

Seventh Annual

KAREN ZIER PHD

MEDICAL STUDENT RESEARCH DAY

Program and Abstracts

THURSDAY, MARCH 21, 2024, 12:15 – 4:00 PM



**Icahn
School of
Medicine at
Mount
Sinai**





TABLE OF CONTENTS

- *Introduction* (pg 3)
- *Program and Student Speakers* (pg 4-5)
- *List of Abstracts* (Section 1: pg 6-27)
- *Abstracts* (Section 2: pg 28-125)
- *Student Index* (Section 3: pg 126-133)
- *Mentor Index* (Section 4: pg 134-142)
- *Abstract Topics Area* (Section 5: pg 143-147)
- *Acknowledgements* (Section 6: pg 148-151)

Seventh Annual Karen Zier
Medical Student Research Day
March 21, 2024

Welcome to the 29th Annual Medical Student Research Day (MSRD). The Medical Student Research Office (MSRO) is proud to showcase the medical students' scholarly projects. These 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. We thank the over 100 mentors who have worked with students for the past year. And send a special thank you to the Scholarly Track Advisors for their dedicated support and feedback:

Ahsan, Fariha, MPA, MSc
Jacob Appel, MD, MS, MPH
Supinda Bunyavanich, MD
Kevin Costa, PhD
Darinka Gadikota-Klumpers, PhD
Leona Hess, PhD
James Iatridis, PhD
Reena Karani, MD, MHPE
Tatyana Kushner, MD, MSCE
Minal Kale, MD
Jenny Lin, MD
Ann-Gel Palermo, DrPH
Perry Sheffield, MD
Rainer Soriano, MD

The MSRD has been made possible by the unrelenting work by Grace Oluoch and Yakhira Encarnacion-Patterson, senior program administrators for the MSRO.



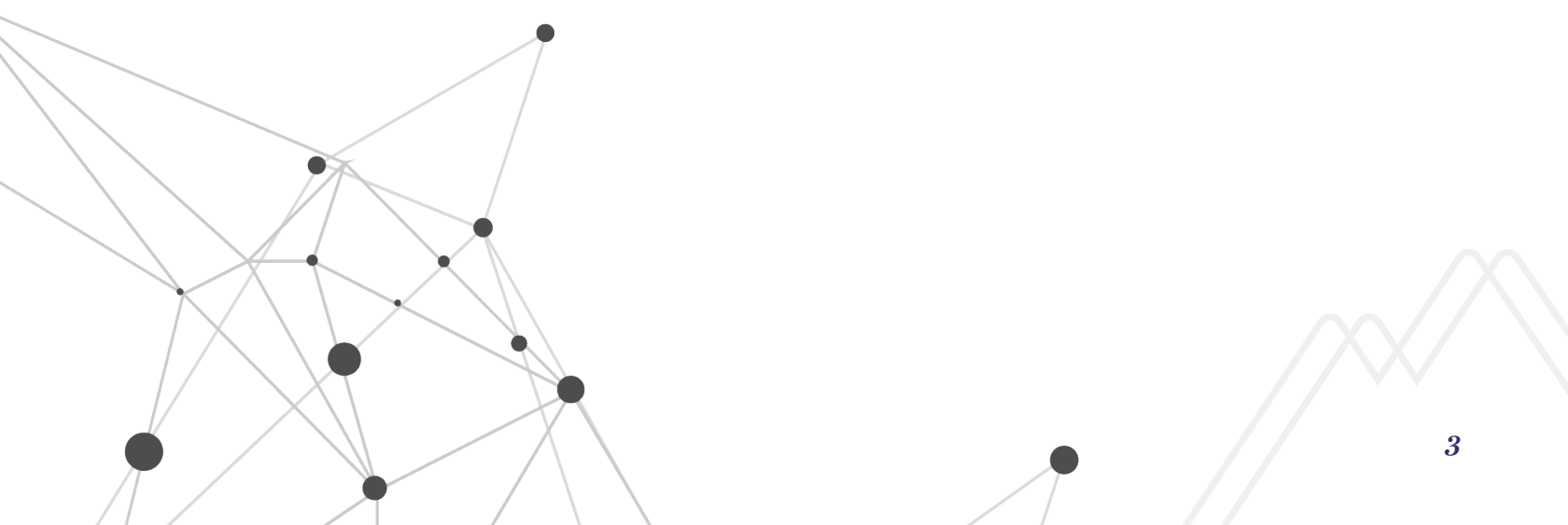
Jenny J. Lin, MD, MPH
Co-Director of SCHOLaR



