation. However, under univariate analysis, the average operative time (hours) for Artemis was shorter than for Apollo (1.58 vs 2.33; p=0.025).

CONCLUSIONS/FUTURE PLANS: The Artemis Aspiration System performs better intraoperatively in terms of operative time but not for evacuation rate or the rate at which intraoperative bleeding was encountered.

ABSTRACT 98

INTEGRATION AND ADOPTION ANALYSIS OF DIGITAL HEALTH MONITORING DEVICES FOR CHF MANAGEMENT.

Christopher Park[1], Emamuzo Otobo[2], Jason Rogers[2], Farah Fasihuddin[2], Shashank Garg[2], Sarthak Kakkar[2], Chloe Yang[2], Zahin Roja[2], Sai Vishudhi Chandrasekhar[2], Marni Goldstein[2], Ashish Atreja[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Congestive heart failure (CHF) is a disease that affects about 6.5 million people in the U.S. with a mortality rate of around 30%. Recently, the advent of remote monitoring technology has significantly broadened the scope of the physician's reach in the management of such chronic diseases.

HYPOTHESIS OR RESEARCH QUESTION: Does daily remote weight and blood pressure help identify heart failure patients at high risk of readmission and what are their monitor usage patterns?

STUDY DESIGN/METHODS: Vital sign data, including blood pressure and weight, were collected through an ambulatory remote monitoring system that integrated a mobile app and Bluetooth-connected smart devices. Physicians were notified of abnormal patient blood pressure and weight change readings and further action was left to the physician's discretion. We used statistical analyses to determine risk factors associated with 30-day all-cause readmission and monitor usage patterns.

RESULTS: Of the 60 patients enrolled in the study, there were six 30-day hospital readmissions. Single marital status ($p<0.1$) and history of percutaneous coronary intervention ($p<0.1$) were associated with readmission. Readmitted patients were also less likely to have been previously prescribed angiotensin converting enzyme inhibitors or angiotensin II receptor blockers ($p<0.05$). Notably, readmitted patients utilized the blood pressure and weight monitors less than non-readmitted patients, and patients aged less than 70 used the monitors more frequently on average than those over 70. The percentage of patients using the monitors at least once dropped steadily from 83% in the first week after discharge to 46% in the fourth week.

CONCLUSIONS/FUTURE PLANS: We identified clinical and social factors as well as remote monitor usage trends that pinpoint targetable patient populations. In addition, we demonstrated that interventions driven by real-time vitals data may greatly aid in reducing hospital readmissions. Future studies should seek to implement remote monitoring and confirm usage trends as well as risk factors in a large-scale population.

ABSTRACT 99

OBSERVATIONAL PROCESS MAPPING (OPM) TO IDENTIFY GAPS AND INEFFICIENCIES IN A WESTERN KENYAN REFERRAL SYSTEM.

Shravani Pathak[1], McKinsey Pillsbury[2], Juliet Miheso[3], Josephine Andesia[3], Gerald Bloomfield[4], Jemima Kamano[5], Violet Naanyu[6], Benson Njuguna[5], Sonak Pastakia[7], Aarti Thakkar[8], Constantine Akwanalo[9], Timothy Mercer[10], Rajesh Vedanthan[11]. [1,2,6,8]Medical Education, [4,5,7,9,10,11]Medicine. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]UCSF School of Medicine, [3]Academic Model Providing Access To Healthcare (AMPATH), [4,8]Duke University School of Medicine, [5,6,9]Moi Teaching and Referral Hospital University, [7]Purdue University College of Pharmacy, [10]University of Texas, Austin, [11]NYU Langone Health, New York, NY 10016.

BACKGROUND/RATIONALE: In low- and middle-income countries, lack of coordination between levels of the health system threatens the ability to provide the care necessary to control hypertension and prevent CVD-related morbidity. In response, the Kenya Health Sector Referral Strategy 2014-2018 calls for improving referral networks at every tier of the health system. Observational Process Mapping (OPM), an approach based on lean six sigma principles, can diagram the steps of the referral process to identify gaps, waste, and inefficiencies. Future interventions can be targeted toward specific steps to optimize this process for all stakeholders in the referral network.

HYPOTHESIS OR RESEARCH QUESTION: OPM will identify gaps in the referral network structure that can be categorized based on impact and specifically addressed through future interventions in order to strengthen referral networks for hypertension control.

STUDY DESIGN/METHODS: We observed clinic flow and patient-provider interactions for patients referred into/out of facilities at each level of the health system. These were used to develop process maps, which were enriched with field notes and facility checklists assessing the referral infrastructure. Inductive analysis and data visualization were used to analyze the field notes and process maps, respectively. Semi-structured interviews (SSIs) were conducted with patients, clinicians, and administrators across each level of the health system using snowball sampling. SSIs were audio-recorded, transcribed, and translated into English; content analysis was performed using NVIVO software.

RESULTS: Process maps/field notes from 16 patient encounters and 39 facility checklists have been completed for this study. These tools show that the provider explained the reason for referral in only ten (62.5%) patient encounters, hypertension referral guidelines/protocols are available at only twenty (51.3%) facilities, and there are many inconsistencies in records of how many patients are referred by/to facilities.

CONCLUSIONS/FUTURE PLANS: The results of this study demonstrate how OPM may be used to identify gaps, waste, and inefficiencies in a process through a mixed methods approach. This will be used to develop a targeted intervention for strengthening the referral system in western Kenya.

ABSTRACT 100

PREOPERATIVE INFLAMMATORY STATUS IS NOT ASSOCIATED WITH PRIMARY PATENCY OF TIBIAL STENTS.

Shravani Pathak[1], Kenneth Nakazawa[2], Rami Tadros[2], Robert Lookstein[2], Peter Faries[2], Ageliki Vouyouka[2].
[1]Medical Education, [2]Cardiovascular Surgery. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: We had previously determined that the patency of bare metal stents in femoropopliteal vessels is strongly and negatively associated with elevated preoperative white blood cell, platelet, and neutrophil counts (1).

1. Nakazawa et al. "Preoperative inflammatory status as a predictor of primary patency after femoropopliteal stent implantation." Journal of Vascular Surgery 2017.

HYPOTHESIS OR RESEARCH QUESTION: Here we aimed to evaluate the impact of preoperative inflammatory status, as determined by complete blood count (CBC) test parameters, on 12-month patency of drug-eluting stents placed in tibial vessels.

STUDY DESIGN/METHODS: We retrospectively analyzed baseline clinical and angiographic data among 64 patients (median age: 73 years, 41% females) from 2008-2017 at the Mount Sinai Hospital with preoperative CBC test values and information of patency for at least 12 months after first-time placement of everolimus eluting stents in tibial vessels. The primary endpoint was loss of primary patency, defined by a Doppler velocity ratio ≥2.5:1, computed tomographic angiography demonstrating ≥50% luminal narrowing within the stent, or re-intervention.

RESULTS: During a median follow-up of 22 months, 17 patients (27%) had in-stent restenosis (ISR) within 12 months. There were no significant differences in preoperative blood counts among patients who had ISR within 12 months vs those who had stents that remained patent for longer (Table 1). There were also no associations for other factors such as age, sex, lesion type, number of stents placed, total stent length, vessel runoff, adjunct procedures, statins, antiplatelet therapy, presence of diabetes, critical limb ischemia, critical limb ischemia, diabetes, smoking history, coronary artery disease, congestive heart failure, chronic occlusive pulmonary disease, and end stage renal disease (Table 1).

CONCLUSIONS/FUTURE PLANS: Unlike for bare-metal femoropopliteal stents, routine pre-procedural tests that determine baseline inflammatory status may not provide strong clinical utility in risk stratifying for ISR after drug-eluting stents are placed in tibial vessels. Further investigation is needed to better Identify which patients with tibial disease will respond optimally to stenting or other percutaneous interventions.

ABSTRACT 101

SURVIVAL OF PATIENTS WITH MUSCLE-INVASIVE UROTHELIAL CANCER OF THE BLADDER WITH RESIDUAL DISEASE AT THE TIME OF CYSTECTOMY FOLLOWING NEOADJUVANT CHEMOTHERAPY: AN ANALYSIS OF THE NATIONAL CANCER DATABASE.

John Pfail[1], François Audenet[2], Alberto Martini[2], Kyrollis Attalla[2], Nikhil Waingankar[2], Matthew Galsky[3], John Sfakianos[2]. [1]Medical Education, [2]Urology, [3]Medicine.
[1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Recent genomic analyses suggest that selective pressure from platinum-based chemotherapy shapes the evolution and clonal architecture of urothelial cancer. These findings suggest that the presence of residual disease after neoadjuvant chemotherapy (NAC) for muscle-invasive bladder cancer (MIBC) may be associated with particularly poor outcomes. Biomarkers predictive of NAC resistance may help to refine treatment algorithms.

HYPOTHESIS OR RESEARCH QUESTION: Analyze the impact of pathologic residual disease after NAC at radical cystectomy (RC) on overall survival (OS) in patients with MIBC.

STUDY DESIGN/METHODS: The National Cancer Data Base was queried for patients who underwent RC with or without NAC for MIBC from 2004-2015. Covariates were balanced using inverse probability of treatment weighting (IPTW). OS in patients with MIBC treated with RC alone or NAC followed by RC using a 6-month conditional landmark analysis from the time of surgery.

RESULTS: 11,287 patients met inclusion criteria. 5-year IPTW-adjusted OS rates were 44.7% (95% CI: 43.5–45.9) for NAC plus RC vs. 38.4% (95% CI: 37.4–39.4) for RC alone (HR: 0.86, 95% CI: 0.83-0.90; all p<0.001). 6-mo conditional landmark analysis comparing patients treated with NAC plus RC versus RC alone revealed a decreased risk of death (HR: 0.79, 95% CI: 0.74-0.85) and increased median OS (119.2 vs. 82.1 mos.) in patients with ≤pT2 disease and increased risk of death (HR: 1.28, 95% CI: 1.22-1.35) and decreased median OS (22.4 vs. 30.0 mos.; all p<0.001) in patients with >pT2 disease.

CONCLUSIONS/FUTURE PLANS: NAC is associated with improved OS in this comparative effectiveness analysis. However, presence of >ypT2 disease (following NAC and cystectomy) is associated with particularly poor outcomes when compared with >pT2 disease in patients treated with cystectomy alone, likely reflecting different biology underlying chemotherapy-resistant tumors. Biomarkers predictive of NAC resistance may be important to optimize NAC usage.

ABSTRACT 102

RESTORATION OF FAILING HUMAN CARDIOMYOCYTE ELECTROPHYSIOLOGY AND CALCIUM HANDLING BY ADULT STEM CELLS: A COMPUTATIONAL APPROACH TO THERAPEUTIC OPTIMIZATION.

Katherine Phillips[1], Joshua Mayourian[2], Kevin Costa[2]. [1]Medical Education, [2]Medicine.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Myocardial delivery of human c-kit+ cardiac progenitor cells (hCPCs) and human mesenchymal stem cells (hMSCs) in isolation or combination is a controversial approach for treating heart failure. The progress of this therapeutic approach is hindered by limited mechanistic insight into adult stem cell effects on human cardiac electrophysiology (EP) and calcium transients (CaT).

HYPOTHESIS OR RESEARCH QUESTION: This study aims to computationally simulate both hCPC and hMSC effects on human cardiac myocyte (CM) EP and CaT to provide a mechanistic basis for optimizing stem cell-based cardiotherapies.

STUDY DESIGN/METHODS: We developed a novel mathematical model of hCPCs and validated it through simulation of published experiments on hCPC heterocellular coupling (HC) with rat CM. We coupled healthy and heart failure (HF) human CMs to hCPCs, hMSCs, and a fused hCPC-hMSC CardioChimera (CC) cell line, which others are actively exploring for its therapeutic potential. A parameter sensitivity analysis provided mechanistic insight into hCPC and hMSC ion channels responsible for the changes in CM action potential waveform and CaT outcomes. Finally, we generated a population of models incorporating hMSC paracrine signaling (PS) as well as hMSC and hCPC HC to explore the possibility of restoring normal EP and CaT in HF CMs.

RESULTS: Consistent with available experimental findings, simulated HC of hCPCs with rat CMs lengthened action potential duration (APD) and decreased upstroke velocity (UV). Coupling of hCPCs to healthy or HF human CMs led to more prominent increases in CaT amplitude and UV, and less drastic effects on APD compared to hMSCs. Coupling both hCPCs and hMSCs to healthy and HF CMs led to synergistic benefit on CaT amplitude and UV, whereas HC of hCPC-hMSC CC to these cells diminished CaT effects. Finally, our population of models identified hMSC-PS as a key parameter for restoring action potential and CaT of fibrotic HF human CMs to healthy conditions.

CONCLUSIONS/FUTURE PLANS: We created a novel mathematical model of hCPC EP, simulated its effects when coupled to hMSCs and CMs, and predicted that hMSC PS plays a key role in restoring fibrotic HF CMs to healthy CMs. These findings suggest focusing on secretome delivery to improve future stem cell therapies for heart failure.

ABSTRACT 103

USING CONVOLUTIONAL NEURAL NETWORKS TO DEVELOP AN OBJECTIVE METHOD TO CLASSIFY THE DEGREE OF JOINT EROSION AND NARROWING IN RHEUMATOID ARTHRITIS.

Alison Pruzan[1], Dan Samber[2], Venkatesh Mani[2], Zahi Fayad[2]. [1]Medical Education, [2]Radiology.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Articular bone erosions are a clinical feature of rheumatoid arthritis (RA). Joint imaging enables early detection of erosions and provides insights into pathogenesis, but it is a time consuming, variable process. The creation of a systematic method assures a more standardized evaluation of each joint. The goal of this project is to quantify and analyze erosion and joint space narrowing (JSN) in the hands and feet using radiographic images with a modified van def Heidje-sharp score. This method assigns an erosion score (ES, range 0-280) and joint space narrowing score (JSN, range 0-168) to each set of radiographs. The total score (TS, range 0-448) is the sum of ES and JSN scores.

HYPOTHESIS OR RESEARCH QUESTION: Is this data set large enough to help us create a neural network that can identify narrowing and erosion on its own?

STUDY DESIGN/METHODS:

1. Analyze the data set (2495 images) for erosion and narrowing on Joint Extractor Application.
2. Input images of pathological and normal joints into a classification neural network to see if the program can use this training data to adjust network parameters to functionally replicate expert assessments.
3. To facilitate the classification step, a separate neural network was applied to radiological images to automate the segmentation of joints from radiological images.

RESULTS: 8593 joints were manually analyzed for erosion (8033 non-pathological), and 8242 joints were analyzed for narrowing (7203 non-pathological).

The paucity of available data suggests a conservative approach of binning the data into small batches, performing the analysis, evaluating the results, and proceeding to a more challenging classification task. Initially, 900 images were split into 2 classes comparing joints with a narrowing score of 0 to all other joints with scores of 1-6 (82% accuracy). We further segmented the data into 3 classes (250 images) with narrowing scores of 0, 2 & 3, and 4 & 6 (78% accuracy). It was then decided that an automated technique be applied to generate more data for the algorithm.

CONCLUSIONS/FUTURE PLANS: Our results are promising, but suggest we need a larger sample size and more pathological joints. Our future steps consist of qualitatively detecting joints using a YOLO program, which can detect joints and reconstruct a hand with only segmented images.

ABSTRACT 104

THE IMPACT OF DEFERRED ACTION FOR CHILDHOOD ARRIVALS (DACA) MEDICAL STUDENTS - A SCARCE RESOURCE TO U.S. HEALTHCARE.

Julio Ramos[1], Emanuela Taioli[2]. [1]Medical Education, [2]Thoracic Surgery.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: The current status of the Deferred Action for Childhood Arrivals (DACA) policy is unclear, creating an atmosphere of uncertainty for DACA recipients enrolled in medical school. Although the value of DACA medical students has been hypothesized, no data are available on their contribution to U.S. health care and on the effects of a DACA lapse.

HYPOTHESIS OR RESEARCH QUESTION: DACA medical students bring valuable bilingual skills and multiple experiences working with vulnerable populations.

STUDY DESIGN/METHODS: Self-reported surveys of DACA medical students were collected that queried demographics, socioeconomic status, education, and future career plans. Self-reported GPA and MCAT data was compared to data obtained from individual medical schools and national data.

RESULTS: Thirty-three of the roughly 70 to 100 DACA medical students answered the questionnaire. Sixty-one percent of participants indicated a Latino/Hispanic ethnicity; the sample was mostly born in North America (30.3%), Asia (27.3%), and South America (24.2%). The parental annual household income was $20,000-39,000 (42.4%) or < $20,000 (21.2%); 60.6% reported speaking English and Spanish, and 36.4% reported speaking English and another language at home. The average (±SD) undergraduate GPA (3.70±0.25) and MCAT percentile (80.08±20.13) was comparable to the corresponding school they attended as well as national averages. Ninety-seven percent of respondents reported working with disadvantaged populations.

DISCUSSION: The characteristics of the DACA sample along with their ethnic, bilingual, and socioeconomic diversity will contribute to a traditionally homogeneous physician landscape, provide a unique background to address health disparities and treat U.S. underserved populations. It is critical to address the status of DACA recipients and realize the economic and social losses a DACA lapse would cause to U.S. healthcare.

ABSTRACT 105

CHARACTERIZING TRENDS IN PRIMARY CARE VISITS USING NAMCS 2008-2014.

Aarti Rao[1], Zhuo Shi[2], Kristin Ray[3], Ateev Mehrotra[4], Ishani Ganguli[5]. [1]Medical Education, [3]Pediatrics, [4,5]Medicine. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Harvard Medical School, Boston, MA, [3]University of Pittsburgh School of Medicine, Pittsburgh, PA, [4]Beth Israel Deaconess Medical Center, Boston, MA, [5]Brigham and Women's Hospital, Boston, MA.

BACKGROUND/RATIONALE: Supporting primary care has been a focus of policy reforms in the United States. However, recent evidence suggests a decline in primary care visits per capita.

HYPOTHESIS OR RESEARCH QUESTION: To understand the underlying reasons driving this decline in primary care visits, we seek to describe trends in patient demographic information, visit characteristics, and physician practices over 9 years using data from the National Ambulatory Medical Care Survey (NAMCS).

STUDY DESIGN/METHODS: Using 2007-2015 NAMCS data, we examined adult visits to a primary care physician (PCP) (i.e. internal medicine, family practice, or pediatrics). We calculated visits per capita by dividing number of visits by annual US Census estimates per population subgroup, using rolling averages to minimize yearly fluctuations. We estimated visit rates stratified by patient demographic groups. We examined visit duration and the number of diagnoses and medications addressed per visit. We also examined visit disposition and the percentage of PCPs using email consults. For each outcome, we used ordinary least-squares regression to estimate linear time trends and assessed statistical significance at $p<0.05$.

RESULTS: Our weighted sample represented 2.2 billion PCP visits. Over 9 years, visit rates declined by 18.9 visits per 100 patient years (-0.04 per year; 95% CI -0.05, -.02), with similar declines across sex and age groups. We found increases in visit duration (0.41 min per year; 95% CI 0.20, 0.64) and in the number of diagnoses (0.04 per year; 95% CI 0.01, 0.06) and medications (0.12 per year; 95% CI 0.06, 0.16) addressed. We found a decline in visits per capita in which PCPs recommended follow-up (-0.03 per year; 95% CI -0.04, -0.02). More PCPs reported using email consultations over time (1.7% per year; 95% CI 1.2, 2.2).

CONCLUSIONS/FUTURE PLANS: Over time PCP visits were longer, more issues were addressed per visit, and physicians were less likely to suggest follow-up. These findings suggest that the declining PCP visit rate may be partially explained by PCPs providing more comprehensive in-person care and using more non-face-to-face care such as email. Our findings are limited by physician self-report and potential changes in billing practice that may contribute to a rise in self-reported diagnoses.

ABSTRACT 106

PREDICTING DELIRIUM AFTER AORTIC VALVE REPLACEMENT: ADDITIVE VALUE OF FRAILTY TO AN EXISTING DELIRIUM RISK MODEL.

Aarti Rao[1], Sandra Shi[2], Edward Marcantonio[2], Dae Hyun Kim[2]. [1]Medical Education, [2]Geriatrics and Palliative Medicine. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA.

BACKGROUND/RATIONALE: Delirium is a preventable complication following aortic valve replacement that is associated with functional decline and mortality. In 2009, Rudolph et al. developed a preoperative prediction rule for delirium after cardiac surgery.

HYPOTHESIS OR RESEARCH QUESTION: We evaluated the performance of the Rudolph model in an independent cohort, and assessed the additive valve of frailty markers for prediction.

STUDY DESIGN/METHODS: We prospectively enrolled 187 patients who underwent either surgical (SAVR, n=77) or transcatheter aortic valve replacement (TAVR, n=110) at Beth Israel Deaconess Medical Center in 2014-2016. We assessed delirium using the Confusion Assessment Method. We estimated delirium incidence based on the Rudolph score (range: 0-5): 2 points for Mini mental status exam (MMSE) ≤23; 1 point for MMSE 24-27, Geriatric Depression Scale >4, prior stroke, and abnormal albumin. We assessed the association between commonly used frailty measures (Clinical Frailty Score [CFS], gait speed, grip strength, and chair stands) and delirium, adjusting for the Rudolph risk score. The predictive performance for each model was evaluated by C-statistic

RESULTS: The overall incidence of delirium was 50% in SAVR patients (mean age 78 years) and 25% in TAVR patients (mean age 84 years). In the SAVR cohort, the incidence of delirium for 0, 1, 2, and ≥3 of the Rudolph model was 42%, 44%, 64%, and 71% respectively (p-value 0.05). Predictive discrimination of the Rudolph model was fair (C-statistic 0.61). In the TAVR cohort, delirium incidence for 0, 1, 2, and ≥3 was 7.7%, 28%, 22%, and 32% (p-value 0.16). Predictive discrimination was comparable (C-statistic 0.58). In the SAVR cohort, predictive performance improved with the addition of each frailty measure: CFS (C-statistic 0.69), gait speed (C-statistic 0.70), grip strength (C-statistic 0.67), and chair stands (C-statistic 0.67). In the TAVR cohort, predictive performance improved with the addition of gait speed (C-statistic 0.65) and chair stands (C-statistic 0.63).

CONCLUSIONS/FUTURE PLANS: The Rudolph model performed well in SAVR patients, but less so in more frail and complex TAVR patients. The addition of frailty measures to the Rudolph model, in particular, gait speed, improved accuracy of the prediction in both SAVR and TAVR patients.

ABSTRACT 107

QUANTITATIVE TRACKING OF INFLAMMATORY ACTIVITY AT THE PEAK AND TROUGH PLASMA LEVELS OF A JANUS KINASE INHIBITOR VIA IN VIVO 18F-FDG PET.

Sanchita Raychaudhuri[1], Christine Abria[2], Zachary Harmany[3], Smriti Kundu-Raychaudhuri[4], Siba Raychaudhuri[4], Abhijit Chaudhari[5]. [1]Medical Education, [2]Medicine, [3]Pathology, [5]Radiology. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2,3,4,5]University of California Davis School of Medicine, Davis, CA.