Keith Sigel, MD, PhD
Director of PORTAL



Mary Rojas, PhD
Director of the MSRO



PROGRAM

12:15 – 1:15 pm

Session A –

Poster Presentations

Annenberg 12 & 13thFloors

Group B – Lunch

1:25 – 2:25 pm

Session B –

Poster Presentations

Annenberg 12 & 13thFloors

Group A – Lunch

2:35–4:00 pm

Welcome

Stern Auditorium

Welcome 2:35 - 2:50 pm

Mary Rojas, PhD

Director, Medical Student Research Office
Icahn School of Medicine at Mount Sinai

Dennis Charney, MD

Anne and Joel Ehrenkranz Dean
Icahn School of Medicine at Mount Sinai
President for Academic Affairs
Mount Sinai Health System

Student Platform Presentations 3:00 - 4:00 pm

Juan Sebastian Arroyave, MS II

Renal Recovery and Clinical Outcomes after
Surgery for a Renal Mass in a Solitary Kidney
MENTOR: A. ARI HAKIMI, MD

Annette Chang, MS II, PORTAL Program

Transcriptomic Profiling of the Immune and
Inflammatory Signature of Sclerotic-Type
Chronic Graft-Versus-Host Disease (SCGVHD)
Tape Strips
MENTOR: EMMA GUTTMAN, MD, PHD, AND NICHOLAS
GULATI, MD, PHD

Joy Jiang, (MD/PhD)

Multimodal Fusion Learning for Diagnosis of
Inherited Arrhythmia Syndromes Using the
Electrocardiogram
MENTOR: GIRISH NADKARNI, MD, MPH

Katherine Link, MS Scholarly Year

Longitudinal Deep Neural Networks for
Assessing Metastatic Brain Cancer on a Large
Open Benchmark
MENTOR: ERIC OERMANN, MD

Closing Remarks 4:00 pm

Jenny Lin, MD, MPH

Associate Director, SCHOLaR
Medical Student Research Office
Icahn School of Medicine at Mount Sinai

STUDENT SPEAKERS



JUAN SEBASTIAN ARROYAVE, MS II

Renal Recovery and Clinical Outcomes after Surgery for a Renal Mass in a Solitary Kidney

Abstract #: 4

MENTOR: A. ARI HAKIMI, MD

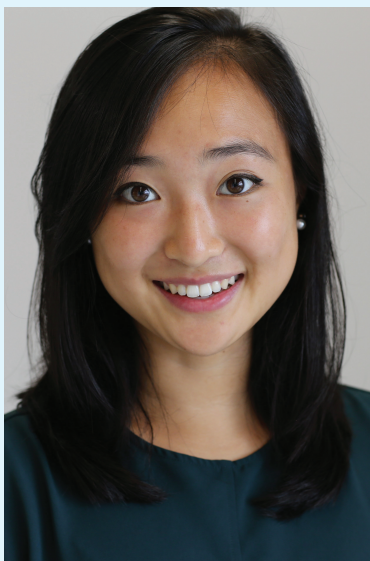


ANNETTE CHANG, MS II, PORTAL PROGRAM

Transcriptomic Profiling of the Immune and Inflammatory Signature of Sclerotic-Type Chronic Graft-Versus-Host Disease (SCGVHD) Tape Strips

Abstract #: 11

MENTOR: EMMA GUTTMAN, MD, PHD, AND NICHOLAS GULATI, MD, PHD



JOY JIANG, (MD/PHD)

Multimodal Fusion Learning for Diagnosis of Inherited Arrhythmia Syndromes Using the Electrocardiogram

Abstract #: 33

MENTOR: GIRISH NADKARNI, MD, MPH



KATHERINE LINK, MS SCHOLARLY YEAR

Longitudinal Deep Neural Networks for Assessing Metastatic Brain Cancer on a Large Open Benchmark

Abstract #: 51

MENTOR: ERIC OERMANN, MD



SECTION 1:

List of Abstracts

Note: Medical students' name is the first author and the last author is the mentor.

LIST OF ABSTRACTS

1	<p>THE EFFECT OF BONE DENSITY ON SUBSIDENCE FOLLOWING ANTERIOR CERVICAL DISCECTOMY AND FUSION.</p> <p>Wasil Ahmed, Akiro Duey¹, Jiwoo Park¹, Timothy Hoang¹, Bashar Zaidat¹, Moutie Rajjoub¹, Zachary Milestone¹, Christopher Gonzalez¹, Pierce Ferriter¹, Jun Kim², Samuel Cho^{2,1} ¹Medical Education, ²Orthopaedics. ^{1,2}Icahn School of Medicine at Mount Sinai, New York, New York.</p>
2	<p>BARRIERS IMPACTING ELIGIBILITY IN A CLINICAL TRIAL EVALUATING A NEW TREATMENT OPTION FOR PEOPLE WITH TYPE II DIABETES (T2D).</p> <p>Denise Alabi, Carol Levy¹. ¹Medicine. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>
3	<p>FOCAL NODULAR HYPERPLASIA PREVALENCE AMONG PEDIATRIC NEUROBLASTOMA SURVIVORS.</p> <p>Ashanay Allen, Danielle Friedman¹. ¹Pediatrics. ¹Memorial Sloan Kettering Cancer Center, New York, NY.</p>
4	<p>RENAL RECOVERY AND CLINICAL OUTCOMES AFTER SURGERY FOR A RENAL MASS IN A SOLITARY KIDNEY.</p> <p>Juan Arroyave, Stephen Reese¹, Charlie White², Lennert Eismann¹, Mark Dawidek¹, Lina Posada Calderon¹, Katiana Vasquez-Rivera³, Sari Khaleel¹, Irina Ostrovnaya², Paul Russo¹, A. Ari Hakimi¹. ^{1,3}Urology, ²Biostatistics. ^{1,2}Memorial Sloan Kettering Cancer Center, ³Maimonides Medical Center. New York, NY.</p>
5	<p>INVESTIGATING THE ASSOCIATION BETWEEN HASHIMOTO'S THYROIDITIS AND PAPILLARY THYROID CANCER AGGRESSIVENESS.</p> <p>Adriana Baez Berrios, Mathilda Alsen¹, Margaret Brandwein-Weber², Maaike van Gerwen¹. ¹Otolaryngology, ²Pathology. ^{1,2}Icahn School of Medicine at Mount Sinai, New York, New York.</p>

LIST OF ABSTRACTS

6	<p>EFFECTS OF A MULTIDISCIPLINARY CLINIC ON ADMISSIONS AND EMERGENCY DEPARTMENT VISITS FOR CHILDREN WITH NEUROMUSCULAR DISORDERS.</p> <p>Uma Balachandran, Olivia Blanchard¹, Katrina Nietsch¹, Elaine Lin², Sheena Ranade¹. ¹Orthopaedics, ²Pediatrics. ¹Icahn School of Medicine at Mount Sinai, New York, New York, ²Boston Children's Hospital Boston, MA.</p>
7	<p>EARLY PREGNANCY WARM SEASON EXPOSURE IS ASSOCIATED WITH INCREASED RISK OF OBSTETRIC COMPLICATIONS AND ADVERSE BIRTH OUTCOMES.</p> <p>Melissa Blum, Donato DeIngeniis¹, Daniela Shill², Perry Sheffield³, Yoko Nomura⁴. ¹Neuroscience, ²Medical Education, ³Pediatrics, ⁴Psychiatry. ¹Queens College - CUNY, Queens, NY, ^{2,3,4}Icahn School of Medicine at Mount Sinai, New York, New York.</p>
8	<p>ASSOCIATION OF PRIMARY LANGUAGE WITH OUTCOMES AND PATIENT ENGAGEMENT PROCESS METRICS AFTER TOTAL JOINT ARTHROPLASTY.</p> <p>Rodnell Busigo Torres, Mateo Restrepo Mejia¹, Brocha Stern¹, Darwin Chen¹, Calin Moucha¹, Jashvant Poeran², Brett Hayden¹. ¹Orthopaedics, ²Anesthesiology. ^{1,2}Icahn School of Medicine at Mount Sinai, New York, New York.</p>
9	<p>HEALTHCARE SERVICES UTILIZATION PATTERNS AMONG PATIENTS WITH ALCOHOL USE DISORDER.</p> <p>Edward Bull, Clare O'Brien-Lambert¹, Erick Eiting¹, Jacqueline Ryder¹, Ethan Cowan¹. ¹Emergency Medicine. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>
10	<p>ARID1A MUTATION ASSOCIATED WITH RECURRENCE AND SHORTER PROGRESSION-FREE SURVIVAL IN ATYPICAL MENINGIOMAS.</p> <p>Danielle Chaluts, Jonathan Dullea¹, Muhammad Ali¹, Vikram Vasan¹, Alex Devarajan¹, John Rutland¹, Corey Gill¹, ethan ellis¹, Yayoi Kinoshita¹, Russell McBride¹, Joshua Bederson¹, Michael Donovan¹, Robert Sebra¹, Melissa Umphlett¹, Raj Shrivastava¹. ¹Neurosurgery. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>