BACKGROUND/RATIONALE: Rheumatoid arthritis (RA) is an autoimmune disease characterized by joint inflammation. The current standard techniques to evaluate RA severity cannot rapidly detect response to a drug in a non-invasive and longitudinal manner. The purpose of our study was to test whether Positron Emission Tomography scanning using the radiotracer F-fluorodeoxyglucose (^{18}F-FDG PET) can detect changes in inflammatory activity occurring in mice with Collagen Induced Arthritis (CIA) within mere hours of RA drug treatment. Our rationale was that such rapid assessment would contribute towards optimizing dosing regimens for treatments, and early determination of treatments that would be effective.

HYPOTHESIS OR RESEARCH QUESTION: Can ^{18}F-FDG PET scanning detect changes in inflammatory activity in response to an RA drug during its peak and trough plasma levels (60 minutes and 270 minutes post treatment, respectively)?

STUDY DESIGN/METHODS: CIA mice underwent ^{18}F-FDG PET scanning at 60 minutes and 270 minutes post injection of a JAK inhibitor drug. A separate group of CIA mice underwent a PET scan before receiving any drug, and then after receiving 6 daily doses of JAK inhibitor. Control group mice received no drug and underwent a PET scan on day 0 and day 6. Inflammation was quantified from the PET scans and analyzed.

RESULTS: The CIA-PET model can successfully detect a significant decrease in inflammation at 60 minutes post injection of JAK inhibitor, when plasma drug level is at its peak value, and a subsequent significant increase in inflammation at 270 minutes post injection of JAK inhibitor, when plasma drug level is at its trough value. The CIA-PET model can also detect a significant decrease in inflammation after 6 days of daily JAK inhibitor treatment.

CONCLUSIONS/FUTURE PLANS: ^{18}F-FDG-PET imaging can be used to rapidly detect quantitative changes in inflammation mere hours after JAK inhibitor treatment.

ABSTRACT 108

PREDICTORS OF 30-DAY OUTCOMES FOLLOWING MITRAL VALVE REPAIR.

Adam Reisman[1], Allison Thomas[1], Michael Leitman[1]. [1]Medical Education.
[1]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Mitral valve repair (MVr) has been established as the preferred treatment option to manage degenerative mitral valve disease. Compared with other surgical treatments, MVr results in increased survival and decreased rates of both complications and reoperations. However, among patients undergoing MVr, little is known about the predictors of postoperative outcomes.

HYPOTHESIS OR RESEARCH QUESTION: To identify preoperative patient risk factors associated with morbidity and mortality within 30 days of MVr.

STUDY DESIGN/METHODS: Data was derived from the American College of Surgeons National Surgical Quality Improvement Program database to assess patients who underwent MVr from 2011-2016. Preoperative risk factors were analyzed to determine their association with a variety of postoperative 30-day outcomes.

RESULTS: 1,234 patients underwent MVr; 763 (61.8%) males and 471 (38.2%) females. Ages ranged from 18 to 89, with a mean of 64. 30-day mortality was 3% (37 patients). Of the 12 risk factors associated with mortality, pre-operative hematocrit was the only significant variable on multivariate analysis. 235 patients (19.2%) were discharged to a location other than home, an outcome associated with 21 risk factors. Among them, female gender, age, hypertension requiring medication, dialysis, pre-operative serum sodium, and pre-operative serum albumin remained significant on multivariate analysis. 121 patients (9.8%) experienced unplanned readmission, which was associated with 8 risk factors, of which only dyspnea upon mild exertion was significant on multivariate analysis. Reoperation occurred in 99 patients (8.1%). Of the 6 variables associated with reoperation, patient age was the only independent predictor on multivariate analysis. 49 patients (4.0%) underwent reintubation, which was associated with 13 risk factors. Among them, age and pre-operative INR were predictive of reintubation on multivariate analysis.

CONCLUSIONS/FUTURE PLANS: Outcomes are good following MVr Although a substantial number of risk factors were found to be associated with adverse outcomes, only a small subset remained statistically significant following multivariate analysis. Identification of these risk factors may help guide clinical decision making with respect to which patients are the best candidates to undergo MVr.

ABSTRACT 109

INTEGRATING A SOCIAL DETERMINANT OF HEALTH SCREENER AT AN OUTPATIENT PEDIATRIC CLINIC IN EAST HARLEM, NEW YORK CITY.

Rebecca Rinehart[1], Lauren Zajac[2], Rebecca Kann[3], Jennifer Avecedo[2], Leora Mogilner[2].
[1]Medical Education, [2,3]Pediatrics. [1,2]Icahn School of Medicine at Mount Sinai, New York, NY,
[3]Barnard College, New York City, NY.

BACKGROUND/RATIONALE: Addressing social determinants of health (SDH), the social and environmental factors that affect a person's physical and mental health, is critical for effective pediatric healthcare, especially in underserved settings. In 2018, a new screening tool to identify eight social risk factors for ill health was implemented at Pediatrics Associates (PA), an outpatient clinic at Mount Sinai Hospital.

HYPOTHESIS OR RESEARCH QUESTION: After implementing the new evidence-based tool and referring patients to appropriate community services, we analyzed outcomes to determine: to what extent does an SDH screening tool, implemented in a pediatric outpatient setting, effectively identify and refer patients with social risk factors for ill health?

STUDY DESIGN/METHODS: We recruited a convenience sample of caretakers of patients 0-21 years of age and screened them while they were waiting to be seen by a physician. We collected descriptive statistics and analyzed them using SAS.

RESULTS: 437 caregivers were screened over a 9-month period. More than half (59%) of caretakers screened positive for at least one social need, and an average of 1.7 unmet needs were identified per family. Home environmental concerns, such as pests or mold, were the most common issues cited by parents (37%), followed by tobacco smoke exposure (27%), and food insecurity (17%). The majority of caretakers with an identified social need (78%) accepted at least one referral.

CONCLUSIONS/FUTURE PLANS: A majority of patients accepted referrals for community resources, and future studies will explore factors associated with successful referral completion. This study provides a first step in assessing the clinical utility of screening as a way to incorporate SDH into regular pediatric visits.

ABSTRACT 110

LONG BONE REGENERATION OF THE RADIUS USING ADENOSINE RECEPTOR ACTIVATION AND 3D PRINTED BIO-CERAMIC SCAFFOLDS.

Ricardo Rodriguez Colon[1], Christopher Lopez[1], Lukasz Witek[2], Paulo Coelho[2]. [1]Medical Education. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]New York University, New York, NY.

BACKGROUND/RATIONALE: Bone defects may result from a variety of conditions and can lead to significant disability. Although most bone fractures heal spontaneously, there is no "gold standard" for promoting bone regeneration in settings where either fractures do not heal or in a critical sized segmental bone defect. Current standard of care calls for reconstruction using a vascularized bone graft. However, due to high instances of donor site morbidity, infection, and delayed healing, alternatives such as bone tissue engineering have been explored but require further investigation.

HYPOTHESIS OR RESEARCH QUESTION: Can a novel approach to promote segmental bone defect repair combining a custom-fit, digitally 3D printed ceramic scaffold coated with a bioactive molecule, Dipyridamole (DIPY), accelerate bone regeneration in critical-sized radius defect?

STUDY DESIGN/METHODS: Full-thickness segmental defects were created in the radii of rabbits. Rabbits were divided into 3 groups: control with uncoated 100% beta-tricalcium phosphate (-TCP) scaffold, collagen (Type II Bovine) coated -TCPscaffold, and 1,000μM DIPY coated -TCPscaffold. After 8 weeks, animals were euthanized and the radii retrieved for evaluation. Bone regeneration was assessed with 3D reconstruction software and mechanical testing through nanoindentation. Values for bone percentages and mechanical properties were analyzed by ANOVA.

RESULTS: After 8 weeks of healing, animals with defects repaired with 1,000μM DIPY coated scaffolds resulted with 26.7±6.2% bone, compared to 33.9±5.6% and 18.2± 8.3% in collagen coated scaffolds, and -TCPscaffolds, respectively. The 1,000μM DIPY coated group and collagen coated group statistically showed more bone regeneration than the uncoated -TCPscaffold ($p<0.005$ and $p<0.004$, respectively). In all groups, histological analysis revealed a well vascularized healing pathway with immature woven bone formation, along with lamellar reorganization throughout the scaffold porosity. Mechanical properties of the regenerated bone resulted in statistically analogous values to that of native bone.

CONCLUSIONS/FUTURE PLANS: Custom engineered -TCP scaffolds are biocompatible, resorbable, and can regenerate and remodel bone within the scaffold dimensions in a critical segmental long bone defect in a rabbit model.

ABSTRACT 111

RESILIENCE BEHAVIORS AMONGST MEDICAL STUDENTS AFTER NATURAL DISASTERS: A PERSPECTIVE ON RELIABILTY.

Ana Rodriguez[1], Daniel Afonin[2], Rie Sakamoto[3], Hiroki Ando[3], Yuzo Takeguchi[3], Tenshin Otsuka[3], Tomoyuki Jimbo[3], Kanako Taku[4], Satoshi Waguri[3], Robert Yanagisawa[5], Craig Katz[6]. [1]Medical Education, [4,6]Psychiatry, [5]Medicine. [1,2,5,6]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Fukushima Medical University, Fukushima, Japan, [4]Oakland University, Rochester, MI.

BACKGROUND/RATIONALE: Due to the Great East Japan Earthquake of March 2011, the Fukushima prefecture, specifically, suffered the trifecta of Japan's most powerful recorded earthquake, multiple tsunamis, and the melt down of the Fukushima Daiichi Nuclear Power Plant. Today, residents are still dealing with the physical and emotional repercussions of the disaster. To further understand resilience behaviors amongst medical students, we extended the 10 Factor Resilience Behavior Scale (10FRBS) (Levine et al.) that examined resilience strategies to include specific behaviors or tactics that students can engage in to pursue these strategies.

HYPOTHESIS OR RESEARCH QUESTION: Is the expanded 45-item FRBS an internally reliable measure of behaviors that fulfill the resilience strategies of the 10 FRBS?

STUDY DESIGN/METHODS: We distributed surveys to Japanese medical students. The questionnaires included two surveys: the Connor-Davidson Resilience Scale (a common used, cross culturally valid and reliable measure of resilience), and 45 item extended 10FRBS (45FRBS), to better distinguish specific behaviors. We also included a qualitative component to allow students to share personal experiences with resilience through an optional follow-up interview or writing.

RESULTS: We report on 359 survey responses. Based on Cronbach's alpha, a measure of internal reliability, our extended survey demonstrated 2 strategies with $< .70$, 3 strategies with $> .70$, and 5 strategies with $> .80$. Each item of the 45FRBS was significantly correlated to the CDRISC 25 mean score (43 items, $p < .01$; for 2 items, $p < .05$).

CONCLUSIONS/FUTURE PLANS: Our addition of resilience behaviors to the strategies of the 10FRBS to further understand how to meaningfully capture resilience amongst medical students yielded a largely internally reliable instrument, with 8 of 10 factors having Cronbach's alpha values greater than .70. We will improve the 45FRBS survey to produce better internal reliability and assess the validity of the resulting 45FRBS by interviewing future subjects about their survey responses. Ultimately, the validated 45FRBS should be operationalized for assessing and tracking our ability to promote resilience behaviors among not only Japanese medical students but also all survivors of trauma and ideally even people at high risk for trauma.

ABSTRACT 112

EPIDEMIOLOGY OF PEDIATRIC SEPSIS IN THE EMERGENCY DEPARTMENT: A DESCRIPTION OF RISK FACTORS AND ASSOCIATED OUTCOMES.

Hailey Rosenthal[1], James Tsung[2]. [1]Medical Education, [2]Emergency Medicine.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Early recognition of sepsis remains a clinical challenge with worldwide hospital mortality related to pediatric sepsis around 25%. Evidence suggests that early interventions improve outcomes but further research is necessary to identify best practices.

HYPOTHESIS OR RESEARCH QUESTION: This study seeks to describe the current state of sepsis care to better recognize it in patients presenting to the Mount Sinai Pediatric Emergency Department (MSH Peds ED) and to identify risk factors and associated outcomes.

STUDY DESIGN/METHODS: Retrospective review of patents who triggered the "Stop Sepsis" alert in their electronic medical record. Patients were excluded if alert was discontinued. Descriptive statistics and adherence to the 2006 PALS Septic Shock Algorithm were assessed.

RESULTS: From January 2015 to January 2017, 60 patients triggered the alert- protocol was initiated in 25 patients (41.7%), 56% male, median age 4 years (IQR 1.8-10.5). Sixteen patients (64%) had comorbid chronic diseases and 3 (12%) were immunocompromised.

Sepsis alert was acknowledged within 1 hour in all 25 cases. Median time to recognition was 1 min [IQR: 0-12 min]. In 13 cases (52%) vascular access was achieved within one hour- median time to access 40.8 min [IQR: 6-92.4 min]. In 40% of cases IV fluids were administered within 1 hour- median time to fluids 70.2 min [IQR: 27.6-146.4 min]. Antibiotics were administered within 1 hour in 5 cases (20%)- median time to antibiotics 92.4 min [IQR: 65.2-139.8 min]. Complete adherence was achieved in 3 cases (12%).

On average patients who received antibiotics and vascular access within one hour spent 2.3 hours (95% CI: 0.35-4.24) and 2.1 hours (95% CI: 0.61-3.60) less in the ED respectively.

CONCLUSIONS/FUTURE PLANS: Similar to other data, a minority of patients in this cohort achieved adherence in one hour to PALS Septic Shock Algorithm. Understanding the current state of care, and developing strategies to improve adherence should lead to improved pediatric sepsis process measures and outcomes.

ABSTRACT 113

THE ROLE OF DEMARCATION LASER PHOTOCOAGULATION IN TREATING LARGE RETINAL BREAKS: A CASE SERIES.

Collin Rozanski[1], Richard Kaplan[2], Jonathan Lo[2], Ross Chod[3], Alexander Barash[2]. [1]Medical Education, [2,3]Ophthalmology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Vision Care Specialists Denver, Colorado.

BACKGROUND/RATIONALE: Retinal breaks are concerning precursor lesions to retinal detachments (RDs) due to disruption in the integrity of the retina and potential subsequent subretinal fluid (SRF) accumulation. Demarcation laser photocoagulation is commonly used to prevent the progression of RDs however, its use to specifically treat symptomatic large retinal breaks (over 8 disc diameters (DD)) associated with significant subretinal fluid has not been as well reported.

HYPOTHESIS OR RESEARCH QUESTION: Can laser photocoagulation be used to treat patients with large retinal breaks to prevent progression to RD?

STUDY DESIGN/METHODS: Demographics, past medical and ocular history, best corrected visual acuity at presentation and follow-up, retinal break characteristics, laser photocoagulation characteristics, and clinical course information were collected for 9 patients who presented with large retinal breaks with significant subretinal fluid between May 2016 and September 2018 and were subsequently treated with demarcation laser photocoagulation. Standard descriptive statistics were used to characterize patient data.

RESULTS: The mean age was 53.7 (range 31-65) years and the mean length of follow-up was 7.4 (SD=6.3) months. Average best-corrected visual acuity was 20/101 (SD=116.8) at presentation and 20/93 (SD=128.2) at most recent follow-up. Average break size was 16.2 DDs (SD=6.2). 2 of 9 patients treated eventually progressed to RD requiring pars plana vitrectomy. Common features seen in these two patients included temporal location (one IT, one ST) of the break, presence of other retinal breaks, eventual macula involvement, and presence of posterior vitreous detachment. None of these measures were statistically significantly different between the group that progressed to RD and the group that did not. Both patients who progressed to RD did so within 30 days of laser application.

CONCLUSIONS/FUTURE PLANS: Seven of 9 patients (78%) treated with demarcation laser photocoagulation for large retinal breaks with significant subretinal fluid did not require additional surgical treatment for progression to RD. These findings suggest that laser photocoagulation with close follow-up may be a reasonable non-surgical option for patients with large retinal breaks associated with significant subretinal fluid.

ABSTRACT 114

COMPARING INTERVENTIONS FOR TEMPOROMANDIBULAR JOINT ANKYLOSIS IN THE PEDIATRIC POPULATION: A SYSTEMATIC REVIEW.

Collin Rozanski[1], Hope Xu[1], Kasey Wood[2], Paymon Sanati[2], Peter Taub[2]. [1]Medical Education, [2]Pediatrics. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Surgical interventions for temporomandibular joint (TMJ) ankylosis include: gap arthroplasty, interpositional arthroplasty, and joint reconstruction. There is a lack of consensus regarding which approach is best in pediatrics.

HYPOTHESIS OR RESEARCH QUESTION: Can a pooled analysis of individual case data for pediatric TMJ ankylosis provide insight into the different treatments for this disease process?

STUDY DESIGN/METHODS: A systematic review of PubMed (Jan 1, 1990-Jan 1, 2017) and Scopus (Jan 1, 1990-Jan 1, 2017) was performed by searching an appropriate combination of key words and MeSH terms including "temporomandibular joint ankylosis" and "TMJ ankylosis" with "pediatric" or "pediatrics". Case reports and case series in the English language including at least one patient under the age of 18 that had a diagnosis of TMJ ankylosis who underwent surgical correction were included for review. Only pediatric cases were included. Main outcomes included preoperative maximum interincisal opening (MIO), postoperative MIO, change in MIO (ΔMIO), and complications.

RESULTS: 24 case series and case reports were identified that met inclusion criteria. From these studies, 176 patients and 227 joints were included. There was a significant difference in ΔMIO between intervention groups as determined by one-way ANOVA ($p<0.001$). Independent sample t-tests comparing MIO variables for each of the intervention groups were performed. MIO_{postop} (mm) was greater for gap arthroplasty (30.18) compared to reconstruction (27.47) ($t=4.9$, $p=0.043$), interpositional arthroplasty (32.87) compared to reconstruction ($t=3.25$, $p=0.002$), but not for gap arthroplasty compared to interpositional arthroplasty ($t=-1.9$, $p=0.054$). ΔMIO (mm) was not significantly different for interpositional arthroplasty (28.33) compared to gap arthroplasty ($t=0.29$, $p=0.33$).

CONCLUSIONS/FUTURE PLANS: The present study found no significant difference in ΔMIO, postoperative MIO, or recurrence of ankylosis between gap arthroplasty and interpositional arthroplasty. Given these nonsignificant differences and the relative technical ease and shorter operation time of gap arthroplasty compared to interpositional arthroplasty, the authors suggest serious consideration of gap arthroplasty for primary ankylosis repair in pediatric patients.

ABSTRACT 115

HISTOLOGICAL IDENTIFICATION OF BLAST EXPOSURE IN DOLPHIN LUNG TISSUE.

Stephen Russell[1], Virginia Gillespie[2], Joy Reidenberg[1]. [1]Medical Education, [2] Pathology.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Blast lung is a major cause of morbidity from exposure to explosions, which create zones of overpressure and under-pressure that can shear interstitial lung tissue. Currently, no medical interventions can prevent or limit pressure-induced lung damage. Perhaps such protective technology could be modeled from the lungs of diving animals that are naturally adapted for pressure changes.

HYPOTHESIS OR RESEARCH QUESTION: In this study, we examine the lungs of one dolphin obtained post mortem from a beach stranding. This specimen was used in a prior study that involved postmortem exposure to a range of controlled blast pressures (including zero). We were blinded as to which pressure levels (if any) this specimen was exposed. The specific aim was to examine histological biopsies of the lungs and determine whether there was any injury.

STUDY DESIGN/METHODS: Tissue samples from the lung apex, ventral-medial edge, left lung base, and right mainstem bronchus were fixed in formalin. Tissue biopsies were trimmed, dehydrated, paraffin embedded, microtome sliced, slide mounted, and stained with hematoxylin and eosin (H&E) stain. Observed lung histology was compared with published histopathologic characterizations of blast lung injury in humans and the expected findings for fresh-dead wild dolphins.

RESULTS: Microscopic examination showed diffuse alveolar hemorrhage and edema, with foamy macrophages. Multifocal neutrophilic inflammation was also observed, indicating an interstitial pneumonia. Vascular air emboli were found near a mainstem bronchus. The hemorrhage, edema, and inflammation were likely caused by antemortem processes rather than blast injury, due to the presence of foamy macrophages and neutrophils. The finding of vascular air emboli, atypical for fresh-dead wild dolphins, suggests blast exposure. However, as this project is ongoing, we remain blinded to this specimen's blast status.

CONCLUSIONS/FUTURE PLANS: Moving forward, while postmortem dolphin lung parenchyma may not obviously present with blast damage, there is likely a histologically identifiable response to the blast forces in the form of vascular emboli. This work hopes to characterize lung adaptions that may accommodate changing pressures and inspire new protective devices for people exposed to blast forces.

ABSTRACT 116

ONCOLOGICAL OUTCOMES OF OPEN VERSUS ENDOSCOPIC APPROACH TO SKULL BASE MALIGNANCY: A 10-YEAR EXPERIENCE.

John Rutland[1], Travis Ladner[2], David Goldrich[3], Dillan Villavisanis[3], Akila Pai[2], Amit Banihashemi[4], Corey Gill[1], Brett Miles[3], Sonam Sharma[5], Priti Balchandani[6], Joshua Bederson[2], Alfred Iloreta[3], Raj Shrivastava[2].
[1]Medical Education, [2]Neurosurgery, [3]Otolaryngology, [4]Pathology, [5]Radiation Oncology, [6]Radiology.
[1,2,3,4,5,6]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: The skull base presents complex anatomy for resection of malignant tumors. The role of endoscopic endonasal surgery in the management of aggressive skull base malignancies is inadequately described in the literature.

HYPOTHESIS OR RESEARCH QUESTION: The authors perform an extensive comparison between patients treated with open versus endoscopic approach to skull base malignancy with to determine differences in oncological results.

STUDY DESIGN/METHODS: A retrospective review of 60 patients at our institution that underwent surgery for skull base malignancy between 2010 and 2018 was performed. Disease features, surgical resection, post-operative morbidities, adjuvant treatment, recurrence, and survivability were compared between 30 patients that received purely open surgery and 30 patients that underwent purely endoscopic resection.

RESULTS: Of the 60 patients with skull base malignancy in this study, 30 underwent endoscopic resection and 30 underwent open resection. The most common histotypes were squamous cell carcinoma (35.0%), olfactory neuroblastoma (15.0%), sarcoma (6.7%), and melanoma (6.7%). There was no difference in gross total resection between open (76.7%) and endoscopic cohorts (90.0%), p=0.17. Within the open resection cohort, 26 patients (86.7%) received post-operative adjuvant treatment, while 21 patients (70.0%) that underwent endoscopic surgery received adjuvant treatment, p=0.17. Patients treated endoscopically initiated radiation treatment more quickly following surgery (47.3 days) than did patients that received open resection (72 days), p =0.01. Patients treated endoscopically exhibited significantly lower rate of local recurrence (16.7%) than patients treated with open resection (50.0%), p=0.002. Patient that received endoscopic surgery also had a greater 3-year survival rate (93.3%) than patients that received open surgery (65.4%), p=0.04.

CONCLUSIONS/FUTURE PLANS: Endoscopic surgery may play a role in shortening the interval in between surgery and initiation of radiation treatment, conferring long-term oncological outcomes such as superior tumor control for patients with skull base malignancy.

ABSTRACT 117

DEGENERATION OF THE LATERAL GENICULATE NUCLEUS FROM CHIASMAL COMPRESSION OF PITUITARY ADENOMA DETECTED BY ULTRA-HIGH MRI PREDICTS VISION RECOVERY FOLLOWING SURGICAL DECOMPRESSION.

John Rutland[1], Javin Schefflein[2], Annie Arrighi-Allisan[1], Daniel Ranti[1], Travis Ladner[3], Joshua Loewenstern[1], Hung-Mo Lin[4], James Chelnis[5], Bradley Delman[2], Priti Balchandani[2], Raj Shrivastava[3].
[1]Medical Education, [2]Radiology, [3]Neurosurgery, [4]Population Health Science and Policy, [5]Ophthalmology.
[1,2,3,4,5]Icahn School of Medicine at Mount Sinai, New York, NY.

BACKGROUND/RATIONALE: Predicting vision recovery following surgical decompression of the optic chiasm in patients with pituitary adenoma remains a clinical challenge. Changes in the lateral geniculate nucleus (LGN) in adenoma patients have been inadequately described in the literature. Because ultra-high field MRI improves visualization of thalamic nuclei over conventional field strengths, more precise measurement of thalamic nuclei is possible.

HYPOTHESIS OR RESEARCH QUESTION: This study characterized LGN size in adenoma patients, and assessed for correlations with vision recovery following surgery.

STUDY DESIGN/METHODS: A prospective neuroimaging study of 27 adenoma patients and 27 matched healthy controls was conducted. Participants were scanned at 7 Tesla MRI using an ultra-high resolution structural protocol. Three independent blinded readers measured the LGN at the slice of maximum cross-sectional area on coronal MPRAGE sequence (Figure 1). Post-operative visual function was collected for patients that underwent surgery. LGN areas among adenoma patients and controls were compared using two-tailed t-tests. Imaging was also correlated with post-operative vision function.

RESULTS: The average LGN cross-sectional area for adenoma patients (13.8 mm^2) was lower than controls (19.2 mm^2), $P < 0.0001$. Among adenoma patients, LGN cross-sectional area in patients with chiasm compression was 26.6% less than patients without compression, $P = 0.009$. Patients with preoperative vision impairment showed 29.4% smaller LGN cross-sectional areas than patients without deficits, $P = 0.003$. Patients that experienced improved vision after surgery had LGN cross-sectional areas that were 40.8% larger than patients without postoperative improvement, $P = 0.007$.

CONCLUSIONS/FUTURE PLANS: The authors demonstrate in vivo evidence of LGN volume loss in adenoma patients, and correlate imaging with post-operative vision recovery. Volume loss may reflect anterograde trans-synaptic degeneration. These findings suggest that LGN degeneration is a relevant marker of visual system injury and may also be useful in predicting vision recovery following surgical resection of pituitary adenoma.

ABSTRACT 118

PREVALENCE OF TOBACCO AND MARIJUANA SMOKE EXPOSURE AMONG CHILDREN 0-3 YEARS OLD.

Lodoe Sangmo[1], Karen Wilson[2]. [1]Medical Education, [2]Pediatrics.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: The prevalence of marijuana use has steadily increased over the years, from 6.9% of the population aged 12 and older in 2010 to 8.9% in 2016. Given the shift towards marijuana legalization, rapid changes in cultural perception and the increased prevalence of marijuana use, more research needs to be done to objectively understand the prevalence and effects of secondhand marijuana smoke exposure in children.

HYPOTHESIS OR RESEARCH QUESTION: What is the prevalence of marijuana smoke exposure among children 0-3 years old in the pediatric outpatient and inpatient departments of Mount Sinai Hospital?

What is the prevalence of tobacco smoke exposure among children 0-3 years old in the pediatric outpatient and inpatient departments of Mount Sinai Hospital?

STUDY DESIGN/METHODS: Children from the Kravis Children's Hospital Inpatient Units and healthy children coming in for well-child visits from the Pediatric Associates Clinic were recruited. After obtaining consent, a study team member completed a questionnaire and collected urine using a paper bag or through cotton balls placed in the diaper followed by extraction with a syringe. Approximately 2cc of urine was sent to the CDC for analysis of cotinine, THC, CBN and secondary marijuana metabolites such as COOH-THC.

RESULTS: 20.7% (6) of the children who participated had detectable COOH-THC. 86.2% (25) of the children who participated had detectable urinary cotinine. For children with COOH-THC>LOD, COOH-THC levels ranged from 0.04 ng/mL-0.68 ng/mL, with a geometric mean of 0.08 ng/mL and arithmetic mean of .16 ng/mL (standard deviation=.26 ng/mL). For children with urinary cotinine>LOD, levels ranged from .082- 9.80 ng/mL, with a geometric mean of .80 ng/mL and an arithmetic mean of 2.15 ng/mL (standard deviation = 2.43 ng/mL).

CONCLUSIONS/FUTURE PLANS: Preliminary results showed significant prevalence of urinary COOH-THC and cotinine levels in children ages 0-3 in the 29 children whose urine samples were analyzed. The study aims to recruit 115 healthy children from the Pediatric Associates Clinic who are coming in for well-child visits and up to 20 from the Kravis Children's Hospital Inpatient Units. The recruitment process will continue during the Fall/Spring semester.

ABSTRACT 119

MOLECULAR PROFILING OF FRONTAL FIBROSING ALOPECIA REVEALS TH1 AND JAK/STAT UPREGULATION WITH NO HAIR KERATIN SUPPRESSION.

Riana Sanyal[1], Juan Ruano Ruiz[2], Teresa Song[3], Jesus Gay-Mimbrera[2], Robert Phelps[4], Ana Pavel-Brandusa[5], Ning Zhang[5], Yeriel Estrada[5], Emma Guttman[5]. [1]Medical Education, [2,3,5]Dermatology, [4]Pathology. [1,4,5]Icahn School of Medicine at Mount Sinai, New York, New York, [2]IMIBIC/Reina Sofía University Hospital, University of Córdoba, Spain, [3]SUNY Downstate, New York NY.

BACKGROUND/RATIONALE: Frontal fibrosing alopecia/(FFA) is a primary lymphocytic scarring alopecia featuring progressive frontotemporal and eyebrow hair loss. The hair loss is often irreversible, leading to negative psychosocial outcomes and decreased quality of life. Although several recent studies report increasing incidence of FFA over the last decade, its etiopathogenesis remains mostly unknown, leading to a lack of evidence-based treatments for this debilitating disease. Conversely, alopecia areata/(AA) is a non-scarring hair loss disease with a more well-described molecular phenotype and successful reversal with immune-targeted therapeutics.

HYPOTHESIS OR RESEARCH QUESTION: How does the molecular and cellular profile of FFA differ from that of AA, with regards to expression of inflammatory and hair keratin genes as well as presence of immune and stem cells in the hair follicle?

STUDY DESIGN/METHODS: 4-6mm lesional and non-lesional (>5cm from lesion) biopsies were taken from the center of an alopecic plaque in AA patients (n=10), and from the frontal and retroauricular scalp of FFA patients (N=12). Normal scalp biopsies were also obtained from healthy patients (n=3). Immunohistochemistry was performed on frozen sections, and immune and hair keratin gene expression was measured by RT-PCR. A qualitative assessment of CD200 and K15 expression in all samples including FFA, AA, and healthy scalp samples was conducted by a board-certified dermatopathologist.

RESULTS: $CD8^+$T-cells and $CD11c^+$dendritic cells were significantly increased in FFA and AA lesions versus controls. T_H1 and JAK-STAT signaling (IFN-, CXCL10, JAK3, STAT1) as well as T_H2 products (IL-13, CCL13) were more upregulated in FFA versus AA and controls ($p<0.05$). Hair keratin genes were downregulated versus controls in AA but not FFA ($p<0.05$). Staining of CD200 was diminished at the HF bulge of both FFA and AA tissues, while expression of K15 was diminished only in FFA.

CONCLUSIONS/FUTURE PLANS: Our data suggests that FFA is a highly inflammatory disease even at the non-lesional state, with predominant T_H1 and JAK-STAT pathway involvement and no inhibition of hair keratins.

ABSTRACT 120

METABOLIC EFFECTS OF JAK1/2 INHIBITION IN PATIENTS WITH MYELOPROLIFERATIVE NEOPLASMS.

Manali Sapre[1], Douglas Tremblay[2], Amanda Leiter[2], Alexander Coltoff[2], Anita Geevarghese[2], Sheena Bhalla[2], John Mascarhenas[2], Emily Gallagher[2]. [1]Medical Education, [2]Medicine.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Ruxolitinib is a JAK1/2 inhibitor that is FDA approved to treat certain myeloproliferative neoplasms (MPNs), including myelofibrosis (MF) and polycythemia vera (PV). Clinical trials have reported that ruxolitinib treatment was associated with weight gain, but other metabolic consequences remain unknown.

HYPOTHESIS OR RESEARCH QUESTION: We aimed to determine the metabolic consequences of JAK1/2 inhibition with ruxolitinib in patients with MPN in the clinical setting.

STUDY DESIGN/METHODS: We identified patients from an electronic medical record (EMR) based database who began treatment with ruxolitinib for MPN from December 2011 to December 2016. EMR data were collected at baseline (prior to initiating ruxolitinib) and 72±8 weeks after starting treatment. Parameters collected included age, gender, weight, height, systolic and diastolic blood pressure (SBP, DBP), medications, co-morbidities, random serum glucose, and lipid profile. Baseline and 72 week data were compared using the Wilcoxon signed rank test.

RESULTS: 129 patients were initially identified, of which 71 had data available for weight, and at least one other metabolic parameter of interest at baseline and 72 weeks. Mean baseline weight was 73.6±16.9 (±SD) kg, and was 78.3±8.9kg at 72 weeks (n=71, $p<0.001$). Mean body mass index (BMI) at baseline was 25.9±4.8kg/m^2, and 27.6±5.5kg/m^2 at 72 weeks (n=70, $p<0.001$). The proportion of obese (BMI >30) patients doubled from 16% at baseline to 30% at 72 weeks ($p=0.002$). At 72 weeks, 21% of patients moved up a BMI class from baseline. Next, we investigated the effect of ruxolitinib treatment on BP and glucose concentrations. SBP was 124±15 mmHg at baseline and 129±18 mmHg at 72 weeks, ($p=0.024$, n=70). DBP was not different between baseline and 72 weeks. There was no change in the percent of patients with hyperglycemia (glucose ≥200mg/dL) or on treatment for diabetes at baseline (14.0%) and 72 weeks (14.0%). An insufficient number of patients had lipid data available for analysis.

CONCLUSIONS/FUTURE PLANS: Systemic JAK1/2 inhibition was associated with weight gain, the development of obesity, and increased SBP in this cohort of patients. As pharmacological JAK1 and 2 inhibitors are developed and more widely used, it is important to gain a greater understanding of their long-term metabolic consequences.

ABSTRACT 121

COMPASSION FATIGUE (CF) AND COMPASSION SATISFACTION (CS) IN PEDIATRIC HEMATOLOGY-ONCOLOGY PROVIDERS.

Alex Sarosi[1], Eliana Goldberg[1], Andrea Weintraub[2]. [1]Medical Education, [2]Pediatrics.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: CF is emotional distress that caretakers may experience through contact with patients who are suffering. CS is work-related fulfillment experienced through providing care for others. It has been suggested that unexpressed grief may lead to symptoms of CF in healthcare providers.

HYPOTHESIS OR RESEARCH QUESTION: We hypothesize that PHO providers are at risk for CF and decreased CS due to repeated exposure to patient/family distress and difficult decision-making in clinical practice.

STUDY DESIGN/METHODS: A modified Compassion Fatigue and Satisfaction Self-Test for Helpers (CFST) and a questionnaire of professional and personal characteristics were distributed anonymously and electronically to a nationwide list of over 2,000 PHO providers. Hierarchical linear regression models for CF and CS as a function of potential risk factors significant at $P < 0.05$ in bivariate analyses were constructed.

RESULTS: The survey response rate was 28%. The prevalence of CF and CS was 19.7% and 18.4%, respectively. Distress about a "clinical situation", "administrative burden/academic stress", "personal health", "emotional depletion" and "talking with clergy" as a means of coping with work-related stress were each significant determinants of higher CF scores, whereas CS score and engaging in administrative/QI activities on the day of the survey were associated with lower CF scores in the final six-block regression model (total variance 49% ($F [35, 317] = 8.57$, $P < 0.000$)). CF score, BO score, "emotional depletion", and distress about the "physical work environment" and "administrative burden/academic stress" were each significant determinants of lower CS scores, whereas "exercise", "socializing", and "talking with life partner" as coping strategies for work stress, as well as having nurses/nurse practitioners on the end-of-life care team were associated with higher CS scores in the final model (total variance 56% ($F [36, 287] = 10.22$, $P < 0.000$)).

CONCLUSIONS/FUTURE PLANS: Identification of risk factors associated with CF and CS may help pinpoint potential interventions to reduce CF and augment CS amongst PHO providers.

ABSTRACT 122

RELATIONSHIP BETWEEN INTRAOPERATIVE HEMODYNAMIC STATUS & FRAILTY WITH POSTOPERATIVE ICU ADMISSION AMONG OLDER ADULTS WITH CANCER.

Dahniel Sastow[1], Armin Shahrokni[2], Anoushka Afonso[3]. [1]Medical Education, [2]Oncological Sciences, [3]Anesthesiology. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2,3]Memorial Sloan Kettering, New York, NY.

BACKGROUND/RATIONALE: In elderly cancer patients, recent studies have shown the Comprehension Geriatric Assessment to be much more predictive of surgical outcomes than age. Additionally, in the intraoperative setting, intraoperative hemodynamic variables and their effect on post-operative outcomes have long been studied, however, there has not been a consensus on the effects of intraoperative hypertension on outcomes.

HYPOTHESIS OR RESEARCH QUESTION: In our study, we aimed to assess the relationship between frailty, measured by CGA, and intraoperative hemodynamic variables on the incidence of postoperative ICU admission among geriatric patients who underwent oncological surgery lasting at least 120 minutes.

STUDY DESIGN/METHODS: All patients underwent CGA preoperatively by electronic Rapid Fitness Assessment. Intraoperative variables were retrieved from anesthesiology dataset. Chi Square and t-test were used to assess the association between categorical and continuous variables with postoperative ICU admission. Significant associations ($p < 0.05$) were included in the multivariable regression analysis with postoperative ICU admission as dependent and other variables as independent variables.

RESULTS: Our study included a total of 994 patients with a median age of 79. A total of 48 patients (4.8%) were admitted to the ICU within 30 days after surgery. From univariate analysis the only significant association between CGA and ICU admission was polymorbid conditions, specifically CVA, PVD, kidney failure, and CAD. With regard to intraoperative hemodynamics, blood loss, time spent with HR over 100, and time spend with systolic BP over 180 were significantly associated with increased ICU admission per univariate analysis. From multivariate analysis, minutes spend with SBP over 180 and kidney failure were the only two statistically significant associations with increased ICU admission.

CONCLUSIONS/FUTURE PLANS: In conclusion, we found intraoperative hypertension and preoperative kidney failure to be significantly associated with increased ICU admission in our geriatric cancer population. Future plans include a deeper investigation as to the mechanisms and roles of hypertension and kidney failure in our population and how they affect important aspects of postoperative outcomes.

ABSTRACT 123

IS INCREASED BMI A CONTRAINDICATION FOR LIVING KIDNEY DONATION?

Lilli Schussler[1], Prerna Khetan[2], Edward Chin[2]. [1]Medical Education, [2]Surgery.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: To ensure safety in living donor nephrectomy, donor selection must be rigorous. Although reviews on evaluation of kidney donors have been published, there remains no established selection criteria. To enlarge the donor pool, selection criteria for potential donors have become less strict, leading to a donor population with an increased incidence of chronic conditions that are similar to that of the recipient pool, including obesity.

HYPOTHESIS OR RESEARCH QUESTION: We hypothesized that compared to non-obese donors, obese living kidney donors (OLKD) would have significantly reduced kidney function pre- and postoperatively, with lower pre-operative EGFR and higher post-operative Creatinine.

STUDY DESIGN/METHODS: In this single-center retrospective analysis, we examine the effects of obese BMI on Glomerular Filtration Rate (GFR) and Creatinine in patients undergoing laparoscopic donor nephrectomy. Other outcomes include incidence of intraoperative and 30-day complications, including ileus. We compared categorical variables by using Chi-square or Fisher's exact test as necessary. Continuous variables were compared using Two-independent-sample T-test or the Mann–Whitney U test as appropriate.

RESULTS: The average pre-operative GFR of obese donors was significantly higher compared with non-obese donors (57.85 versus 59.66 respectively; p = 0.045). However, the incidence of GFR below 60 (concerning for kidney disease) was higher in non-obese donors (12 versus 1), although this finding was not statistically significant. Differences in creatinine at 6 and 12 months follow-up were non-significant.

CONCLUSIONS/FUTURE PLANS: These preliminary findings suggest that obese BMI is not related to decreased pre- or post-operative renal function and support the inclusion of obese living kidney donors in the donor pool.

ABSTRACT 124

EVALUATING PATIENT DERIVED BREAST CANCER ORGANOIDS AS AN IN VITRO DISEASE MODEL FOR PRECISION MEDICINE.

Julia Schwarz[1], Pamela Cheung[2], John He[2], Ramon Parsons[2], Stuart Aaronson[2], Hank Schmidt[3]. [1]Medical Education, [2]Oncological Sciences, [3]Surgery. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Breast cancer (BC) is the most common cause of cancer death in women. It is a diverse disease with over 1,600 likely driver mutations in 93 BC genes. The majority of BC research utilizes cell lines and patient-derived xenografts developed from advanced-stage tumors, limiting their usefulness in understanding disease progression and selection of therapy.

HYPOTHESIS OR RESEARCH QUESTION: To understand organoids' potential to recapitulate the disease characteristics of individual patients by determining phenotype / genotype congruency between organoids and primary tumors.

STUDY DESIGN/METHODS: Tumor specimens were collected from patients with BC during biopsies, lumpectomies and mastectomies. A portion of each specimen was cultured using an organoid approach, and a portion was fresh frozen in OCT. A prospective database with information on the characteristics of the patient, tumor, surgery, and growth of the corresponding organoids was then developed. Univariate analysis and binary logistic regression was used to analyze characteristics of a cancer that predict successful growth of an organoid. DNA sequencing and expression profiling were conducted on samples from original tumors and the organoids.

RESULTS: This project is ongoing but as of December 31st, 2017 87 samples were collected and 63.2% were successfully passaged five times and frozen. The type of tissue (primary vs. metastatic), surgery type, histology, N stage, recurrence status and overall cancer stage were all significant predictors of growth upon univariate analysis. Surgery type was the only independent predictor of growth (OR = 5). Cancer-associated PIK3CA mutations were identified in 5 of the organoid lines and will be correlated with sequence data from corresponding tumors.

CONCLUSIONS/FUTURE PLANS: A limiting factor to growing organoids is the amount of tissue obtained. Using this conditional reprogramming technique, organoids can be grown from BC of any stage, histology, and hormone receptor status suggesting cancer derived organoids may be a viable model for precision medicine. Further studies should examine their ability to predict drug response in patients.

ABSTRACT 125

TEAM MEMBER PERCEPTIONS OF INEFFICIENCIES IN MICROVASCULAR FREE FLAP RECONSTRUCTION SURGERIES.

Solomon Seckler[1], Rohini Bahethi[2], Katelyn Stepan[2], Eliezer Kinberg[2], Mingyang Gray[2], Brett Miles[2], Eric Genden[2]. [1]Medical Education, [2]Otolaryngology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Maximizing workflow in microvascular free flap reconstructions is of paramount importance. Examining various team members' perspectives offers important insight into key causes of inefficiency that may not be obvious to all team members. This pilot study serves as a means of identifying sources of workflow inefficiency during microvascular reconstructive procedures via a team based survey methodology.

HYPOTHESIS OR RESEARCH QUESTION: What are team member perceptions of inefficiencies in microvascular free flap reconstruction surgeries?

STUDY DESIGN/METHODS: Two different types of surveys were administered to staff at The Mount Sinai Hospital. The first used closed and open-ended questions to assess perceptions of various aspects of free flap surgeries. These surveys were distributed to approximately 35 surgeons, 10 nurses/techs, and 55 anesthesiologists. The second survey was a customized Safety Attitudes Questionnaire, which was distributed to about 94 residents and attending surgeons and nurses. Responses were anonymous.

RESULTS: Responses from 22 surgeons, 7 nurses/technologists, and 11 anesthesiologists were collected for analysis from the first type of survey, and 24 responses were collected for analysis from the SAQ. Supply related issues, communication issues, and staffing/scheduling issues were commonly cited sources of inefficiency in microvascular free flap reconstructions. Roughly, 52% of surgeons indicated that they "often" wait for supplies and roughly, 38% indicated that they "sometimes" wait. With regards to communication, roughly 33% of surgeons felt that current pre-op communication methods between residents and attendings are inadequate. About 79% of nurses and surgeons either "disagreed" or "strongly disagreed" that staffing was sufficient for these procedures. Themes of supply related issues, inadequate communication, and staffing/scheduling problems were echoed in open-ended responses from team members.

CONCLUSIONS/FUTURE PLANS: Problems concerning supplies, communication, and staffing/scheduling are modifiable targets for improved efficiency. Institutions performing free tissue transfer surgery would benefit from targeted interventions to improve the operational efficiency of these procedures.

ABSTRACT 126

EVALUATION OF ANAL HIGH-GRADE SQUAMOUS EPITHELIAL LESIONS IN THE PATIENTS INFECTED WITH HUMAN IMMUNODEFICIENCY VIRUS.

Nikhil Shamapant[1], Yuxin Liu[2], Michael Gaisa[3], Keith Sigel[3]. [1]Medical Education, [2]Pathology, [3]Medicine.
[1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: The incidence of anal squamous cell carcinoma (SCCA) is 50-fold higher in HIV+ persons than in uninfected persons. Anal high-grade squamous intraepithelial lesions (HSIL) are the precursors to SCCA. Improved understanding of the natural history of these lesions will likely provide insight into the high risk of anal SCCA among HIV+ persons.

HYPOTHESIS OR RESEARCH QUESTION: This study evaluated differences between the expression of immune microenvironment-related genes in anal HSIL in HIV+ and uninfected patients. It also evaluated differences between gene expression in lesions that were cured and those that persisted.