LIST OF ABSTRACTS

11	TRANSCRIPTOMIC PROFILING OF THE IMMUNE AND INFLAMMATORY SIGNATURE OF SCLEROTIC-TYPE CHRONIC GRAFT-VERSUS-HOST DISEASE (SCGVHD) TAPE STRIPS. Annette Chang , Madeline Kim ¹ , Jonathan Bar ¹ , Nicholas Gulati ¹ , Emma Guttman ¹ . ¹ Dermatology. ¹ Icahn School of Medicine at Mount Sinai, New York, New York.
12	CHRONIC HAND ECZEMA SHARES A COMMON MOLECULAR SIGNATURE REGARDLESS OF ATOPIC DERMATITIS STATUS. Gabriella Chefitz , Jonathan Bar ¹ , Emma Guttman ¹ . ¹ Dermatology. ¹ Icahn School of Medicine at Mount Sinai, New York, New York.
13	PERCEPTIONS AND USE OF CANNABIDIOL AMONG PATIENTS IN TREATMENT FOR OPIOID USE DISORDER. Rebecca Chen , Chris Kudrich ¹ , Keren Bachi ¹ , Yasmin Hurd ² . ¹ Psychiatry, ² Neuroscience. ^{1,2} Icahn School of Medicine at Mount Sinai, New York, New York.
14	ELUCIDATING THE ROLE OF ΔFOSB IN STRESS AND COCAINE RESPONSES: A PATHWAY TO UNDERSTANDING ANHEDONIA AND ADDICTION BEHAVIORS. Earnest P. Chen , Brandon W, Hughes ¹ , Molly S. Estill ¹ , Yunyoung Yim ¹ , Gabriel Stephens ² , Jeannie Chin ³ , Eric J. Nestler ¹ . ^{1,2,3} Neuroscience. ¹ Icahn School of Medicine at Mount Sinai, New York, New York, ² Baylor College of Medicine, ³ Baylor School of Medicine.
15	USE OF LIVE, PERFUSED MOUSE LUNGS TO VISUALIZE NEUTROPHIL MIGRATION TO ALVEOLI. Wayland Chiu , Jaime Hook ¹ . ¹ Medicine. ¹ Icahn School of Medicine at Mount Sinai, New York, New York.