STUDY DESIGN/METHODS: From the Mount Sinai anal cancer screening program we identified 44 persons with HSIL and 4 benign controls. We then collected banked pathologic samples and corresponding clinical data from these subjects (24 HIV+ and 20 uninfected persons). Nanostring gene expression testing was then conducted on the samples using a modified array including both an immunooncology panel as well as HIV and HPV related genes. We used R software to normalize the data and then analyze for differentially expressed genes using the NanoStringDiff package. We corrected for multiple testing using the procedure of Benjamini and Hochberg (which yields a measure of significance q).

RESULTS: We found only one gene with differential expression by HIV status: CCL27 (Fold change=38.62; q=1.1E-4). CCL27, also known as cutaneous T cell-attracting chemokine (CTACK) is associated with attract T-cells to the skin during inflammatory responses. In contrast, we found 27 genes that were differentially expressed with statistically significance between cured and persisting lesions.

CONCLUSIONS/FUTURE PLANS: We found only one differentially expressed gene by HIV status associated with high grade anal dysplasia, suggesting that HIV infection may have a limited role in the natural history of these lesions. In contrast, an extensive group of genes were associated with more aggressive lesions, and these findings may be useful for risk stratification of lesions. Further studies may expand on these findings by using immunostained tissue samples to confirm these findings or using associated clinical data to establish the clinical relevance of the unique microenvironment for HIV+ patients with anal HSIL.

ABSTRACT 127

MORPHOMETRIC EVALUATION OF ILEAL STRICTURES IN CROHN'S DISEASE.

Abdul Sheikh[1], Xiaofei Zhang[2], Noam Harpaz[2]. [1]Medical Education, [2]Pathology.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Intestinal strictures are a major complication of Crohn's disease (CD) that usually require surgery for relief of intestinal obstruction. Insufficient study of the microscopic tissue structure of strictures has hampered advances in their diagnosis, prevention, and therapy. Mount Sinai pathologists have recently proposed that ileal strictures in CD be classified as "hypertrophic," dominated by fibromuscular expansion of the intestinal wall, and "constrictive," defined by reduction of their outer circumference. The latter stricture category, which has been overlooked hitherto, is believed to result from cocoon-like encasement of the ileum by reactive mesenteric fat.

HYPOTHESIS OR RESEARCH QUESTION: Do hypertrophic and constrictive ileal strictures in Crohn's disease exhibit differences in radial asymmetry of the muscularis propria and what do such differences imply regarding their pathogenesis?

STUDY DESIGN/METHODS: H&E-stained cross sections of resected ileum from patients with CD were evaluated by digital morphometry to determine their outer circumferences and the mean thickness of each mural layer on its anti-mesenteric and mesenteric aspects. The measurements were normalized against internal control sections. The respective ratios of the anti-mesenteric to mesenteric dimensions of each layer were determined as asymmetry ratios (ARs) and their associations with each stricture category were compared by T-test.

RESULTS: The inner muscularis propria of the constrictive strictures exhibited significant radial asymmetry in favor of the antimesenteric aspect compared with hypertrophic strictures ($p=0.011$).

CONCLUSIONS/FUTURE PLANS: Expansion of the inner muscularis propria layer is a ubiquitous intestinal response to obstruction reflecting "work hypertrophy." Expansion of this layer favoring the antimesenteric aspect of constrictive strictures implies asymmetrical compensatory hypertrophy, supporting the cocoon hypothesis wherein muscular activity on the mesenteric aspect is selectively restricted. These results corroborate other pathological, molecular and clinical data which indicate that constrictive strictures are a distinct complication of CD.

ABSTRACT 128

THE AESTHETICALLY IDEAL BREAST: ATTRACTIVENESS RATINGS IN A COMMUNITY SAMPLE.

Devki Shukla[1], Amy Yao[2], Matthew Dillon[3], Peter Taub[4], Julie Schnur[5], Guy Montgomery[5]. [1]Medical Education, [2,4]Surgery, [5]Population Health Science and Policy. [1,4,5]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Montefiore Medical Center, Bronx, NY, [3]Xaxis, New York, NY.

BACKGROUND/RATIONALE: Determining objective measurements of the ideal breast morphology and proportions can provide valuable insight for surgical planning to achieve the optimal aesthetic outcome.

HYPOTHESIS OR RESEARCH QUESTION: The goal of this study was to use a crowdsourcing platform to determine preferences for three aspects of breast aesthetics: the sternal notch angle, the upper pole-lower pole fullness ratio, and the nipple areola complex (NAC) diameter to total breast width ratio. We also sought to explore whether breast aesthetics differed based on demographic variables.

STUDY DESIGN/METHODS: An anonymous survey was administered electronically through the crowdsourcing platform, Amazon Mechanical Turk. Stock images were digitally altered to create a panel of 5 images for each of the three individual breast aesthetic measurements (15 images in total). The sternal notch angle was varied by 5 degrees in each image (50° - 70°). The upper-lower pole ratio was altered by increments of 5 degrees (40:60 - 60:40) and nipple areola complex (NAC) diameter to breast width ratio was altered by increments of 0.5 degrees (2.5:1 - 3.5:1). Participants were asked to rank the attractiveness of each image from best (score of 1) to worst (score of 5) and provide demographic information.

RESULTS: A total of 188 individuals participated, of which 59.04% were men and 40.96% were women. Sternal notch angles of 60° (mean attractiveness = 2.39, SD = 1.07) and 65° (mean attractiveness = 2.15, SD = 1.14) were ranked as most attractive [$F(4, 184) = 84.38$, $p < .001$]. The most attractive upper to lower pole ratio was a 40:60 ratio [mean attractiveness =1.86, SD = 1.28; $F(4, 184) = 113.80$, $p < .001$]. The most preferred NAC diameter to breast width ratio was a 3:1 ratio [mean attractiveness =1.94, SD = 0.94; $F(4, 184) = 116.17$, $p < .001$]. There were no significant differences in attractiveness rankings based on respondent gender, sexual orientation, race, ethnicity, or census region (all ps>0.05).

CONCLUSIONS/FUTURE PLANS: Although subjective perceptions of breast attractiveness can be idiosyncratic, population-level breast preference metrics from this study can inform future research in patient populations, both those seeking cosmetic breast procedures as well as those planning breast reconstruction procedures.

ABSTRACT 129

THE IMPACT OF DIABETES MELLITUS ON IN-HOSPITAL COMPLICATION RATES AND COST OF CARE FOR PATIENTS UNDERGOING ANTERIOR CERVICAL DISCECTOMY AND FUSION.

William Shuman[1], Sean Neifert[1], Daniel Snyder[1], Brian Deutsch[1], Jonathan Gal[2], Jeffrey Zimering[3], Robert Rothrock[3], John Caridi[3]. [1]Medical Education, [2]Anesthesiology, [3]Neurosurgery.
[1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Anterior cervical discectomy and fusion (ACDF) is commonly used to treat an array of cervical spine pathology and is associated with good outcomes and low complication rates. Diabetes mellitus (DM) is one of the most common comorbidities for patients undergoing ACDF, but the literature is equivocal about the impact it has on outcomes.

HYPOTHESIS OR RESEARCH QUESTION: As DM becomes increasingly prevalent, it is crucial to determine if it is a predictive risk factor for outcomes after ACDF procedures.

STUDY DESIGN/METHODS: Patients at a single institution from 2008-2016 undergoing ACDF were compared on the basis of having a prior diagnosis of DM vs. no DM. The two cohorts were compared utilizing chi-square, Student's t-test, and multivariate logistic and linear regression.

RESULTS: Data for 2,477 patients undergoing ACDF was analyzed retrospectively. Patients with DM had a significantly higher proportion of American Society of Anesthesiologists (ASA) designations greater than two ($p<0.0001$) and Elixhauser Comorbidity Index levels greater than five ($p<0.0001$). Univariate chi-square test showed that diabetic patients were more likely to suffer from sepsis ($p=0.005$), septic shock ($p=0.01$), airway complication ($p=0.02$), bleed complication ($p=0.04$), and death (0.01). All other complication rates were similar between the two groups. In multivariate analyses adjusting for age, sex, ASA status, and Elixhauser Comorbidity index score, diabetic patients had similar in-hospital complication rates to those without diabetes. The direct cost of care was shown to be similar between the two groups after adjusting for patient, surgical, and hospital-related factors (-$51.45, 95% CI -$-502.23 to $399.33).

CONCLUSIONS/FUTURE PLANS: Patients with DM undergoing ACDF have similar outcomes and cost of care compared to non-diabetic patients.

ABSTRACT 130

POSTERIOR CERVICAL DECOMPRESSION AND INSTRUMENTED FUSION: AN ANALYSIS OF DISPARITIES IN OUTCOMES BY INSURANCE PAYER GROUPS.

Daniel Snyder[1], Jonathan Rasouli[2], Sean Neifert[1], Jonathan Gal[3], Brian Deutsch[1], John Caridi[2]. [1]Medical Education, [2]Neurosurgery, [3]Anesthesiology. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Posterior cervical decompression and fusion with lateral mass screws and rods (PCDF) is the treatment of choice for multi-segmental degenerative cervical radiculopathy and myelopathy refractory to medical management. Recently, the effect of a patient's insurance status as an independent variable of outcome after cervical fusion has become a topic of interest. The goal of this study was to investigate the effect of insurance status on episode-based outcomes for patients undergoing PCDF.

HYPOTHESIS OR RESEARCH QUESTION: Does insurance status impact episode-based outcomes for patients undergoing PCDF?

STUDY DESIGN/METHODS: All PCDF cases from 2008-2016 were obtained from a single institution. Patients undergoing additional anterior cervical fusion during the same hospital stay were excluded. 5 cohorts were created based on insurance status as delineated by Rosen et al.: commercial insurance, Medicare, Medicaid, managed care, and uninsured. Groups were compared using bivariate analysis. Multivariate logistic regression models were created including age, sex, ASA status, and Elixhauser score for the following outcomes: prolonged extubation, in-hospital complication, prolonged LOS, ICU stay, nonhome discharge, unplanned readmission and ER visit within 30- and 90-day intervals.

RESULTS: A total of 1,137 patients underwent PCDF during our study period. Distributions were as follows: commercial insurance (n=217), managed care organization (n=492), Medicaid (n=63), Medicare (n=360), and uninsured (n=5). Patients in the managed care and Medicare cohorts were significantly older than patients in the commercial plan cohort and markedly sicker. In multivariate analysis, patients with Medicaid insurance were 2.4 times as likely (95% CI: 1.1 – 5.7, p=0.009) to have a non-home discharge than patients in the commercial plan group. There were no other differences in in-hospital complications or post-discharge outcomes between insurance groups.

CONCLUSIONS/FUTURE PLANS: The findings in this study suggest that patients insured by Medicaid have a greater likelihood of nonhome discharge after PCDF than patients with private insurance, after adjusting for clinical characteristics. Future research should investigate the reasons behind differential rates of PAC discharge for Medicaid patients.

ABSTRACT 131

EVALUATING PATIENT'S KNOWLEDGE, ATTITUDES, AND BELIEFS TOWARDS PROVIDER RELATIONSHIPS AT THE KORLE-BU TEACHING HOSPITAL OUTPATIENT CLINIC.

Lara Sokoloff[1], Benjamin Kornbluth[1], Adwoa Agyei-Nkansah[2], Stella Safo[3]. [1]Medical Education, [2,3]Medicine. [1,3]Icahn School of Medicine at Mount Sinai, New York, New York, [2]School of Medicine and Dentistry, Ghana.

BACKGROUND/RATIONALE: Extensive research suggests that patient engagement leads to improvement in patient health outcomes. A reciprocal partnership between patient and provider is particularly important in ambulatory care, given the long-term nature of the relationship. Patient engagement and its impact on health, however, is often underappreciated in the global setting, where resources may be limited and primary care infrastructure spotty.

HYPOTHESIS OR RESEARCH QUESTION: We aim to better understand patients' relationship and interactions with their providers, and how patients understand this relationship to impact their clinical care.

STUDY DESIGN/METHODS: Forty qualitative interviews were conducted in the Outpatient Medical Clinic at Korle Bu Teaching Hospital in Accra, Ghana. Patients and caregivers were selected at random by clinic staff. After written informed consent was obtained, participants completed a 20-30 minute semi-structured qualitative interview. Collected studies were transcribed from audio recordings. Transcriptions were manually coded to generate a list of codes for themes. Further data analysis using Nvivo computer coding software was completed by the two primary researchers and one independent coder with no prior affiliation to the study.

RESULTS: Participants' attitudes about their providers varied: the majority felt listened to by their providers (N=30), were comfortable asking questions (N=33), understood the care plan (N=26), and were confident in their abilities to carry out the care plan (N=21). Participants reported a positive desire to continue to seek care at Korle Bu due to the availability of specialists (N=16) and the quality of the medical care (N=22). Many participants also advocated for care with the same provider (N=14).

CONCLUSIONS/FUTURE PLANS: Patients reported feeling satisfied with their care at Korle Bu. Moreover, high quality of medical care and availability of specialists were the highest reported reasons for utilizing Korle Bu services. In advocating for continuity of care, our findings suggest patients' interest in developing continuous relationships with their providers. This study is limited in that we only worked in one clinic at one hospital in Accra. However, given that Korle Bu is the major teaching hospital in Ghana, we believe these results to be significant.

ABSTRACT 132

ASSESSING THE EFFICACY AND EXPERIENCE OF IN-PERSON VERSUS TELEPHONIC PSYCHIATRITC EVALUATIONS OF ASYLUM SEEKERS IN THE U.S.

Lara Sokoloff[1], Mitchell Bayne[1], Rebecca Rinehart[1], Axel Epie[1], Leeza Hirt[1], Craig Katz[2].
[1]Medical Education, [2]Psychiatry. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Psychiatric evaluations of asylum seekers in the U.S. play an important role in asylum cases. Much like scars or bruises, mental health diagnoses can offer important evidence substantiating an asylum seeker's claims of torture or abuse. However, there are significant barriers to assessing asylum seekers' psychological trauma. Providers are often based at academic medical centers in metropolitan areas, inaccessible to asylum seekers living in remote areas or detention. For these individuals, telephonic psychiatric evaluations provide an opportunity to access important resources to bolster their case. These services, however, remain underutilized. In this retrospective study, we considered the efficacy of telephonic psychiatric evaluations and assessed their potential as a solution to meet the needs of hard-to-reach asylum seekers.

HYPOTHESIS OR RESEARCH QUESTION: Is there a significant difference in the quality of psychiatric evaluations when performed in person or telephonically?

STUDY DESIGN/METHODS: We developed a coding instrument based on the Istanbul Criteria, an international guideline for evaluating survivors of torture. We analyzed 10 telephonic affidavits and compared them to 20 in person affidavits. Each affidavit was individually assessed by three independent coders and assigned a score 0-30.

RESULTS: Items where telephonic affidavit scores were significantly lower included: Psychiatric History: Cognitive Complaints; Mental Status: appearance; Mental status: motor activity; Use of checklists. The remaining 26 criteria showed no significant difference between telephonic and in-person evaluations. Overall, the affidavits showed a small significant difference in overall score (19.7/30 telephonic versus 22.1/30 in-person; p= 0.0493).

CONCLUSIONS/FUTURE PLANS: This study identifies differences between in-person and telephonic evaluations attributable to interview elements that are challenging or impossible to perform telephonically, such as appearance and hygiene. Absence of these elements would not substantially alter an evaluation's credibility. As telephonic affidavits are rarely conducted, our study was limited in sample size and power. Evaluators, lawyers, and judges should consider these results in weighing the risk-benefits of a telephonic evaluation of an asylum seeker.

ABSTRACT 133

ANALYZING NEGATIVE SYMPTOMS AND LANGUAGE IN YOUTHS AT RISK FOR PSYCHOSIS USING AUTOMATED LANGUAGE ANALYSIS.

Emma Stanislawski[1], Guillermo Cecchi[2], Cheryl Corcoran[3]. [1]Medical Education, [3]Psychiatry. [1,3]Icahn School of Medicine at Mount Sinai, New York, NY, [2]IBM.

BACKGROUND/RATIONALE: Schizophrenia is characterized by positive and negative symptoms. Positive symptoms include hallucinations and delusions, while negative symptoms include motivational deficits and reduced emotional expression. Negative symptoms cause most of the morbidity in schizophrenia and appear prior to psychosis onset in youths at clinical high risk (CHR). Language disturbances, such as a reduction in complexity and aberrant pause behavior, may be cognitive markers for negative symptoms. Therefore, we aim to determine if negative symptoms in CHR youths are associated with reduced complexity and longer pauses.

HYPOTHESIS OR RESEARCH QUESTION: Negative symptoms in CHR youths will be associated with reduced syntactic complexity and longer average pauses in speech.

STUDY DESIGN/METHODS: Study design and setting: a Cross-sectional analysis of negative symptom severity and linguistic features extracted from clinical interviews with 33 CHR patients
Subjects: Patients at clinical risk for psychosis (N = 33; mean (SD) age 21 (4) years; 11 females; ethnically diverse)
Study outcomes: Pause variables (average pause length, proportion of pauses) and negative symptoms evaluated using the Structured Interview for Psychosis-Risk Syndromes

Language analysis: Speech was transcribed, de-identified, and subjected to preprocessing and linguistic analysis using the open-access Natural Language Toolkit, PRAAT, and the Penn Treebank

Data analysis: Spearman correlational analyses of pause variables and negative symptoms

RESULTS: Total negative symptom severity was correlated with longer average pause lengths ($r=.50$, $p<.005$), higher percentage of pauses ($r=.56$, $p<.005$), decreased maximum phrase length ($r=-.51$, $p<.005$), and decreased use of determiners ($r=-.38$, $p<.05$). Item analysis suggests decreased social motivation and emotional expressivity drove this analysis

CONCLUSIONS/FUTURE PLANS: The association of negative symptoms and language features observed in schizophrenia extends to youths at-risk for psychosis, indicating that language may be a biomarker for psychosis. Language is easy and inexpensive to assay, and may lead to earlier identification of schizophrenia.

ABSTRACT 134

PREVALENCE OF LOWER EXTREMITY PERIPHERAL ARTERIAL DISEASE AND SELF-REPORTED LEG SYMPTOMS IN RELATION TO CHRONIC KIDNEY DISEASE AND DIABETES MELLITUS AMONG UNITED STATES ADULTS.

Samantha Stein[1], Usman Baber[2]. [1]Medical Education, [2]Medicine.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Peripheral arterial disease (PAD) is characterized by atherosclerotic occlusive disease in the lower extremities and is present in approximately 5% of United States adults. Chronic kidney disease (CKD) and diabetes mellitus (DM) are also prevalent conditions that share risk factors with PAD. Nevertheless, the extent to which CKD and DM, alone or in combination, influence PAD prevalence and associated lower-extremity symptoms remains unknown.

HYPOTHESIS OR RESEARCH QUESTION: The objective of the present study is to assess the prevalence and independent associations of these conditions using data from a large, nationally representative sample of US adults.

STUDY DESIGN/METHODS: United States adults ≥ 40 years old from the 1999 to 2004 National Health and Nutrition Examination Survey (NHANES) were cross-classified into 4 groups according to presence or absence of CKD (eGFR < 60 or microalbuminuria (MA)) or DM (self-reported diagnosis by a physician or concurrent use of insulin or oral hypoglycemic). The primary outcome was PAD defined using ankle brachial index (ABI) < 0.9 on either side. Leg or calf discomfort was self-reported using a standardized questionnaire.

RESULTS: PAD prevalence among adults without DM or CKD (n=2,332,153) was 3.14% compared to 7.97%, 14.92%, and 17.52% among adults with DM alone (n=427,115), CKD alone (n=1,934,858), and both DM and CKD (n=603,783), respectively (Figure 1). After multivariable adjustment, adjusted odds ratio (aOR) for prevalent PAD associated with DM alone, CKD alone, and both DM and CKD compared to those without DM or CKD was 1.57 (95% CI 0.95 to 2.56), 1.96 (95% CI 1.44 to 2.66), and 2.58 (95% CI 1.44 - 4.63) respectively. After multivariate adjustment, the odds ratio for self-reported calf pain associated with DM alone, CKD alone, and both DM and CKD compared to those without DM or CKD was 2.00 (95% CI 1.44 to 2.75), 1.11 (95% CI 0.87 to 1.4), and 2.16 (95% CI 1.50 - 3.12) respectively.

CONCLUSIONS/FUTURE PLANS: PAD and leg symptoms vary substantially by the presence of CKD and DM. In the setting of CKD alone PAD is common while leg symptoms are infrequently reported whereas in patients with DM alone both PAD and leg symptoms are common. These findings suggest a more aggressive approach towards PAD screening may be needed in patients with non-diabetic CKD.

ABSTRACT 135

CAUSES OF HOSPITAL READMISSIONS AFTER AN EPILEPSY RELATED SURGICAL INTERVENTION IN THE NATIONWIDE READMISSIONS DATABASE.

Varsha Subramaniam[1], Churl-Su Kwon[2], Parul Agarwal[3], Mandip Dhamoon[2], Madhu Mazumdar[2], Nathalie Jetté[2]. [1]Medical Education, [2]Neurology, [3]Population Health Science and Policy.
[1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Hospital readmissions are associated with increased healthcare costs and worse patient outcomes. Understanding causes for readmission in persons with epilepsy post neurosurgery is important to implement future quality improvement efforts.

HYPOTHESIS OR RESEARCH QUESTION: Investigate the causes and rates of readmissions after cranial/epilepsy related neurosurgery.

STUDY DESIGN/METHODS: A retrospective cohort study was performed using the 2014 National Readmission Database, a population-based dataset capturing ~35 million of hospitalizations in the USA. The primary outcome of interest was 30-day readmission following neurosurgical intervention in epilepsy. Validated ICD-9-CM diagnostic case definitions were used to identify people with epilepsy. ICD-9-procedure codes were used to identify surgical procedures: resective surgery, responsive neurostimulation (RNS) or deep brain stimulation (DBS), vagus nerve stimulation (VNS), intracranial EEG (iEEG) and radiosurgery and at index admission. Descriptive statistics were used to determine weighted frequencies and cause of 30-day readmission.

RESULTS: Of the 2284 patients with epilepsy who underwent surgery, 251 (10.8%) were readmitted within 30 days post-surgery. Readmission proportions were as follows: resective surgery 11.2%, RNS/DBS 13.6%, VNS 6.4%, iEEG 11.2%, radiosurgery 10.2%. The top two reasons for readmission were as follows: resective surgery: 1) epilepsy/convulsions, 2) complications of surgical procedures; RNS/DBS 1) epilepsy/convulsions, 2) complications of device; implant or graft; VNS: 1) fluid and electrolyte disorders, 2) residual codes; unclassified; iEEG: 1) epilepsy/convulsions, 2) complications of surgical procedures or medical care; radiosurgery: 1) epilepsy/convulsions, 2) cancer of brain and nervous system.

CONCLUSIONS/FUTURE PLANS: Patients undergoing epilepsy related neurosurgery have a 10.8% frequency of readmission within 30-days, which is lower than the reported all-cause readmission rate in the overall NRD cohort (14%). The most common primary reasons for readmission overall were epilepsy/convulsions and complications of surgical procedures or medical care. Further emphasis on patient safety targeting these modifiable factors and optimization of discharge planning would likely reduce the occurrence of readmissions.

ABSTRACT 136

EVALUATING INFLAMMATORY CYTOKINE PROFILES OF MILITARY VETERANS WITH PTSD, MTBI, AND THEIR INTERACTION.

Ray Tang[1], Carly Walter[2], Janine Flory[3]. [1]Medical Education, [2,3]Psychiatry.
[1,3]Icahn School of Medicine at Mount Sinai, New York, New York, [2]James J. Peters VA Medical Center.

BACKGROUND/RATIONALE: The conflicts in Iraq and Afghanistan have resulted in a large increase of patients who suffer from PTSD, mTBI, or both. PTSD and mTBI have significant overlap in symptoms and may be difficult to distinguish clinically. The two conditions require different treatments and some mTBI medications may exacerbate PTSD symptoms. Recent studies have shown that there may be differential expression of cytokines in patients with PTSD and mTBI, particularly IL-6, TNFa, and IL-1B.

HYPOTHESIS OR RESEARCH QUESTION: Are there distinct profiles of inflammatory cytokine markers in military veterans who have PTSD, mTBI, or both?

STUDY DESIGN/METHODS: The study included military veterans between the ages of 20-45 who experienced combat in Iraq, Afghanistan, or both. Study participants were separated into four groups based on whether they have no PTSD, PTSD only, mTBI only, or both PTSD and mTBI. Veterans with major psychiatric disorders other than PTSD/current depression or medical conditions likely to directly influence neuroendocrine variables were excluded. Blood draws were taken at 8am after an overnight fast. Blood samples were analyzed for cytokine profiles using the Milliplex MAP immunoassay. 2-way ANOVA was employed to determine significant mean differences in levels of IL-1B, IL-6, and TNFa.

RESULTS: 73 military veterans who met the inclusion criteria were recruited. 2-way ANOVA found no significant mean differences in IL-1B (PTSD: $F_{(1,61)} = 0.012$, $P = 0.915$; mTBI: $F_{(1,61)} = 0.470$, $P = 0.496$; PTSD*mTBI: $F_{(1,61)} = 0.727$, $P = 0.727$), IL-6 (PTSD: $F_{(1,61)} = 0.276$, $P = 0.601$; mTBI: $F_{(1,61)} = 2.992$, $P = 0.089$; PTSD*mTBI: $F_{(1,61)} = 1.281$, $P = 0.262$), and TNFa (PTSD: $F_{(1,61)} = 0.734$, $P = 0.395$; mTBI: $F_{(1,61)} = 0.145$, $P = 0.704$; PTSD*mTBI: $F_{(1,61)} = 0.939$, $P = 0.727$). Smoking status (current smoker or not) was considered as a covariate in the analyses. Of note, results were not appreciably different when 11 participants with past diagnosis of PTSD were excluded, suggesting previous PTSD status had no significant effect on cytokine differences.

CONCLUSIONS/FUTURE PLANS: This study found that PTSD, mTBI and their interaction had no significant effect on levels of TNFa, IL-1B, IL-6.

ABSTRACT 137

ASSESSING BARRIERS TO HEALTHCARE IN SOUTH ASIAN IMMIGRANT POPULATION AT HIGH RISK FOR MYOCARDIAL INFARCTION.

Sahityasri Thapi[1], Joseph Masci[2]. [1]Medical Education, [2]Medicine. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Elmhurst Hospital.

BACKGROUND/RATIONALE: The South Asian population has been identified to have increased risk for premature coronary heart disease as a result of dyslipidemia and life style. It has been observed that a cohort of patients that present with unstable angina or myocardial infarction to the Emergency Department at Elmhurst Hospital do not return for follow up health care. This study will focus on assessing barriers to care in the South Asian immigrant population in the context of premature acute myocardial infarction. A secondary goal of the interviews will be to better understand the life styles of these immigrants both from a cultural and socioeconomic stand point. This will help better understand trends that increase the South Asian population's risk of coronary heart disease. It is hypothesized that these patients lack adequate health insurance in order to return to Elmhurst Hospital for care.

HYPOTHESIS OR RESEARCH QUESTION: What factors prevent South Asian patients from returning to Elmhurst Hospital following initial treatment for ACS?

STUDY DESIGN/METHODS: Patients of South Asian origin who were treated at the EHC Cath Lab and failed to return for follow up were identified through medical records. These patients will be interviewed over the phone regarding the circumstances that prevented their follow up care at EHC.

RESULTS: At present interview and enrollment processes have indicated that a majority of patients have either returned to their country of origin or have been following up in private clinics. This poses the question of why patients have been reluctant to return to Elmhurst for follow up care. Interview procedures are being modified to be able to inquire what factors are encouraging patients to choose private follow ups. In addition, the private clinics will be interviewed in order to assess how fit these clinics are for treating such patients. The study is evolving to learn if these patients require specialty care, and what barriers are preventing them from accessing it.

CONCLUSIONS/FUTURE PLANS: The study has identified that most patients who have fallen out of care are either "travelling patients" who come to EHC during a visit to the states or are following up in private clinics. IRB modification will allow us to include questions about the private clinics and how suited they are for specialty care.

ABSTRACT 138

DISEASE SPECIFIC SURVIVAL OF PATIENTS WITH GASTROINTESTINAL NEUROENDOCRINE TUMORS AND DIABETES MELLITUS.

Sahityasri Thapi[1], Kiwoon Baeg[2], Emily Gallagher[2], Michelle Kim[2]. [1]Medical Education, [2]Medicine.
[1,2]Icahn School of Medicine at Mount Sinai, New York, NY.

BACKGROUND/RATIONALE: Diabetes (DM) is associated with an increased risk of developing a number of cancers, and an increase in cancer mortality. Gastrointestinal neuroendocrine tumors (GINETs) arise from cells of the neuroendocrine system and can cause hormonal syndromes. The influence of DM on disease-specific survival in individuals with GINETs is poorly described.

HYPOTHESIS OR RESEARCH QUESTION: To compare the disease-specific survival of patients with GINETs who did not have DM with those who had pre-existing DM before GINET diagnosis.

STUDY DESIGN/METHODS: IRB approval was obtained and data from the SEER-Medicare claims were used. We included patients diagnosed between 1995-2010 who had no HMO coverage, participated in Medicare Part B, were older than 65 at diagnosis, had full tumor grade information, and had no secondary cancer. We divided the cohort into 2 groups: one with patients with a GINET without DM, and the other with patients with a documented diagnosis of DM 1-12 months prior to GINET diagnosis. We compared survival by Kaplan-Meier curves and Cox regression analysis.

RESULTS: A cohort of well-characterized 2,371 GI-NET patients with accurate stage, grade, and comorbidities were identified. Of these patients 1383 (70.2%) had no diagnosis of DM (Group 1), and 586 (29.8%) had a diagnosis of DM documented between 1 and 12 months prior to the diagnosis of the GINET (Group 2). The stage distribution for Stage I, II, III, and IV in Group 1 were: 30.7%, 11.1%, 21.8%, 36.4%; Group 2: 37.5%, 7.3%, 24.4%, 30.7%. Group 2 had higher percentage of stomach (14.68%), duodenal (10.92%) and pancreatic (20.99%) GINETs compared to Group 1 (9.7%, 6.4%, 16.9%). Cox analysis for disease-specific survival adjusted for age, race, comorbidity score, tumor stage, site, grade, and treatment, found no significant difference in disease specific survival between those without, and those with pre-existing DM.

CONCLUSIONS/FUTURE PLANS: In this SEER-Medicare database study, a quarter of patients with GINETs had pre-existing DM. Site of GINETs were different between the groups, with more pancreatic, gastric and duodenal tumors in the group with pre-existing DM. Having pre-existing DM did not affect disease-specific mortality when compared with those without DM.

ABSTRACT 139

ASSESSING THE CHALLENGES AND OPPORTUNITIES IN ESTABLISHING A PRIMARY CARE LEARNING NETWORK AS THE FIRST STEP TOWARDS A TRUE SERVICE LINE.

Daniel Thomas[1], Natalie Privett[2]. [1]Medical Education, [2]Medicine.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Mount Sinai Health System (MSHS), a large urban academic medical healthcare system located in New York City, is engaged in transitioning its loose network of directly owned and voluntarily affiliated primary care practices into a true systems-integrated primary care service that provides standardized, coordinated care that matches and pioneers industry best practices. Learning networks (LNs) can serve as fundamental infrastructure in this journey by providing a platform for communication, encouraging innovation from frontline providers, and diffusing improvements system wide.

HYPOTHESIS OR RESEARCH QUESTION: The purpose of this project was to perform necessary foundational research to design and implement a primary care LN.

STUDY DESIGN/METHODS: Every non-clinical practice administrator and medical director at each of MSHS' 49 practices was sent a novel mixed qualitative/quantitative 20-minute survey tool with 30 questions spread over 5 modules designed to assess self-perception of performance, integration with MSHS, generation and communication of ideas, barriers and enablers of innovation, and interest in potential LN components.

RESULTS: This user-needs research (n=30) revealed that while 80% of respondents tend to have high perceptions of their own performance, they are largely interested in further integration with MSHS. Only 18% of respondents believe that their practice frequently generates new ideas for practice improvement and most have limited interaction with resources and peers in order to identify and implement best practices. There is a clear expressed interest in many of the common components of LNs in order to better do so. Common enablers and barriers on a practice and system level emerged from analyzing respondents' qualitative feedback.

CONCLUSIONS/FUTURE PLANS: Complemented by a literature review of best practices for primary care service lines and LNs, this research will help MSHS generate a business case for network establishment, set institutional priorities for primary care, and build a LN prototype that allows MSHS to better measure outcomes and standardize primary care operations at scale.

ABSTRACT 140

LOW BASELINE MENTAL HEALTH SCORES PREDISPOSE PATIENTS TO WORSE OUTCOMES FOLLOWING PATELLOFEMORAL ARTHROPLASTY.

Jared Tishelman[1], Cynthia Kahlenberg[2], Jordan Gruskay[2], Benedict Nwachukwa[2], Sabrina Strickland[2].
[1]Medical Education, [2]Orthopaedics. [1]Icahn School of Medicine at Mount Sinai, New York, New York,
[2]Hospital for Special Surgery, New York, NY.

BACKGROUND/RATIONALE: Patellofemoral arthroplasty (PFA) has been shown to produce superior outcomes to total knee arthroplasty (TKA) in patients with isolated patellofemoral compartment osteoarthritis. Preoperative mental health is well-established as a predictor of poor outcomes in TKA. Currently there is a lack of evidence for the effect of psychosocial factors prior to Patellofemoral Arthroplasty (PFA).

HYPOTHESIS OR RESEARCH QUESTION: Poor preoperative mental health scores predispose patients to worse postoperative outcomes following Patellofemoral Arthroplasty (PFA).

STUDY DESIGN/METHODS: A retrospective review was performed of consecutive patients undergoing patellofemoral arthroplasty at a single institution in a major urban center between 2012 and 2018. Patients were dichotomized into Low and High Mental Health (MH) groups based on their preoperative Veterans Rand 12 (VR-12) Mental Component Summary (MCS) score. Low MH patients scored below the 40th percentile and High MH patients scored above the 60th percentile for VR-12 MCS. Patient reported outcomes measures included KOOS QoL & PS, Kujala PF score, IKDC, VR-12 MCS & PCS.

RESULTS: A total of 114 patients were included for analysis, with 146 knees included. 69 had complete preoperative PROMs and 21 had complete postoperative PROMs. For the whole cohort, the average age at surgery was 53.45, 82.5% of patients were female, and the average BMI was 27.91. Patients in the low MH group had a higher BMI than those in the high MH cohort ($p=0.040$). At baseline, patients with low MH were found to have lower KOOS-QoL, KOOS-PS, Kujala, IKDC, and VR-12 PCS scores (all $p<0.05$). Low MH patients have worse post-operative functional outcomes and quality of life scores than high MH patients (mean follow-up: 1.52yr, all $p<0.045$) Low MH patients were also found to have lower knee-specific functional improvement from pre-op to post-op (IKDC and Kujala, $p<0.05$).

CONCLUSIONS/FUTURE PLANS: Patients with lower preoperative VR-12 MCS scores have lower knee function scores and physical health scores at baseline and post-op, with less knee-specific functional improvement from pre to post-op. Patients with low mental health scores at baseline improve in mental health with concomitant improvement in physical health.

ABSTRACT 141

FECAL MICROBIOTA TRANSPLANT DECREASES MORTALITY IN PATIENTS WITH SEVERE AND FULMINANT CLOSTRIDIUM DIFFICILE INFECTION.

Emily Tixier[1], Elijah Verheyen[2], Ryan Ungaro[3], Ari Grinspan[3]. [1]Medical Education, [2,3]Medicine.
[1,2,3]Icahn School of Medicine at Mount Sinai, New York, NY.

BACKGROUND/RATIONALE: Severe/fulminant Clostridium difficile infection (CDI) carries high morbidity and mortality. Fecal microbiota transplant (FMT) has shown to be effective for recurrent CDI, but there is little data on its use in severe/fulminant CDI.

HYPOTHESIS OR RESEARCH QUESTION: To assess outcomes of patients with severe/fulminant CDI who receive FMT versus antibiotics alone.

STUDY DESIGN/METHODS: We performed a retrospective matched cohort study of patients with severe/fulminant CDI who received antibiotics and FMT or antibiotics alone (standard of care, SOC) in a single tertiary care center between December 2013 and August 2018. FMT patients were matched 1:2 to SOC patients, selected from a group of CDI patients requiring care in ICU or step-down unit during their admission. Matching was based on age, sex, history of CDI, and CDI severity per 2018 IDSA/SHEA guidelines. FMT was given by colonoscopy or flexible sigmoidoscopy. Primary outcome was death during admission. Secondary outcomes were colectomy, recurrent CDI, and readmission. Student t-test, ^{2}, and Fisher's exact tests were used to compare characteristics between groups. Logistic regression was performed with odds ratios and 95% confidence intervals. Multivariable analysis adjusted for variables significantly different between FMT and SOC groups.

RESULTS: 26 FMT patients were matched with 52 controls who received SOC. The FMT and SOC groups were similar with the exception of WBC count and Hgb. Mean # of FMTs was 1.6. 3 patients (15%) in FMT group compared to 21 patients (40%) in SOC group died (p = 0.03). In univariable logistic regression, patients who received FMT had a 73% decrease in mortality versus SOC (OR 0.27, 95%-CI 0.08-0.89, p=0.032). After adjusting for WBC and Hgb, FMT was still significantly associated with lower risk of death (adjusted OR 0.23, 95%-CI 0.06-0.91, p=0.04). When analyses were restricted to patients who required intensive care, there was still a significant mortality benefit with FMT compared to SOC (18.8% vs 50%, p=0.04). There were no significant differences in secondary outcomes.

CONCLUSIONS/FUTURE PLANS: In patients with severe/fulminant CDI, FMT and antibiotics reduced mortality by 73% versus antibiotics alone. With an NNT of 4, FMT should be considered in all patients presenting with severe/fulminant CDI.

ABSTRACT 142

POSTERIOR LUMBAR FUSION AND EPISODE-BASED OUTCOMES: A 10-YEAR INSTITUTIONAL RETROSPECTIVE ANALYSIS.

Nir Tomer[1], Sean Neifert[1], Daniel Snyder[1], Jared Tishelman[1], Samuel DeMaria[2], Jonathan Gal[2], John Caridi[3]. [1]Medical Education, [2]Anesthesiology, [3]Neurosurgery. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Posterior lumbar fusion (PLF) is a common procedure performed by orthopedic and neurologic surgeons for a variety of spinal pathologies. Time under anesthesia can be used as a surrogate to determine length and difficulty of surgery. This analysis will look to see if time under anesthesia could be a predictor for poor outcomes. HYPOTHESIS OR RESEARCH QUESTION: Time under anesthesia influences episode-based outcomes such as extubation time, ICU stay, prolonged LOS, in-hospital complications, and readmissions.

STUDY DESIGN/METHODS: A retrospective study was performed which included all patients undergoing PLF by a spine surgeon at a single institution between January 1, 2006 and November 30, 2016. PLF cases were queried from a single institution based on the CPT codes 22630, 22633, and 22612. Cases were stratified based on time under anesthesia and separated into quintiles. Chi-square test and multivariable logistic regression were used to compare the shortest anesthesia quintile to all other quintiles for a variety of outcomes. Data were controlled for age, sex, and ASA class. A Bonferroni correction was applied, such that alpha=0.0125 and all confidence intervals were 98.75%.

RESULTS: 3273 PLF cases were obtained for analysis. Prolonged extubation was only affected by anesthesia time for the top quintile (OR=16.9, CI:6.7-42.7, p<.0001). The 4th (OR=12.8, CI:3.5-47.2, p<.0001) and 5th (OR=59.0, CI:16.5-210.7, p<.0001) quintiles were predictors of required ICU stay. The 2nd (OR=2.1, CI:1.4-3.3, p<.0001), 3rd (OR=3.0, CI:2.0-4.5, p<.0001), 4th (OR=4.6, CI:3.0-6.9, p<.0001), and 5th (OR=10.9, CI:7.3-16.4, p<.0001) quintiles were predictors of in-hospital complications. The 2nd (OR=2.3, CI:1.5-3.6, p<.0001), 3rd (OR=3.1, CI:2.0-4.7, p<.0001), 4th(OR=4.9, CI:3.2-7.4, p<.0001), and 5th (OR=13.0, CI:8.6-19.6, p<.0001) quintiles were predictors of non-home discharge. The 2nd (OR=2.1, CI:1.3-3.4, p<.0001), 3rd (OR=2.2, CI:1.4-3.5, p<.0001), 4th (OR=3.4, CI:2.2-5.4, p<.0001) and 5th (OR=7.5, CI:4.8-11.6, p<.0001) quintiles were predictors of prolonged LOS.

CONCLUSIONS/FUTURE PLANS: Results indicate that time under anesthesia contributes to variation in hospital-stay and discharge related endpoints. This warrants further investigation into anesthesia time as a predictor for post-operative outcomes.

ABSTRACT 143

ASSESSMENT OF CARE TRANSITIONS AND CAREGIVER BURDEN IN ANTI-N-METHYL-D-ASPARTATE RECEPTOR ENCEPHALITIS.

Amanda Tomlinson[1], Raia Blum[1], Sylviah Nymau[2], Churl-Su Kwon[2], Nathalie Jetté[2], Anusha Yeshokumar[2].
[1]Medical Education, [2]Neurology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: This study aims to assess care transitions and caregiver burden among caregivers of individuals with anti-N-methyl-D-aspartate receptor encephalitis (anti-NMDARE).

HYPOTHESIS OR RESEARCH QUESTION: This study will investigate factors associated with care transitions and caregiver burden as well as examine the relationship between transitions of care and caregiver burden.

STUDY DESIGN/METHODS: Self-identifying caregivers of individuals with encephalitis were recruited via a link provided on advocacy organization websites to complete the study surveys. The surveys collected demographic information as well as responses to the Care Transition Measure 15 (CTM-15) and the Zarit Burden Interview (ZBI). Results from 76 eligible caregivers of patients with anti-NMDARE were included in analyses.

RESULTS: Mean CTM-15 score was 51 (0-100 scale; standard deviation: 25). The three items where caregivers expressed most dissatisfaction (response of "disagree" or "strongly disagree") were: "when the patient left the hospital, I had a readable and easily understood written plan that described how all of their healthcare needs were going to be met" (73%), "when the patient left the hospital, I was confident that I know how to manage their health" (62%), and "when the patient left the hospital, I clearly understood how to manage their health" (59%). Mean ZBI score was 44 (0-88 scale; standard deviation:13), which falls into the moderate to severe burden range. ZBI scores were assessed by exploratory factor analysis to find underlying constructs among caregivers of individuals with anti-NMDARE, revealing four factors. Factor 1 (accounting for 51% of ZBI score variance) represented the impact of caring on caregivers' personal lives and was selected for further analysis because of its modifiable and intervenable nature. Factor 1 scores correlated with lower CTM-15 scores ($p<0.003$) and not driving after anti-NMDARE ($p<0.002$).

CONCLUSIONS/FUTURE PLANS: Some stressors related to acute care management, such as dissatisfaction with understanding post-discharge plans and disease/health management, are associated with increased caregiver burden. Attention to these aspects of care transition and caregiver burden can inform future interventions, which may lead to improved outcomes in individuals with anti-NMDARE and their caregivers.

ABSTRACT 144

CHARACTERIZING ASTIGMATISM IN THE US: A POPULATION-BASED NHANES STUDY.

Girish Valluru[1], Janek Klawe[2], Sumayya Ahmad[2]. [1]Medical Education, [2]Ophthalmology.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Astigmatism is a common condition of asymmetric corneal curvature. It is classified by the axis of steepest corneal curvature as either against the rule (ATR), with the rule (WTR), or oblique (OBL). It is well known that with age individuals progress from WTR to ATR. When the cornea becomes abnormally steep and thin, it results in a disease called keratoconus. Although small studies with simple sampling methods have characterized the change in astigmatism with age as well as keratoconus, it must be assessed on a population wide basis. The NHANES (National Health and Nutrition Examination Survey) dataset allows a larger study with a complex, multistage, probability sampling design that reflects the composition of the US national civilian population.

HYPOTHESIS OR RESEARCH QUESTION: To identify how age influences change in axis of astigmatism and characterize systemic associations with keratoconus.

STUDY DESIGN/METHODS: A retrospective cohort study of NHANES visual exam participants from 1999–2008 (n=30,331 || representing 208,366,782 in the US civilian population). Participants with astigmatic cylinder >0.5 D (n=19,269 || 95,766,957) were determined to be WTR, ATR, or OBL. Those with corneal curvature >48.0 D were assigned into a keratoconus group (n=192) compared to the <48.0 D population (n=32,468) across demographic factors with design-adjusted Rao-Scott Pearson-type chi-square, Wald tests, and multivariate logistic regression.

RESULTS: There is a shift in astigmatism with age from 10-14 yrs. (ATR 35%, OBL 9%, WTR 56%) to 85-89 yrs. (81%, 10%, 8%). Chi-squared analysis confirms an association of age with rule of astigmatism ($p < 2.2e-16$). Multivariate logistic regression for age, gender, race, education, and poverty confirmed females had increased odds of keratoconus (adjusted OR, 2.53; 95% CI, 1.64-3.93; P = 0.000103). There was no association between keratoconus and age, race, educational status, or income relative to poverty line (P > 0.05 in all comparisons).

CONCLUSIONS/FUTURE PLANS: Large-scale population-based studies have not been conducted on astigmatism progression or keratoconus. This study provides important information on these conditions that will help inform ophthalmologists of changes in astigmatism with age as well as help characterize keratoconus in the U.S. population.

ABSTRACT 145

AN INITIATIVE TO IDENTIFY AND TREAT HOSPITALIZED PATIENTS WITH OPIOID USE DISORDER.