LIST OF ABSTRACTS

16	TARGETING POTENTIALLY INAPPROPRIATE MEDICATIONS IN HOSPITALIZED ELDERLY PATIENTS: DESCRIPTION OF A PROCESS TO OPTIMIZE YIELD OF QUALITY IMPROVEMENT EFFORTS. Yhan Colon Iban , Mona Krouss ¹ , Mayuri Jain ² , Joseph Talledo ¹ , Sakina Ouedraogo Tall ¹ , Jashvant Poeran ² , Hyung Cho ¹ , Rainier Soriano ³ . ^{1,3} Geriatrics and Palliative Medicine, ² Population Health Science and Policy. ¹ NYC H+H, NYC, NY, ^{2,3} Icahn School of Medicine at Mount Sinai, New York, New York.
17	DIFFERENCES IN CANCER PRESENTATION, TREATMENT, AND MORTALITY BETWEEN RURAL AND URBAN PATIENTS DIAGNOSED WITH KIDNEY CANCER IN THE UNITED STATES. Christopher Connors , Micah Levy ¹ , Chih Peng Chin ² , Daniel Wang ¹ , Olamide Omidele ² , Francisca Larenas ² , Michael Palese ² , ¹ Medical Education, ² Urology. ^{1,2} Icahn School of Medicine at Mount Sinai, New York, New York.
18	SEX DIFFERENCES IN THE ASSOCIATIONS BETWEEN MATERNAL PLACENTAL MITOCHONDRIAL DNA MUTATIONS AND EARLY CHILDHOOD NEUROBEHAVIORAL OUTCOMES. Agathe de Pins , Kelly Brunst ¹ , Leon Hsu ² , Rosalind Wright ³ , ³ Pediatrics. ¹ University of Cincinnati College of Medicine, ^{2,3} Icahn School of Medicine at Mount Sinai, New York, New York.
19	REINFORCEMENT LEARNING FOR OPTIMAL GLUCOSE CONTROL AFTER CARDIAC SURGERY. Jacob Desman , Ashwin Sawant ¹ , Pushkala Jayaraman ¹ , Ankit Sakhuja ¹ , Girish Nadkarni ¹ . ¹ Medicine. ¹ Icahn School of Medicine at Mount Sinai, New York, New York.
20	Abstract 20 has been withdrawn from the 2024 collection.

LIST OF ABSTRACTS

21	IMPROVING ACCURATE DOCUMENTATION OF LIMITED ENGLISH PROFICIENCY PATIENTS AT MOUNT SINAI EXPRESS CARE. Jaskiran Dhinsa , Vibhor Mahajan ¹ , Tamanna Obyed ¹ , Ka Ming Ngai ¹ . ¹ Population Health Science and Policy. ¹ Icahn School of Medicine at Mount Sinai, New York, New York.
22	INSULIN RECEPTOR SIGNALING AND RACIAL DISPARITIES IN TRIPLE NEGATIVE BREAST CANCER. Alexis Engel , Krupa Samuel ¹ , Ilana Bass ¹ , Sylvia Linn ¹ , Irini Antoniou ¹ , Radhi Yagnik ¹ , Derek LeRoith ¹ , Nina Bickell ¹ , Emily Gallagher ¹ . ¹ Medicine. ¹ Icahn School of Medicine at Mount Sinai, New York, New York.
23	HEALTHCARE UTILIZATION AND MEDICAL CONDITIONS IN CHILDREN EXPERIENCING FOOD INSECURITY AT A CLINIC IN EAST HARLEM, NEW YORK CITY. Jessica Fuzailof , Jennifer Acevedo ¹ , Alexis Burgess ¹ , Rebecca Lee ¹ , Eve Spear ² , Lauren Zajac ³ , Leora Mogilner ³ , ^{1,2} Environmental Medicine and Public Health, ³ Pediatrics. ^{1,3} Icahn School of Medicine at Mount Sinai, New York, New York.
24	DONOR RISK FACTORS AND OUTCOMES OF INTRACARDIAC THROMBOSIS DURING LIVER TRANSPLANTS. Sophia Gamboa , Ryan Wang ¹ , Yuxia Ouyang ¹ , Natalia Egorova ¹ , Natalie Smith ¹ . ¹ Anesthesiology. ¹ Icahn School of Medicine at Mount Sinai, New York, New York.
25	DNA DAMAGE RESPONSE MUTATIONS ASSOCIATED WITH WORSE OUTCOMES IN KRAS/TP53 CO-ALTERED PANCREAS CANCER. Adam Geffner , Allen Yu ¹ , Judy Li ¹ , Spiros Hiotis ¹ , Ganesh Gunasekaran ¹ , Camilo Correa ¹ , Umut Sarpel ¹ , Noah Cohen ¹ . ¹ Surgery. ¹ Icahn School of Medicine at Mount Sinai, New York, New York.