Dillan Villavisanis[1], Trevor Lee[2], Reema Navalurkar[1], Benjamin Shuham[1], Matthew Fine[1], Leeza Hirt[1], Linda Wang[2], Michael Herscher[2]. [1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: An estimated 115 people die each day from opioid use disorder (OUD) in the US. National organizations have recommended the development of hospital protocols to engage patients with OUD in opioid agonist treatment (OAT). Buprenorphine is an opioid agonist that has demonstrated associations with reductions in substance use and mortality. Most hospitals lack an addiction consult service, and hospitalized patients with OUD may go without OAT prior to discharge.

HYPOTHESIS OR RESEARCH QUESTION: In absence of a formalized addiction consult service, medical students, residents, and attendings collaborated to identify hospitalized patients with OUD, treat eligible patients with buprenorphine, and link these patients with longitudinal outpatient care.

STUDY DESIGN/METHODS: We identified hospitalized patients at the Mount Sinai Hospital through 1) an automatically generated, daily electronic report of new admissions to the ED with relation to OUD and 2) direct referral from clinicians. Patients determined eligible were evaluated in-person for buprenorphine eligibility, and appropriate patients were started on buprenorphine treatment inpatient. Either a hospitalist or a doctor from an outpatient alcohol and OUD treatment center, REACH (Respectful and Equitable Access to Comprehensive Healthcare) met with patients prior to discharge and established an appointment within one week.

RESULTS: We screened a total of 1158 encounters from June 30, 2018 to November 28, 2018. 1139 (98.4%) patients were identified via the EPIC report (of which 633 (55.6%) were discharged prior to screening) and 19 (1.6%) were referred directly by clinicians. A total of 525 patients (46.0%) were screened, and of these, 39 (7.4%) were evaluated through an in-person consult, 9 (23.1%) of whom were started on buprenorphine treatment in the hospital. Of these, 7 attended an outpatient visit, and 6, 4, and 4 patients were engaged in outpatient treatment at 30, 60, and 90 days, respectively.

CONCLUSIONS/FUTURE PLANS: In absence of a formalized addiction consult service, our team identified patients with OUD, started them on treatment inpatient, and linked them with outpatient care. Our data and findings demonstrate the potential to implement this model at other institutions.

ABSTRACT 146

RACIAL/ETHNIC DISPARITIES IN SEVERE MATERNAL MORBIDITY AND VERY LOW BIRTH WEIGHT BABIES: A QUALITATIVE STUDY ON WOMEN'S EXPERIENCES OF PERIPARTUM CARE.

Eileen Wang[1], Shoshanna Sofaer[2], Amy Balbierz[3], Elizabeth Howell[3]. [1]Medical Education, [2,3]Population Health Science and Policy. [1,3]Icahn School of Medicine at Mount Sinai, New York, New York, [2]American Institutes for Research, New York, NY.

BACKGROUND/RATIONALE: In NYC, there is a 3- to 7-fold variation in risk-standardized severe maternal morbidity (SMM) and very-low-birth-weight (VLBW) births amongst hospitals. Black and Hispanic women are more likely to deliver at higher morbidity hospitals for both outcomes; however, it is unknown why this is the case.

HYPOTHESIS OR RESEARCH QUESTION: We used qualitative methods to explore why disparities might differby site of care, including how choice of hospital and experiences of care differed among mothers from various racial/ethnic groups.

STUDY DESIGN/METHODS: We conducted 3 racially-concordant (Black, Hispanic, and White/Other) focus groups with SMM mothers (n=20) and 3 with VLBW mothers (n=20). Discussions were audio-taped and transcribed, and transcripts coded. Common and differing themes were identified across racial/ethnic groups using a Grounded Theory approach.

RESULTS: All mothers described their childbirth experiences as traumatic; however, the VLBW groups focused more on the NICU experience whereas the SMM groups focused on their acute morbidity event. Poor communication, lack of information, clinician resistance to questions, not being heard and lack of humanized care were common themes associated with poor experiences and outcomes. Mothers felt that they had to advocate for themselves to get the care they needed. Black and Hispanic mothers in particular experienced lack of communication, education and continuity amongst providers during prenatal care. Across all racial/ethnic groups, mothers chose hospitals based on recommendations from family or friends, previous hospital experiences, convenience, location and reputation; however, one key difference was that mothers in the White/Other group, often privately insured, chose their physician in conjunction with the hospital, while those in the Black and Hispanic groups, often insured with Medicaid, were limited in physician, and therefore hospital, choice.

CONCLUSIONS/FUTURE PLANS: This study highlights the importance of communication and individualized attention as indicators of quality of maternal care. Race/ethnicity and insurance also contribute to differential delivery of care. Hospitals and clinicians should be cognizant of these issues and the role that unconscious bias plays in contributing to variation in care by race and socioeconomic status.

ABSTRACT 147

RATES OF PREECLAMPSIA IN DICHORIONIC DIAMNIOTIC TWIN GESTATIONS UNDERGOING CHORIONIC VILLUS SAMPLING.

Leslie Warren[1], Joanne Stone[2], Eric Bergh[3], Luciana Vieira[2]. [1]Medical Education, [2,3]Obstetrics, Gynecology, and Reproductive Science. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]McGovern Medical School, The University of Texas Health Science Center at Houston, Houston, Texas.

BACKGROUND/RATIONALE: Chorionic villus sampling (CVS) is utilized during the first and early second trimesters to identify fetal genetic abnormalities. Studies suggest a possible association between CVS and preeclampsia in singleton pregnancies due to trophoblastic villi damage. CVS is considered to be a safe diagnostic procedure in twin pregnancies. It is also known that twin pregnancies are at higher risk for preeclampsia compared to singleton pregnancies. However, limited data exists regarding the association between CVS and preeclampsia in twin pregnancies.

HYPOTHESIS OR RESEARCH QUESTION: Objective: To compare rates of preeclampsia in dichorionic diamniotic (DCDA) twin gestations undergoing chorionic villus sampling to DCDA twin gestations undergoing routine first trimester ultrasound.

STUDY DESIGN/METHODS: An existing ultrasound database was used to identify DCDA twin gestations with first trimester ultrasounds between January 2010 - September 2016. Data were collected via chart review and patient interview. Patients undergoing CVS were compared to patients undergoing routine first trimester screening. Differences in pregnancy outcomes were assessed using Kruskal-Wallis tests for continuous variables, Fisher's exact tests for categorical variables, and multivariable logistic regression with adjustment for maternal age, nulliparity, and prior preterm birth.

RESULTS: There were 245 patients in the CVS group and 249 patients in the no CVS group. Preeclampsia outcomes were available for 60.4% (148/245) of CVS cases and 96% (239/249) of no CVS cases. Results showed no significant difference in rate of total preeclampsia in the CVS versus no CVS group (14.2% vs 16.3%, p = 0.676). There was no significant difference in rates of mild preeclampsia (6.8% vs 6.3%, p = 1) or severe preeclampsia (7.4% vs 10.0%, p = 0.492) between CVS and no CVS groups. After adjusting for age, nulliparity, and prior preterm birth, the difference in rates of preeclampsia remained insignificant.

CONCLUSIONS/FUTURE PLANS: Undergoing chorionic villus sampling during early pregnancy in dichorionic diamniotic twin gestations is not associated with increased rates of preeclampsia.

ABSTRACT 148

HYPOSPADIAS AND RITUAL CIRCUMCISION.

Mark Weingarten[1], Jeffrey Stock[2]. [1]Medical Education, [2]Urology.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Hypospadias is a relatively common condition, occurring in approximately one in every 100 live male births. Surgical repair is generally performed between 6 and 18 months of age. The need for surgical intervention raises questions as to the proper timing of newborn circumcision, a procedure performed on the majority of American males. Current medical dogma (including Campbell's Urology) mandates delaying circumcision until after hypospadias repair. Recent studies have questioned the necessity of this delay. Some even indicate greater positive outcomes of circumcision before hypospadias repair.

HYPOTHESIS OR RESEARCH QUESTION: Ritual circumcision (prior to repair) does not negatively impact the outcome of hypospadias patients.

STUDY DESIGN/METHODS: We conducted a retrospective chart review of the past four years of neonates who had hypospadias as well as fistula repair performed by Dr. Jeffrey Stock at the Mount Sinai Hospital. The charts indicated whether the patients had previously had ritual circumcisions at eight days following birth. Urethro-cutaneous fistula repairs in patients who had the initial hypospadias repair performed by a surgeon other than Dr. Stock were excluded.

RESULTS: A total of 436 hypospadias repairs using the TIP (Snodgrass) method were identified within this time period. Of these cases, 117 had a ritual circumcision performed at eight days following birth. The 319 cases that lacked the prior circumcision served as the control group. There were no cases of meatal stenosis or glandular dehiscence in either group. Among the experimental (circumcised at 8 days) group, there were 2 cases of fistulas following hypospadias repair. Among the control group, there were 6 cases of fistulas following repair. These results parallel the fistula rate in other studies.

CONCLUSIONS/FUTURE PLANS: The rate of complications following hypospadias repair is not influenced by the performance of an earlier circumcision at eight days following birth. Current medical dogma to the contrary merits further discussion.

ABSTRACT 149

A GENOTYPE-FIRST APPROACH TO EXPLORING MENDELIAN CARDIOVASCULAR TRAITS.

Brittany Wenger[1], Amy Kontorovich[2], Bruce Gelb[3]. [1]Medical Education, [2]Medicine, [3]Genetics and Genomic Sciences. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Monogenic cardiovascular diseases (CVDs) have traditionally been studied by ascertaining individuals phenotypically and then discovering causal genetic variation.

HYPOTHESIS OR RESEARCH QUESTION: Here, we explored two fully penetrant autosomal dominant syndromes, Noonan syndrome (NS) and Marfan syndrome (MFS), using a genotype-first approach.

STUDY DESIGN/METHODS: We leveraged Mount Sinai's BioMe, which links >33,000 patients' exome sequences with electronic health records. We identified patients with known NS-causing PTPN11 alleles. Since MFS-causing FBN1 variation is more variable, we predicted rare deleterious variants (RDVs) using Clinvar, population variant frequency, residue type, and meta_SVM. Charts were reviewed for NS or MFS diagnoses and for typical features of disease. ^{2} testing tested whether observed feature rates differed from published.

RESULTS: Fourteen subjects harbored pathogenic PTPN11 variation, but only two were diagnosed with NS. Observed frequencies of Noonan-associated features [short stature (14.29%, p=0.0022) and congenital heart disease (28.57%, p=0.0034)] were significantly lower in BioMe participants compared to expected. Frequencies of other NS-associated phenotypes [skeletal abnormalities (28.57%, p= 1.00), cognitive disability (21.43%, p= 0.40), bleeding (64.29%, p=0.70), and NS-associated EKG abnormality (54.54%, p=0.97)] were consistent with the literature. Four and two participants had autoimmune disorders and epilepsy, respectively. Among subjects with FBN1 RDVs, 13/49 (26.53%) had either a diagnosis or features suggestive of MFS, lower than expected given the convention of full penetrance (p=0.0066). Notably, of those with available echocardiographic data, only 6/18 (33.33%) had a thoracic aortic Z score>2; dilatation is cited at 80% in MFS.

CONCLUSIONS/FUTURE PLANS: A minority of BioMe participants harboring relevant pathogenic variants were diagnosed with NS or MFS. All PTPN11 variants were definitively pathogenic, suggesting that absence of seminal features may have hindered diagnosis. Even accounting for possible false positive FBN1 variation, our findings suggest that MFS may not be fully penetrant, contrary to current belief. Examination of subjects harboring these variants may discriminate between missed diagnoses and incomplete penetrance.

ABSTRACT 150

EXPLORING PATIENT PERSPECTIVES ON THE ACCEPTABILITY OF MEDICATION ADHERENCE SUPPORT SERVICES AT A LARGE PRIVATE HOSPITAL IN KAMPALA, UGANDA.

Rachel Wilkinson[1], Evan Garden[1], Rose Nanyonga Clarke[2], Allison Squires[3], Jeremy Schwartz[4], David Heller[5].
[1]Medical Education, [2,3,4,5]Medicine. [1,5]Icahn School of Medicine at Mount Sinai, New York, New York,
[2]Clarke International University, [3]New York University, [4]Yale University.

BACKGROUND/RATIONALE: Hypertension is the most common non-communicable disease (NCD) in Uganda, affecting 24% of the adult population. Poor medication adherence is a major barrier to hypertension control globally. In past research, hypertensive patients at International Hospital Kampala (IHK) have identified lack of symptoms, lack of information, and financial obstacles as impediments to successful medication adherence. Several interventions to improve NCD medication adherence in sub-Saharan Africa (SSA) have been piloted, but there is insufficient literature on patient perspectives on the acceptability of these interventions, especially within the private sector.

HYPOTHESIS OR RESEARCH QUESTION: This study explores patient perspectives on the acceptability of various forms of medication adherence support for hypertension. These include: daily text reminders; educational materials on hypertension; monthly group meetings (i.e. "adherence clubs") led by patients or providers; one-on-one appointments with providers; and modified drug dispensing at the hospital pharmacy.

STUDY DESIGN/METHODS: We conducted 42 key informant interviews with hypertensive patients, probing the potential advantages and disadvantages of various forms of adherence support and how various forms of support could mitigate barriers to adherence. Interviews were coded and analyzed for key themes.

RESULTS: Two themes emerged regarding barriers to adherence: access and engagement. Engagement barriers included lack of symptoms, lack of peer or family support, interest in alternative medicine, forgetfulness, and denial; access barriers included distance to clinics and medication cost and availability. Patients were most supportive of interventions designed to further engage them in care, such as educational materials and adherence clubs. Patients praised their convenience (i.e. educational materials are easily portable and customizable) and peer support (i.e. learning from the successfully adherent peers).

CONCLUSIONS/FUTURE PLANS: Patients are motivated to control their blood pressure and are supportive of interventions designed to actively engage them in their care. Pilot testing of adherence clubs is underway and further work will directly evaluate its impact on blood pressure control.

ABSTRACT 151

EFFECTS OF OBSTRUCTIVE SLEEP APNEA ON HUMAN SPATIAL NAVIGATIONAL MEMORY CONSOLIDATION IN COGNITIVELY NORMAL OLDER INDIVIDUALS.

Masrai Williams[1], Andrew Varga[2]. [1]Medical Education, [2]Medicine.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Obstructive sleep apnea (OSA) is a common sleep disorder among older adults that can cause cognitive dysfunction. Spatial navigational memory consolidation (SNMC) enables individuals to remember routes to salient locations. SNMC decreases with age and may be related to OSA severity, possibly though fragmentation of REM sleep and slow wave activity.

HYPOTHESIS OR RESEARCH QUESTION: Here, we investigated the potentially negative impact of OSA on SNMC in cognitively normal older individuals.

STUDY DESIGN/METHODS: We evaluated 42 consented older adults recruited from the community, who lacked sleep complaints, were non-depressed, and scored normally on a standard neuropsychological test battery. Subjects performed timed trials pre- and post-polysomnographically recorded sleep on a 3D spatial maze navigational task where the primary performance metric was completion time. Each trial was capped at 600 seconds. Subjects performed 20-minute psychomotor vigilance testing (PVT) 1 hour after awakening in the sleep laboratory to control for attention effects. This data was analyzed with a 2-way mixed factorial analysis of variance with OSA and No- OSA groups as the between-subjects independent variable and trial number as the within-subject independent variable.

RESULTS: Subjects were aged 66.5 + 7.9 years, and 54.8% were female. OSA, defined as an apnea-hypopnea index with 4% desaturation (AHI4%) ≥ 5.0/hour, was present in 12 subjects, and no OSA (AHI4% < 5.0/hour) was observed in 30 subjects. While there was no difference in pre-sleep performance, subjects without OSA continued to improve maze completion time on average across the 3 morning trials, whereas subjects with OSA performed best on the first morning trial and performed worse on average with each subsequent trial (significant interaction between OSA group and morning trial number, ($F(2,40) = 4.4$, $p = 0.016$). Subjects did not differ in morning PVT.

CONCLUSIONS/FUTURE PLANS: Finding a significant interaction between post polysomnography trails and OSA group in older patients may suggest that managing underlying OSA may lead to improved SNMC. This could lead to a decrease in negative cognitive outcomes in older patients with OSA.

ABSTRACT 152

LEVERAGING SUB-DISTRICT OFFICER INSIGHT AND EXPERIENCE TO ADAPT THE COMMUNITY-BASED HEALTH PLANNING SERVICES (CHPS) PROGRAM TO SCREEN AND TREAT CARDIOVASCULAR DISEASE IN NAVRONGO, GHANA: A PILOT STUDY.

Ethan Wood[1], Katherine Garvey[1], Edith Dambayi[2], Denis Awuni[3], Raymond Aborigo[2], Elizabeth Jackson[4], James Phillips[5], Abraham Oduro[2], David Heller[1]. [1]Medical Education, [3]Medicine. [1]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Navrongo Health Research Center Navrongo, Ghana, [3]Navrongo Health Research Center, [4,5]Columbia University, New York New York, NY.

BACKGROUND/RATIONALE: Noncommunicable diseases (NCDs) are responsible for 75% of deaths in low-and middle-income countries (LMIC). Cardiovascular disease (CVD) is the most common cause of NCD mortality in sub-Saharan Africa. The shift in disease burden to NCDs poses challenges for weak health systems, especially in rural areas like Navrongo, Ghana. Ghana's Community-Based Health Planning and Services (CHPS) has demonstrated efficacy in maternal-child health and vaccination, but doesn't screen or treat CVD. Previous research identified lack of transportation, medicines, medical knowledge and equipment as barriers to CVD screening/treatment. This study aims to determine the best intervention to address these barriers.

HYPOTHESIS OR RESEARCH QUESTION: How can the CHPS program best adapt to address the aforementioned barriers to CVD screening and treatment, in the view of its local leadership?

STUDY DESIGN/METHODS: Semi-structured interviews were conducted with 10 randomly-selected sub-district officers (SDOs) overseeing delivery of CHPS across the Kassena-Nankana District. SDOs shared their thoughts, opinions and beliefs related to potential CVD interventions. Three researchers manually coded initial transcripts iteratively to generate a codebook; transcripts were then coded using NVIVO computer software and analyzed for key themes.

RESULTS: SDOs described barriers to CVD care including lack of provider training and materials and limited patient awareness of disease. They emphasized that all clinic staff be trained on CVD screening and care, not just community health officers (CHOs) providing front-line care. They also suggested CVD educational workshops for providers; larger staff at CHPS clinics; improved CVD medical equipment accessibility; and the ability to prescribe BP medications.

CONCLUSIONS/FUTURE PLANS: CHPS leadership report barriers to CVD treatment in Navrongo – such as a lack of supplies and training – similar to those that impair the CHPS program overall. This result suggests that CVD interventions can be introduced with minimal impact on current CHPS operations. Respondents' proposed interventions, such as delivery of medical equipment, regular CVD trainings of all staff, and the furnishing of hypertensive medications at CHPS facilities, merit pilot-testing as an intervention to strengthen CVD care.

ABSTRACT 153

THE VALUE OF PLASTIC SURGEON SPINAL CLOSURE: A REVIEW OF 782 SPINE CASES.

Hope Xu[1], Collin Rozanski[2], Peter Taub[2]. [1]Medical Education, [2]Surgery.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Plastic surgeon involvement in spinal surgeries has generally been for secondary management of complicated wounds. The topic of prophylactic primary closure of non-complicated wounds has gained increasing attention in literature, however a large body of research has yet to be realized.

HYPOTHESIS OR RESEARCH QUESTION: The present study evaluates wound complications following plastic surgeon closure of the primary spinal surgery in a large patient population.

STUDY DESIGN/METHODS: Retrospective review of spine surgery patients undergoing plastic surgeon closure of spine surgeries at a single tertiary-care center was conducted. Spine surgery patients included those who were referred for plastic surgeon closure due to a) concerns about patient healing potential, b) concerns about difficulty of closure, c) patient request, or d) difficulties with closure intra-operatively. Outcomes in this sample were physiologic measures, including intra- and post-operative complications, hospital length of stay, and 30-day readmissions and reoperations, which were compared to previously published outcomes using two-sample z-tests.

RESULTS: Nine hundred twenty-eight surgeries were reviewed, of which 782 were included. Fourteen patients (1.8%) required readmission with 30 days. This compares favorably to a pooled analysis of 488,049 patients, in which the 30-day readmission rate was found to be 5.5% ($z=4.5$, $p<0.0001$). Seven patients (0.89%) had wound infection and 3 (0.38%) wound dehiscence postoperatively, compared to a study of 22,430 patients in the ACS-NSQIP database which had an infection incidence of 2.2% ($z=2.5$, $p=0.0132$) and 0.3% dehiscence rate ($z=0.4$, $p=0.6889$). The combined incidence of wound complications in the present sample was 1.27%, which is less than the combined incidence of wound complications in the population of 22,430 patients ($z=2.2$, $p=0.029$).

CONCLUSIONS/FUTURE PLANS: 30-day readmissions and wound complications are intensely scrutinized quality metrics that may lead to reduced reimbursements and other penalties for hospitals. Plastic surgeon closure of index spinal cases decreases these adverse outcomes. Further research must be done to determine whether the increased cost of plastic surgeon involvement in these cases is offset by the savings represented by fewer readmissions and complications.

ABSTRACT 154

INTERNAL CRANIAL EXPANSION SURGERY FOR TREATMENT OF REFRACTORY IDIOPATHIC INTRACRANIAL HYPERTENSION IN AN ADULT POPULATION.

Hope Xu[1], Collin Rozanski[2], Jeremy Steinberger[3], Amy Tucker[3], Kambiz Nael[4], Saadi Ghatan[3], Peter Taub[2].
[1]Medical Education, [2]Surgery, [3]Neurosurgery, [4]Radiology.
[1,2,3,4]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Idiopathic intracranial hypertension (IIH) is a disease process attributed to increased intracranial pressure that often presents with headaches, visual deterioration, and papilledema. Severe cases are often refractory to medical treatment, lumbar punctures, and CSF shunts. Internal cranial expansion (ICE) is a relatively novel technique that involves removing and shaving down the skull's inner calvarial table and cancellous bone to increase intracranial volume and reduce intracranial pressure. Previous studies have shown success in pediatric patients.

HYPOTHESIS OR RESEARCH QUESTION: The present study describes the effectiveness of ICE in adult patients with IIH.

STUDY DESIGN/METHODS: A retrospective review was conducted of 9 patients from the ages of 18-61 years who underwent ICE for the treatment of IIH. Preoperative and postoperative clinical parameters including patient symptoms, presence of papilledema, and available ICP or CSF opening pressures were compared. Procedural details and complications were noted. Intracranial volume increases were calculated using available pre- and postoperative CT scans.

RESULTS: Mean follow-up for the 9 patients in this series was 8 months. Technically successful ICE was performed in all patients within the cohort without any surgical complications. At the time of last follow-up, 4 (44%) of 9 patients were either symptomatically improved or asymptomatic. Three (33%) of 9 patients with headache had a reduction in or complete resolution of this symptom. Papilledema was resolved in all patients (4 of 4) with this sign. Postoperative intracranial volume expansion ranged between 6.9% and 18%.