LIST OF ABSTRACTS

26	<p>EXAMINE THE IMPACT OF RADIATION THERAPY ON OVERALL SURVIVAL AND RESPIRATORY FUNCTION OF LUNG CANCER PATIENTS WITH PULMONARY FIBROSIS.</p> <p>Simeret Genet, Annemarie Shepherd¹, ¹Radiation Oncology. ¹Memorial Sloan Kettering Cancer Center, New York, New York.</p>
27	<p>A QUALITATIVE ANALYSIS OF PATIENT ADVOCATE PERSPECTIVES ON ADDRESSING DISPARITIES IN BREAST CANCER IMMUNOTHERAPY ACCESS.</p> <p>Ethan Gomez, Adriana Espinosa¹, Francesca Gany², Alexis Brown¹, Melissa Lopez², Devika Jutagir², ²Psychiatry. ¹Department of Psychology, The City College of New York, New York, NY, ²Department of Psychiatry and Behavioral Sciences, Memorial Sloan Kettering Cancer Center, New York, NY.</p>
28	<p>COMPARING THE EFFECTIVENESS OF AUGMENTED REALITY AND VIDEO LEARNING IN TEACHING A PROCEDURAL SKILL.</p> <p>Shouri Gottiparthi, Garrett Burnett¹, Chang Park¹, Benjamin Hyers¹, Zhi-Yuan Wang¹, Daniel Katz¹, ¹Anesthesiology. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>
29	<p>INCREASE IN CRANIOMAXILLOFACIAL CASE VOLUME WITH THE INTRODUCTION OF GENDER AFFIRMING SURGERY CURRICULUM: RESULTS FROM A SINGLE INSTITUTION.</p> <p>Daniel Guerra, Olachi Oleru¹, Abena Gyasi¹, Peter Shamamian¹, Peter Taub¹, Nargiz Seyidova¹. ¹Division of Plastic and Reconstructive Surgery. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>
30	<p>OUTCOMES IN INCIDENTALLY VERSUS SCREENING DETECTED STAGE I LUNG CANCER SURGERY PATIENTS.</p> <p>Shubham Gulati, Tara Ivic-Pavlicic¹, Jonathan Joasil², Raja Flores³, Emanuela Taioli³. ¹Translational Epidemiology, ²Medical Education, ³Thoracic Surgery. ^{1,2,3}Icahn School of Medicine at Mount Sinai, New York, New York.</p>