CONCLUSIONS/FUTURE PLANS: Internal cranial expansion is a safe procedure that can provide symptomatic improvement for some adult patients and thus has a role in treatment of refractory IIH outside of the pediatric population. This surgery expands the intracranial volume and thus promotes ICP normalization, which may lead to the reduction or complete resolution of the signs and symptoms of IIH. Internal cranial expansion may be used as part of a multidisciplinary management approach in the treatment of refractory IIH.

ABSTRACT 155

C7 SLOPE AS A PROXY FOR T1 SLOPE: A RADIOGRAPHIC ANALYSIS.

Ivan Ye[1], Ray Tang[2], Zoe Cheung[3], Samuel Cho[3]. [1]Medical Education, [2,3]Orthopaedics.
[1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Sagittal imbalance in the cervical spine is a major cause of headache, neck pain, and disability. Slope of the first thoracic vertebrae is one of the most important determinants of overall spinal sagittal balance and it now widely used for preoperative planning. Since T1 slope is often blocked by anatomical features such as the shoulder on radiographs, C7 slope has been suggested as a substitute parameter.

HYPOTHESIS OR RESEARCH QUESTION: This study aimed to determine the visibility of C7 and T1 endplates on radiographs. Second, the study aimed to determine if C7 slope could be used to estimate the T1 slope in cases where anatomic interference prevents adequate visualization of the T1 slope on radiographs. Finally, we aimed to quantify the interrater reliability of measuring C7 slope.

STUDY DESIGN/METHODS: This is a retrospective radiographic study using data already collected during clinical care. 650 patients with lateral weight bearing cervical spine radiographs taken between 12/2017 and 6/2018 were obtained from Mount Sinai Affiliated Hospitals. Following exclusion criteria, 152 patients were included in the study. Institutional review board approval was obtained for this study. Two observers independently measured upper C7 endplate, lower C7 endplate, and upper T1 endplate. The Pearson correlation coefficient was used to evaluate the strength of association between upper/lower C7 slope and T1 slope. Simple linear regression analyses were performed to generate linear regression equations to predict T1 slope from either upper and lower C7 slope. The interobserver reliability of measurements of upper C7 slope, lower C7 slope, and T1 slope was assessed using the Intraclass Correlation Coefficient (ICC) and a paired sample t-test.

RESULTS: The upper C7, lower C7, and T1 endplate had visibilities of 72.9%, 50.2%, and 31.2% respectively. There was a strong correlation between upper C7 slope and T1 slope (r=0.91) and between lower C7 slope and T1 slope (r=0.91). There was a very strong agreement between duplicate measurements made by the two observers for upper C7 slope (ICC=0.95) and lower C7 slope (ICC=0.96).

CONCLUSIONS/FUTURE PLANS: This study provides evidence that either upper or lower C7 slopes can substitute T1 slope as a parameter for sagittal alignment using radiographs.

ABSTRACT 156

CHARACTERISTICS OF ANTIBIOTIC PROPHYLAXIS AND RISK OF SURGICAL SITE INFECTIONS IN PRIMARY TOTAL HIP AND KNEE ARTHROPLASTY.

Ryley Zastrow[1], Hsin-Hui Huang[2], Jashvant Poeran[2], Patricia Saunders-Hao[3], Leesa Galatz[4], Madhu Mazumdar[2], Calin Moucha[4]. [1]Medical Education, [2]Population Health Science and Policy, [3]The Mount Sinai Hospital, [4]Orthopaedics. [1,2,4]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Numerous antibiotic prophylaxis options exist for total hip and knee arthroplasty (THA, TKA). However, a comprehensive assessment of practice patterns and comparative effectiveness is lacking.

HYPOTHESIS OR RESEARCH QUESTION: We aimed to characterize antibiotic utilization patterns and associations with infection risk, and hypothesized differences in infection risk based on prophylaxis regimen.

STUDY DESIGN/METHODS: In this retrospective cohort study, we extracted data on 436,274 THA and 862,918 TKA (elective) primary procedures (Premier Healthcare Database, 2006-2016; n=651 hospitals). Main exposures were antibiotic type and duration: day of surgery only ('day 0') or extended to postoperative day 1 ('day 1'). Primary outcome was surgical site infection (SSI) <30 days post-operation. Mixed-effect models measured associations between prophylaxis regimen and SSI. We report odds ratios (OR) and 95% confidence intervals (CI).

RESULTS: Overall SSI prevalence was 0.21% (n=914) and 0.22% (n=1,914) for THA and TKA, respectively. Most THA patients received cefazolin (74.1%) for prophylaxis, followed by vancomycin (8.4%), other antibiotic combinations (7.1%), vancomycin + cefazolin (5.1%), clindamycin (3.3%), and other single antibiotics (1.9%). Among THA patients, 51.8% received prophylaxis only on day 0 while 48.2% received prophylaxis through day 1. TKA had similar patterns. Hospital size, teaching status, arthroplasty volume, and year were the most important determinants of prophylactic choice, not patient factors (e.g. age, comorbidity burden). Compared to cefazolin, higher odds for SSI were seen for vancomycin: OR=1.36; CI 1.09-1.71 and OR 1.29; CI 1.10-1.52 in THA and TKA, respectively. Prophylaxis duration was not associated with altered SSI odds. Findings persisted after sensitivity analyses.

CONCLUSIONS/FUTURE PLANS: Prophylaxis selection is largely influenced by hospital factors while the use of vancomycin is associated with increased odds for SSI even after addressing 'confounding by indication'. While further research is needed into drivers of prophylactic choice, these findings are supported by previous research and emphasize an easily modifiable risk factor to mitigate infection risk.

ABSTRACT 157

REVEALING SUBCLINICAL GLAUCOMA PROGRESSION USING HIGH-RESOLUTION RETINAL IMAGING.

Davis Bing Zhou[1], Maria Castanos[2], Jorge Andrade[2], Melvi Eguia[3], Erica Jacobs[3], Donald Hood[4], Robert Ritch[3], Richard Rosen[5], Toco Chui[5]. [1]Medical Education, [2,5]Ophthalmology. [1,5]Icahn School of Medicine at Mount Sinai, New York, NY, [2,3]New York Eye and Ear Infirmary of Mount Sinai, New York, NY, [4]Columbia University, New York, NY.

BACKGROUND/RATIONALE: Glaucoma is the dominant cause of irreversible blindness worldwide, with over 64 million people impacted globally. Current disease monitoring - through visual-field testing, fundoscopy, and intraocular pressure measurements - is limited by subjectivity and low sensitivity to certain disease subtypes. Optical coherence tomography reflectance (OCT-R) and angiography (OCT-A) imaging techniques provide a means of objectively quantifying subclinical changes in glaucoma and monitoring the effectiveness of treatment regimens.

HYPOTHESIS OR RESEARCH QUESTION: Do averaged OCT-R and OCT-A scans reveal glaucoma progression not detectable by the current gold standard?

STUDY DESIGN/METHODS: Ten eyes of 9 primary open-angle glaucoma patients with arcuate visual field defects were imaged using an OCT system. Seven eyes were subsequently imaged 11-30 months afterwards. Ten 4.5x4.5mm OCT-R and respective OCT-A scans were obtained at each visit and averaged per patient to remove noise. An area of the retina between the inner limiting membrane and nerve fiber layer was used for image analysis. Neural defect progression was evaluated by measuring the difference in RNFB (retinal nerve fiber bundle) defect width on OCT-R scans. Vascular nonperfusion over time was evaluated by measuring the perfusion density difference on the averaged OCT-A scans between visits. Scans were also compared to the 24-2 visual field tests for each patient. Progression on visual field tests was defined as an increase in the number of points with <1% total deviation between visits.

RESULTS: The mean±SD of RNFB defect and vascular nonperfusion progression was 1.2±1.3° and 4.8±3.3% per year, respectively. Four out of six eyes displayed RNFB defect progression and all six eyes showed vascular nonperfusion over time. Three eyes demonstrated no progression on 24-2 visual field testing but displayed RNFB defect change and vascular nonperfusion of 1.2±1.5° and 4.4±4.2% per year, respectively.

CONCLUSIONS/FUTURE PLANS: Averaged OCT-R and OCT-A imaging show promise for tracking subtle glaucoma progression. There were measurable subclinical changes in neural and vascular components before further vision loss could be detected on 24-2 visual field tests. Future research will evaluate the ability monitor disease progression in additional glaucoma subtypes.

ABSTRACT 158

PREDICTORS OF HEPATITIS C TREATMENT OUTCOMES.

Jacob Ziff[1], Jeffrey Weiss[2], Keith Sigel[2]. [1]Medical Education, [2]Medicine.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: The social determinants of health that are likely to influence successful HCV treatment are under studied. This project aims to evaluate the influence of these factors on HCV treatment outcomes.

HYPOTHESIS OR RESEARCH QUESTION: Are there social determinants affecting the success or failure in a patient's treatment of Hepatitis C?

STUDY DESIGN/METHODS: We used retrospectively collected data from the Department of General Internal Medicine Primary Care HCV Treatment Program (an IRB approved data collection project). The three outcomes we assessed in this cohort were: 1) treatment completion; 2) if a post treatment viral load was taken; and 3) if a 12-week post treatment viral load was taken. Several primary predictors were ascertained including: history of drug use; psychiatric illness; housing instability; treatment regimen; and routinely collected sociodemographic data. We evaluated associations between various predictors and outcomes using univariate and multivariable statistical methods.

RESULTS: From a cohort of 377 patients, significant predictors ($p < 0.05$) for treatment non-completion included: Alcohol, cocaine, ecstasy, or sedative abuse in the past 12 months; housing status; and a history of incarceration. Significant associations for post-treatment viral load testing were: age; diabetes; cocaine, ecstasy, or heroin use in the past 12 months; no substance abuse in the past 12 months; prior prescription of mental health medication; methadone usage; and the level of pre-treatment HCV informational awareness. Significant findings for 12-week post-treatment viral load testing were: age; HIV coinfection; diabetes; ecstasy, heroin, or tobacco use in the past 12 months; no substance abuse in the past 12 months; history of incarceration; methadone use; and the level of pre-treatment HCV informational awareness.

CONCLUSIONS/FUTURE PLANS: Our research identified numerous characteristics associated with patients at higher risk of suboptimal HCV treatment outcomes. Future research should identify methods by which treatment can be improved (i.e. intensive care coordination) for these high-risk patients.

ABSTRACT 159

EXPLORING SEX SPECIFIC ASSOCIATIONS BETWEEN PRENATAL AIR POLLUTION AND EARLY CHILDHOOD WHEEZE PHENOTYPES.

Nicholas Zirn[1], Alison Lee[2], Whitney Cowell[2], Rosalind Wright[2]. [1]Medical Education, [2]Pediatrics.
[1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND/RATIONALE: Prior studies have linked exposure to outdoor particulate air pollution in mid-gestation (16-25 weeks) and asthma development in school-aged children, with boys being more vulnerable. No prior study has examined associations between prenatal exposure to particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) and early childhood wheeze trajectories accounting for sex-specific effects.

HYPOTHESIS OR RESEARCH QUESTION: Children exposed to increased prenatal ambient air pollution will have an increased risk of wheezing respiratory illness by age 36 months. Sex-specific associations were explored.

STUDY DESIGN/METHODS: Leveraging an ethnically mixed, prospective pregnancy cohort, we examined time-varying associations between daily prenatal $PM_{2.5}$ and childhood wheeze trajectories (N=1224). Daily $PM_{2.5}$ exposure was estimated over gestation for each individual using a validated satellite-based spatiotemporal model. Group-based trajectory modeling was used to empirically estimate distinct temporal patterns of wheeze. We employed distributed lag models (DLMs) to identify vulnerable windows of exposure to prenatal $PM_{2.5}$, adjusting for child sex, ethnicity, maternal age, education and wheeze trajectory probability.

RESULTS: The majority of mothers were ethnic minority [Hispanic N=556 (45%), African American N=346 (28%)] and nearly half had <12 years of education (N=536, 44%). Longitudinal trajectory modeling identified two wheeze phenotypes: Never/Infrequent wheeze (0-1 episodes) (N=1011, 83%) vs Early repeated wheeze (2 or more episodes) (N=213, 17%). In all children, DLMs identified a statistically significant sensitive window of $PM_{2.5}$ exposure at 26-34 weeks gestation with increased risk of early repeated wheeze. In sex-stratified analyses, this pattern was evident only in girls.

CONCLUSIONS/FUTURE PLANS: Children born to mothers with higher prenatal $PM_{2.5}$ exposure in later pregnancy (26-34 weeks) were more likely to have 2 or more episodes of wheeze by age 36 months. Girls were particularly impacted. These data suggest that effects of in utero $PM_{2.5}$ exposure on early wheeze phenotypes vs. asthma may be operating through different mechanisms given variable sensitive windows for exposure effects and observed sex differences emerging in the literature.

SECTION 3:

Student Index

STUDENT NAME	MENTOR NAME	DEPARTMENT/INSTITUTION	POSTER
Aboubakr, Aiya	Marla Dubinsky, MD	Pediatrics	1
Adegbite, Benjamin	Evren Azeloglu, PhD	Medicine	2
Afonin, Daniel	Craig Katz, MD Robert Yanagisawa, MD	Psychiatry Medicine	3
Agathis, Alexandra	Celia Divino, MD	Surgery	4
Ahn, Amy	Michael Hausman, MD	Orthopaedics	5
Antoine, Ali	James Sumowski, PhD Stephen Krieger, MD	Neurology	6
Arnold, Melanie	Erika Landau, MD	Pediatrics	7
Arrighi-Allisan, Annie	Raj Shrivastava, MD	Neurosurgery	8
Athar, Imaz	Alicia Hurtado, MD	Psychiatry	9
Bahethi, Rohini	Brett Miles, DDS, MD	Otolaryngology	10
Bailey, Jennifer	C. Anthoney Lim, MD	Pediatrics	11
Bar-Mashiah, Ari	Aimee Lucas, MD	Medicine	12
Barazani, Sharon	Venkatesh Mani, PhD	Radiology	13
Bechard, Brendan	Dewleen Baker, MD Julia Golier, MD	Psychiatry/San Diego VA Medical Ctr Psychiatry	14
Ben-David, Kaitlyn	James Ferrara, MD	Oncological Sciences	15
Bienstock, Dennis	Andrew Hecht, MD James Iatridis, PhD	Orthopaedics	16
Bikkasani, Krishna	Che-kai Tsao, MD	Medicine	17
Blum, James	Reena Karani, MD	Medical Education	18
Blum, Raia	Anusha Yeshokumar, MD	Neurology	19
Bruck, Efrat	Nathan Fox, MD	Obstetrics, Gynecology, and Reproductive Science	20
Carrillo, Oscar	Raj Shrivastava, MD	Neurosurgery	21
Cary, Christina	Britt Lunde, MD, MPH	Obstetrics, Gynecology, and Reproductive Science	22
Casale, Marc	Madeline Fields, MD	Neurology	23
Cayon, Christian	Perry Sheffield, MD	Environmental Medicine & Public Health	24
Chapman, Emily	Qing Hao, MD, PhD	Neurology	25
Cheng He, Rossana	Raymund Yong, MD	Neurosurgery	26
Cheng, Aaron	Andrew Rossetti, MMT, MT-BC.	Radiation Oncology/Department of Music Therapy, Mount Sinai Beth Israel Medical Center	27
Cho, Brian	Samuel Cho, MD	Orthopaedics	28
Christian, David	Alfred Iloreta, MD	Otolaryngology	29
Connolly, Courtney	Nathan Fox, MD	Obstetrics, Gynecology, and Reproductive Science	30

STUDENT NAME	MENTOR NAME	DEPARTMENT/INSTITUTION	POSTER
Connolly, Courtney	Nathan Fox, MD	Obstetrics, Gynecology, and Reproductive Science	31
D'Andrea, Megan	Kim Baranowski, PhD	Psychiatry/Columbia University	32
D'Andrea, Megan	Raj Shrivastava, MD	Neurosurgery	33
Dai, Jennifer	Raj Shrivastava, MD	Neurosurgery	34
DeLappe, Eva	Ann-Gel Palermo, DrPH	Medical Education	35
Dimopoulos, Christina	Ryan Ungaro, MD	Medicine	36
Dimopoulos, Christina	Ryan Ungaro, MD	Medicine	37
Donovan, Katherine	Ann-Gel Palermo, DrPH	Medical Education	38
Dubin, Celina	Emma Guttman, MD, PhD	Dermatology	39
Fastman, Jarrett	M. Mercedes Perez-Rodriguez, MD, PhD	Psychiatry	40
Ferrer, Christopher	Ilya Iofin, MD	Orthopaedics	41
Gany-Beitler, Harper	Girish Nadkarni, MD	Medicine	42
Garden, Evan	David Heller, MD, MPH	Medicine	43
Garvey, Katherine	David Heller, MD, MPH	Medicine	44
Gentile, Caroline	Stephen Krieger, MD	Neurology	45
Gogel, Brooke	Stella Safo, MD, MPH	Medicine	46
Goldberg, Eliana	Andrea Weintraub, MD	Pediatrics	47
Goldstein, Jonathan	Nathalie Jetté, MD	Neurology	48
Groden, Phillip	Sandeep Kishore, MD, PhD	Medicine	49
Grom, Jennifer	Yasmin Meah, MD	Medicine	50
Hall, Jordan	Sanjit Konda, MD	Orthopaedics/NYU Langone Orthopedic Hospital	51
Han, Joseph	Emma Guttman, MD, PhD	Dermatology	52
Hernandez Meza, Gabriela	Augusto Villanueva, MD, PhD	Oncological Sciences	53
Hilgers, Derek	Kaushal Shah, MD	Emergency Medicine	54
Hill, Melissa	Nathan Fox, MD	Obstetrics, Gynecology, and Reproductive Science	55
Hojsak, Stephanie	Keith Sigel, MD, PhD	Medicine	56
Iversen, Esben	Jesper Eugen-Olsen, PhD	Copenhagen University Hospital, Hvidovre, Denmark	57
Jumreornvong, Oranicha	Hsi-en Ho, MD Supinda Bunyavanich, MD, MPH	Genetics and Genomic Sciences	58
Kase, Samuel	Andrea Weintraub, MD	Pediatrics	59
Kelly, Susheian	Celia Divino, MD	Surgery	60

	MENTOR NAME	DEPARTMENT/INSTITUTION	POSTER
Kessler, Remi	Raj Shrivastava, MD	Neurosurgery	61
Khan, Murad	Stephen Goldstone, MD	Surgery	62
Kim, Yongkyum	Ketan Badani, MD	Urology	63
Kirsch, Yonina	Anita Ravi, MD, MPH	Family Medicine and Community Health/PurpLE Clinic	64
Klahr, Rebecca	Andrei Rebarber, MD	Obstetrics, Gynecology, and Reproductive Science	65
Kornbluth, Benjamin	Stella Safo, MD Adwoa Agyei-Nkansah, MD	Medicine Korle-Bu Teaching Hospital Accra, Ghana	66
Koschitzky, Merav	Szilard Kiss, MD	Ophthalmology/Weill Cornell Medicine	67
Krystal, Hannah	Judith Neugroschl, MD	Geriatrics and Palliative Medicine	68
Kumar, Vedika	Katherine Ornstein, PhD	Geriatrics and Palliative Medicine	69
Lai, Michelle	Scott Sicherer, MD	Pediatrics	70
Laroche, Marcus	John Caridi, MD	Neurosurgery	71
Li, Adam	Tanvir Choudhri, MD	Neurosurgery	72
Li, Letitia	Roberto Posada, MD	Pediatrics	73
Lieber, Adam	Christopher Kellner, MD	Neurosurgery	74
Liu, Benjamin	Keith Sigel, MD, PhD Juan Wisnivesky, MD	Medicine	75
Loebel, Emma	Hyung Cho, MD	Medicine	76
Lupicki, Adam	Alfred Iloreta, MD	Otolaryngology	77
Lurie, Jacob	George Silvay, MD, PhD	Anesthesiology	78
MacLean, Sarah	Craig Katz, MD	Medical Education	79
Mahmoudi, Kevin	Constantinos Hadjipanayis, MD, PhD	Neurosurgery	80
Mahon, Allie	Blair Hammond, MD	Pediatrics	81
Maniar, Yash	Andrei Holodny, MD	Radiology/Memorial Sloan Kettering Cancer Center	82
Manna, Sayan	George Wanna, MD	Otolaryngology	83
Matthews, Tucker	Nicole Dubois, PhD	Developmental and Regenerative Biology	84
Mikhaylov, Daniela	Emma Guttman, MD, PhD	Dermatology	85
Miller, Michael	Celia Divino, MD	Surgery	86
Morra, Rocco	John Caridi, MD	Neurosurgery	87
Nangia, Udit	Laurie Keefer, PhD	Medicine	88
Navalurkar, Reema	Ann Marie Beddoe, MD	Obstetrics, Gynecology, and Reproductive Science	89
Newman, Daniel	Sandeep Kishore, MD, PhD	Medicine	90

STUDENT NAME	MENTOR NAME	DEPARTMENT/INSTITUTION	POSTER
Nussbaum, Jeremy	Nikhil Kumta, MD	Medicine	91
Osman, Rinas	Stella Safo, MD, MPH	Population Health Science and Policy	92
Paasewe, Arence	Lori Croft, MD	Medicine	93
Paci, Samuel	Kevin Munjal, MD	Emergency Medicine	94
Pai, Akila	Raj Shrivastava, MD	Neurosurgery	95
Pan, Jonathan	Christopher Kellner, MD	Neurosurgery	96
Pan, Jonathan	Christopher Kellner, MD	Neurosurgery	97
Park, Christopher	Ashish Atreja, MD, MPH	Medicine	98
Pathak, Shravani	Rajesh Vedanthan, MD, MPH	Medicine/NYU Langone Health	99
Pathak, Shravani	Ageliki Vouyouka, MD	Cardiovascular Surgery	100
Pfail, John	John Sfakianos, MD	Urology	101
Phillips, Katherine	Kevin Costa, PhD	Medicine	102
Pruzan, Alison	Zahi Fayad, PhD	Radiology	103
Ramos, Julio	Emanuela Taioli, MD, PhD	Thoracic Surgery	104
Rao, Aarti	Ishani Ganguli, MD, MPH	Medicine/ Brigham and Women's Hospital	105
Rao, Aarti	Dae Hyun Kim, MD	Geriatrics and Palliative Medicine/ Beth Israel Deaconess Medical Center, Harvard Medical School	106
Raychaudhuri, Sanchita	Abhijit Chaudhari, PhD	Radiology/University of California Davis School of Medicine	107
Reisman, Adam	Michael Leitman, MD	Medical Education	108
Rinehart, Rebecca	Leora Mogilner, MD	Pediatrics	109
Rodriguez Colon, Ricardo	Paulo Coelho, PhD	New York University	110
Rodriguez, Ana	Robert Yanagisawa, MD Craig Katz, MD	Medicine Psychiatry	111
Rosenthal, Hailey	James Tsung, MD, MPH	Emergency Medicine	112
Rozanski, Collin	Alexander Barash, MD	Ophthalmology	113
Rozanski, Collin	Peter Taub, MD	Pediatrics	114
Russell, Stephen	Joy Reidenberg, PhD	Medical Education	115
Rutland, John	Raj Shrivastava, MD	Neurosurgery	116
Rutland, John	Raj Shrivastava, MD	Neurosurgery	117
Sangmo, Lodoe	Karen Wilson, MD, MPH	Pediatrics	118
Sanyal, Riana	Emma Guttman, MD, PhD	Dermatology	119
Sapre, Manali	Emily Gallagher, MD, PhD	Medicine	120

STUDENT NAME	MENTOR NAME	DEPARTMENT/INSTITUTION	POSTER
Sarosi, Alex	Andrea Weintraub, MD	Pediatrics	121
Sastow, Dahniel	Anoushka Afonso, MD	Anesthesiology/Memorial Sloan Kettering	122
Schussler, Lilli	Edward Chin, MD	Surgery	123
Schwarz, Julia	Hank Schmidt, MD, PhD	Surgery	124
Seckler, Solomon	Eric Genden, MD	Otolaryngology	125
Shamapant, Nikhil	Keith Sigel, MD, PhD	Medicine	126
Sheikh, Abdul	Noam Harpaz, MD, PhD	Pathology	127
Shukla, Devki	Guy Montgomery, PhD	Population Health Science and Policy	128
Shuman, William	John Caridi, MD	Neurosurgery	129
Snyder, Daniel	John Caridi, MD	Neurosurgery	130
Sokoloff, Lara	Adwoa Agyei-Nkansah, MD Stella Safo, MD, MPH	Medicine/School of Medicine and Dentistry, Ghana Medicine	131
Sokoloff, Lara	Craig Katz, MD	Psychiatry	132
Stanislawski, Emma	Cheryl Corcoran, MD	Psychiatry	133
Stein, Samantha	Usman Baber, MD	Medicine	134
Subramaniam, Varsha	Nathalie Jetté, MD	Neurology	135
Tang, Ray	Carly Walter, BS Janine Flory, PhD	Psychiatry/James J. Peters VA Medical Center	136
Thapi, Sahityasri	Joseph Masci, MD	Medicine/Elmhurst Hospital	137
Thapi, Sahityasri	Emily Gallagher, MD Michelle Kim, MD	Medicine	138
Thomas, Daniel	Natalie Privett, PhD	Medicine	139
Tishelman, Jared	Sabrina Strickland, MD	Orthopaedics/Hospital for Special Surgery	140
Tixier, Emily	Ari Grinspan, MD	Medicine	141
Tomer, Nir	John Caridi, MD	Neurosurgery	142
Tomlinson, Amanda	Anusha Yeshokumar, MD	Neurology	143
Valluru, Girish	Janek Klawe, MA Sumayya Ahmad, MD	Ophthalmology	144
Villavisanis, Dillan	Trevor Lee, MD Michael Herscher, MD	Medicine	145
Wang, Eileen	Elizabeth Howell, MD	Population Health Science and Policy	146
Warren, Leslie	Luciana Vieira, MD	Obstetrics, Gynecology, and Reproductive Science	147
Weingarten, Mark	Jeffrey Stock, MD	Urology	148
Wenger, Brittany	Bruce Gelb, MD	Genetics and Genomic Sciences	149

STUDENT NAME	MENTOR NAME	DEPARTMENT/INSTITUTION	POSTER
Wilkinson, Rachel	David Heller, MD, MPH	Medicine	150
Williams, Masrai	Andrew Varga, MD, PhD	Medicine	151
Wood, Ethan	David Heller, MD, MPH	Medical Education	152
Xu, Hope	Peter Taub, MD	Surgery	153
Xu, Hope	Peter Taub, MD	Surgery	154
Ye, Ivan	Samuel Cho, MD	Orthopaedics	155
Zastrow, Ryley	Jashvant Poeran, MD, PhD Calin Moucha, MD	Population Health Science and Policy Orthopaedics	156
Zhou, Davis Bing	Richard Rosen, MD Toco Chui, PhD	Ophthalmology	157
Ziff, Jacob	Keith Sigel, MD, PhD	Medicine	158
Zirn, Nicholas	Alison Lee, MD	Pediatrics	159

SECTION 4:

Mentor Index

POSTER	MENTOR'S LAST NAME	MENTOR'S FIRST NAME	DEGREE	DEPARTMENT/INSTITUTION
122	Afonso	Anoushka	MD	Anesthesiology/Memorial Sloan Kettering
66, 131	Agyei-Nkansah	Adwoa	MD	Medicine/Korle-Bu Teaching Hospital Accra, Ghana
144	Ahmad	Sumayya	MD	Ophthalmology
98	Atreja	Ashish	MD, MPH	Medicine
2	Azeloglu	Evren	PhD	Medicine
134	Baber	Usman	MD	Medicine
63	Badani	Ketan	MD	Urology
14	Baker	Dewleen	MD	Psychiatry/San Diego VA Medical Center
32	Baranowski	Kim	PhD	Psychiatry/Columbia University
113	Barash	Alexander	MD	Ophthalmology
89	Beddoe	Ann Marie	MD	Obstetrics, Gynecology, and Reproductive Science
58	Bunyavanich	Supinda	MD, MPH	Genetics and Genomic Sciences
71, 87, 129, 130, 142	Caridi	John	MD	Neurosurgery
107	Chaudhari	Abhijit	PhD	Radiology/University of California Davis School of Medicine, Davis, CA
123	Chin	Edward	MD	Surgery
28, 155	Cho	Samuel	MD	Orthopaedics
76	Cho	Hyung	MD	Medicine
72	Choudhri	Tanvir	MD	Neurosurgery
157	Chui	Toco	PhD	Ophthalmology
110	Coelho	Paulo	PhD	New York University
133	Corcoran	Cheryl	MD	Psychiatry
102	Costa	Kevin	PhD	Medicine
93	Croft	Lori	MD	Medicine
4, 60, 86	Divino	Celia	MD	Surgery
1	Dubinsky	Marla	MD	Pediatrics
84	Dubois	Nicole	PhD	Developmental and Regenerative Biology
57	Eugen-Olsen	Jesper	PhD	Copenhagen University Hospital, Hvidovre, Denmark
103	Fayad	Zahi	PhD	Radiology
15	Ferrara	James	MD	Oncological Sciences
23	Fields	Madeline	MD	Neurology

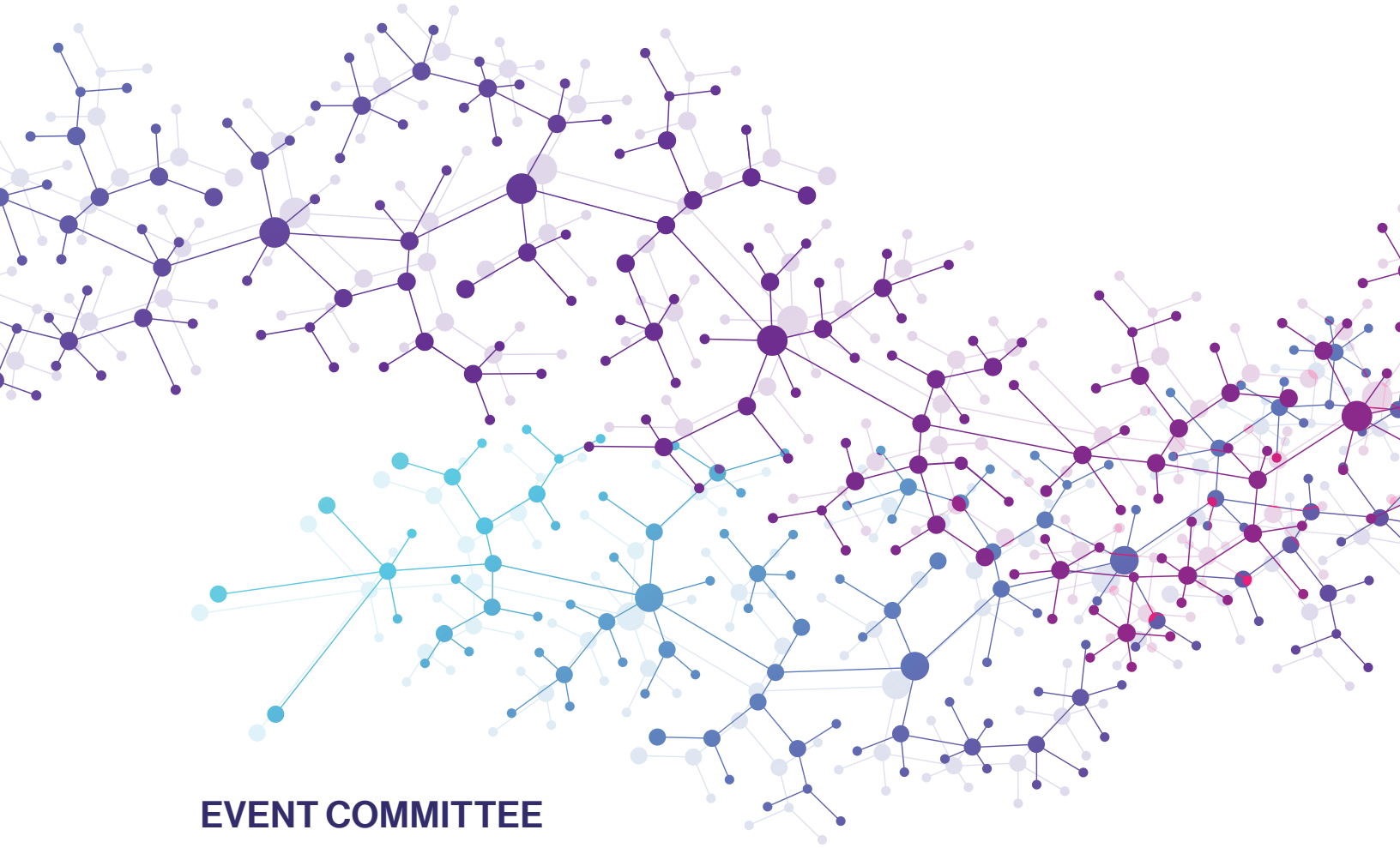
POSTER	MENTOR'S LAST NAME	MENTOR'S FIRST NAME	DEGREE	DEPARTMENT/INSTITUTION
136	Flory	Janine	PhD	Psychiatry
20, 30, 31, 55	Fox	Nathan	MD	Obstetrics, Gynecology, and Reproductive Science
120, 138	Gallagher	Emily	MD, PhD	Medicine
105	Ganguli	Ishani	MD, MPH	Medicine/ Brigham and Women's Hospital, Boston, Massachusetts
149	Gelb	Bruce	MD	Genetics and Genomic Sciences
125	Genden	Eric	MD	Otolaryngology
62	Goldstone	Stephen	MD	Surgery
14	Golier	Julia	MD	Psychiatry
141	Grinspan	Ari	MD	Medicine
39, 52, 85, 119	Guttman	Emma	MD, PhD	Dermatology
80	Hadjipanayis	Constantinos	MD, PhD	Neurosurgery
81	Hammond	Blair	MD	Pediatrics
25	Hao	Qing	MD, PhD	Neurology
127	Harpaz	Noam	MD, PhD	Pathology
5	Hausman	Michael	MD	Orthopaedics
16	Hecht	Andrew	MD	Orthopaedics
43, 44, 150, 152	Heller	David	MD, MPH	Medicine
145	Herscher	Michael	MD	Medicine
58	Ho	Hsi-en	MD	Genetics and Genomic Sciences
82	Holodny	Andrei	MD	Radiology/Memorial Sloan Kettering Cancer Center
146	Howell	Elizabeth	MD	Population Health Science and Policy
9	Hurtado	Alicia	MD	Psychiatry
16	Iatridis	James	PhD	Orthopaedics
29, 77	Iloreta	Alfred	MD	Otolaryngology
41	Iofin	Ilya	MD	Orthopaedics
48, 135	Jetté	Nathalie	MD	Neurology
18	Karani	Reena	MD	Medical Education
3, 79, 111, 132	Katz	Craig	MD	Psychiatry
88	Keefer	Laurie	PhD	Medicine
74, 96, 97	Kellner	Christopher	MD	Neurosurgery
106	Kim	Dae Hyun	MD	Geriatrics and Palliative Medicine/ Beth Israel Deaconess Medical Center, Harvard Medical School
138	Kim	Michelle	MD	Medicine

POSTER	MENTOR'S LAST NAME	MENTOR'S FIRST NAME	DEGREE	DEPARTMENT/INSTITUTION
49, 90	Kishore	Sandeep	MD, PhD	Medicine
67	Kiss	Szilard	MD	Ophthalmology/Weill Cornell Medicine
144	Klawe	Janek	MA	Ophthalmology
51	Konda	Sanjit	MD	Orthopaedics/NYU Langone Orthopedic Hospital
6, 45	Krieger	Stephen	MD	Neurology
91	Kumta	Nikhil	MD	Medicine
7	Landau	Erika	MD	Pediatrics
145	Lee	Trevor	MD	Medicine
159	Lee	Alison	MD	Pediatrics
108	Leitman	Michael	MD	Medical Education
11	Lim	C. Anthoney	MD	Pediatrics
12	Lucas	Aimee	MD	Medicine
22	Lunde	Britt	MD, MPH	Obstetrics, Gynecology, and Reproductive Science
13	Mani	Venkatesh	PhD	Radiology
137	Masci	Joseph	MD	Medicine/Elmhurst Hospital
50	Meah	Yasmin	MD	Medicine
10	Miles	Brett	DDS, MD	Otolaryngology
109	Mogilner	Leora	MD	Pediatrics
128	Montgomery	Guy	PhD	Population Health Science and Policy
156	Moucha	Calin	MD	Orthopaedics
94	Munjal	Kevin	MD	Emergency Medicine
42	Nadkarni	Girish	MD	Medicine
68	Neugroschl	Judith	MD	Geriatrics and Palliative Medicine
69	Ornstein	Katherine	PhD	Geriatrics and Palliative Medicine
35, 38	Palermo	Ann-Gel	DrPH	Medical Education
40	Perez-Rodriguez	M. Mercedes	MD, PhD	Psychiatry
156	Poeran	Jashvant	MD, PhD	Population Health Science and Policy
73	Posada	Roberto	MD	Pediatrics
139	Privett	Natalie	PhD	Medicine
64	Ravi	Anita	MD, MPH	Family Medicine and Community Health/PurpLE Clinic
65	Rebarber	Andrei	MD	Obstetrics, Gynecology, and Reproductive Science
115	Reidenberg	Joy	PhD	Medical Education
157	Rosen	Richard	MD	Ophthalmology

POSTER	MENTOR'S LAST NAME	MENTOR'S FIRST NAME	DEGREE	DEPARTMENT/INSTITUTION
27	Rossetti	Andrew	MMT, MT-BC.	Radiation Oncology/Department of Music Therapy, Mount Sinai Beth Israel Medical Center
46, 66, 92, 131	Safo	Stella	MD, MPH	Medicine
124	Schmidt	Hank	MD, PhD	Surgery
101	Sfakianos	John	MD	Urology
54	Shah	Kaushal	MD	Emergency Medicine
24	Sheffield	Perry	MD	Environmental Medicine & Public Health
8, 21, 33, 34, 61, 95, 116, 117	Shrivastava	Raj	MD	Neurosurgery
70	Sicherer	Scott	MD	Pediatrics
56, 75,126, 158	Sigel	Keith	MD, PhD	Medicine
78	Silvay	George	MD, PhD	Anesthesiology
148	Stock	Jeffrey	MD	Urology
140	Strickland	Sabrina	MD	Orthopaedics/Hospital for Special Surgery
6	Sumowski	James	PhD	Neurology
104	Taioli	Emanuela	MD, PhD	Thoracic Surgery
114, 153, 154	Taub	Peter	MD	Pediatrics Surgery
17	Tsao	Che-kai	MD	Medicine
112	Tsung	James	MD, MPH	Emergency Medicine
36, 37	Ungaro	Ryan	MD	Medicine
151	Varga	Andrew	MD, PhD	Medicine
99	Vedanthan	Rajesh	MD, MPH	Medicine/NYU Langone Health
147	Vieira	Luciana	MD	Obstetrics, Gynecology, and Reproductive Science
53	Villanueva	Augusto	MD, PhD	Oncological Sciences
100	Vouyouka	Ageliki	MD	Cardiovascular Surgery
136	Walter	Carly	BS	Psychiatry/James J. Peters VA Medical Center
83	Wanna	George	MD	Otolaryngology
47, 59, 121	Weintraub	Andrea	MD	Pediatrics
118	Wilson	Karen	MD, MPH	Pediatrics
75	Wisnivesky	Juan	MD	Medicine
3, 111	Yanagisawa	Robert	MD	Medicine
19, 143	Yeshokumar	Anusha	MD	Neurology
26	Yong	Raymund	MD	Neurosurgery

SECTION 5:

Acknowledgements



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Director, Medical Student Research

Jenny J. Lin, MD, MPH
Associate Director of SCHOLaR
Professor of Medicine/General Internal Medicine

Keith Sigel, MD, PhD
Co-Director, PORTAL Program (MD/MSCR)
Associate Director, Medical Student Research
Associate Professor of Medicine/General Internal Medicine

Grace A. Oluoch, MBA
Senior Program Coordinator
Medical Student Research Office

Shannon Bradford, MS
Senior Program Coordinator
Medical Student Research Office

POSTER SESSION FACILITATORS

Andrea D. Branch, PhD
Medicine, Liver Diseases and Surgery

Kirk Campbell, MD
Medicine, Nephrology

Edward Eden, MD
Medicine, Pulmonary, Critical Care & Sleep Medicine

Stephanie H. Factor, MD, MPH
Medicine, Infectious Diseases, Obstetrics, Gynecology and Reproductive Science

Alex D.Federman, MD
Medicine, General Internal Medicine

Mark T. Friedman, DO
Pathology

Scott L. Friedman, MD
Medicine, Liver Diseases, Pharmacological Sciences

Darinka Gadikota-Klumpers, PhD
Global Health Program

Joanne Hojsak, MD
Pediatrics, Pediatric Critical Care Medicine, Medical Education

Sam Horng, MD, PhD
Neurology

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Medicine, Gastroenterology

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Pediatrics, Environmental Medicine & Public Health

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Medicine, Hematology and Medical Oncology

Vivian Mitropoulou, MA, CHRC
Research Compliance

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Environmental Medicine & Public Health, Pediatrics

Keith Sigel, MD, PhD
Medicine, Infectious Diseases

Christopher Strother, MD
Emergency Medicine, Medical Education

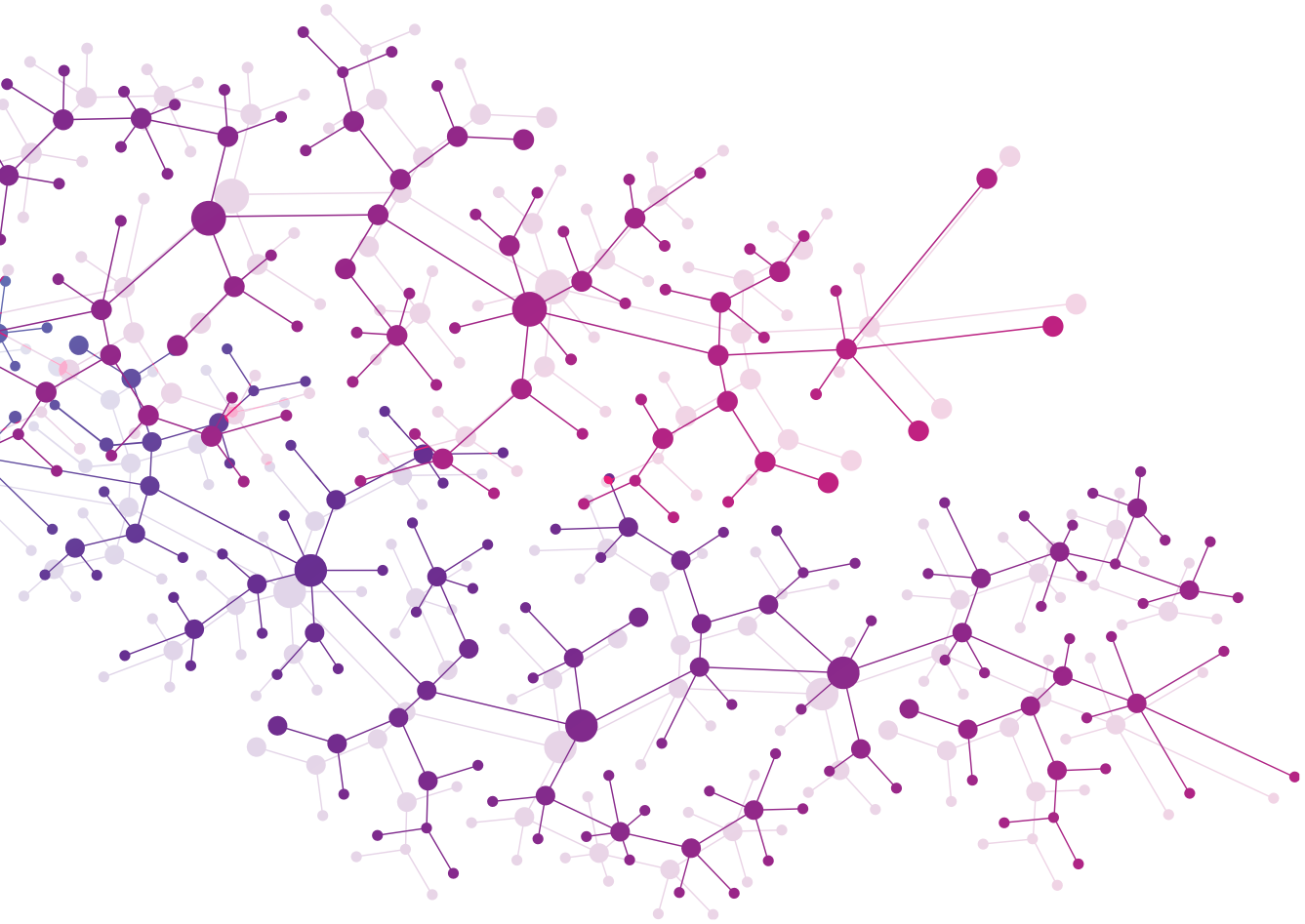
Windsor Ting, MD
Surgery, Radiology

Rajwanth Veluswamy, MD
Medicine, Hematology and Medical Oncology

Augusto Villanueva Rodriguez, MD, PhD
Medicine, Liver Diseases
Hematology and Medical Oncology

Karen M. Wilson, MD, MPH
Pediatrics

Anusha K. Yeshokumar, MD
Neurology, Pediatrics



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