LIST OF ABSTRACTS

<p style="text-align: center; font-size: 24pt; font-weight: bold;">31</p>	<p>A MIXED-METHODS ANALYSIS OF THE SOCIAL DETERMINANTS OF HEALTH AND NEEDS MET IN A COMMUNITY-BASED DOULA CARE PROGRAM IN NYC PUBLIC HOSPITALS.</p> <p>Kaila Helm, Alva Rodriguez Nunez¹, Kanwal Haq¹, Natalie Boychuk², Caroline Cooke³, Sarah Nowlin⁴, Teresa Janevic², Sheela Maru⁵.¹Global Health & Health System Design, ²Epidemiology, ³Ambulatory Care and Population Health, ⁴Population Health Science and Policy, ⁵Obstetrics, Gynecology, and Reproductive Science. ^{1,4,5}Icahn School of Medicine at Mount Sinai, New York, New York, ²Columbia University Mailman School of Public Health, New York, NY, ³NYC Health + Hospitals, New York, NY.</p>
<p style="text-align: center; font-size: 24pt; font-weight: bold;">32</p>	<p>TELEMEDICINE SOLUTIONS FOR VULNERABLE POPULATIONS: ASSESSING THE IMPACT OF ECONSULTS IN MATAMOROS, MEXICO.</p> <p>Soonmyung Hwang, Shaella Morales¹, Kaitlyn McGarry¹. ¹RubiconMD.</p>
<p style="text-align: center; font-size: 24pt; font-weight: bold;">33</p>	<p>MULTIMODAL FUSION LEARNING FOR DIAGNOSIS OF INHERITED ARRHYTHMIA SYNDROMES USING THE ELECTROCARDIOGRAM.</p> <p>Joy Jiang, Akhil Vaid¹, Ha My Thi Vy¹, Alexander Charney², Patricia Kovatch³, Vivek Reddy¹, Ron Do⁴, Deepak Bhatt¹, Joshua Lampert¹, Girish Nadkarni¹. ¹Medicine, ²Neuroscience, ³High Performance Computing, ⁴Genetics and Genomic Sciences. ^{1,2,3,4}Icahn School of Medicine at Mount Sinai, New York, New York.</p>
<p style="text-align: center; font-size: 24pt; font-weight: bold;">34</p>	<p>THE IMPACT OF INTENSITY AND DURATION OF SMOKING ON LUNG CANCER SCREENING AND SEVERITY.</p> <p>Jonathan Joasil, Tara Ivic-Pavlicic¹, Emanuela Taioli¹. ¹Thoracic Surgery. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>
<p style="text-align: center; font-size: 24pt; font-weight: bold;">35</p>	<p>DEVELOPING AN EMR-BASED APPROACH FOR NORSE SURVEILLANCE.</p> <p>Brian Johnson, Parul Agarwal¹, Cristina Rodas², Carolina Ferreira-Atuesta³, Samantha Townes¹, Brian Mathew¹, Ariella Cohen¹, Sharon Nirenberg¹, Anusha Yeshokumar¹, Zachary Grinspan⁴, Claude Steriade⁵, Kiran Thakur⁶, Jacqueline Gofshteyn⁷, Nathalie Jetté¹, Leah Blank^{1,1,2,3,5,6}Neurology, ⁴Child Neurology, ⁷Pediatrics. ¹Icahn School of Medicine at Mount Sinai, New York, New York, ²St. Mary's Hospital, Athens, GA, ³Harvard Medical School and Massachusetts General Hospital, Boston, MA, ⁴Weill Cornell Medicine, New York, NY, ⁵NYU Langone Health, New York, NY, ⁶Columbia University Irving Medical Center, New York, NY, ⁷Weill Cornell Medical College.</p>

LIST OF ABSTRACTS

36	<p>ANALYZING RACIAL AND ETHNIC DISPARITIES IN THE UTILIZATION OF ELECTIVE VS. NON-ELECTIVE COLECTOMIES AMONG GERIATRIC PATIENTS: A RETROSPECTIVE MULTIVARIATE ANALYSIS OF THE NSQIP DATABASE.</p> <p>Spencer Johnson, Adriano Cuadros¹, Venu Bangla¹, Alexandra Agathis¹, Celia Divino¹;Surgery. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>
37	<p>MODELING THE SPATIOTEMPORAL PROPERTIES OF CROSSTALK BETWEEN RYR AND IP3R-MEDIATED CA²⁺ RELEASE IN FAILING CARDIOMYOCYTES.</p> <p>DeAnalisa Jones, Eric Sobie¹, ¹Pharmacological Sciences. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>
38	<p>OUTCOMES OF CHILDREN AND ADOLESCENTS IN ACUTE PSYCHIATRIC CRISIS WITH AND WITHOUT PEDIATRIC OBSERVATION UNIT UTILIZATION.</p> <p>Rachel Kasdin, Mary Rojas¹, William Bonadio², Yvette Calderon², Czer Anthoney Lim². ¹Medical Education, ²Emergency Medicine. ^{1,2}Icahn School of Medicine at Mount Sinai, New York, New York.</p>
39	<p>ASSESSING EQUITY WITHIN HEALTHCARE INSTITUTIONS: FINDINGS FROM STAFF OF A COMMUNITY HEALTH CENTER NETWORK.</p> <p>Jillian Keegan, Jacqueline Chiofalo¹, Arniella Guedy¹, Neil Calman¹. ¹Family Medicine and Community Health. ¹The Institute of Family Health.</p>
40	<p>INCREASING ACCESS TO PATHOLOGY SERVICES IN LOW-AND MIDDLE-INCOME COUNTRIES THROUGH INNOVATIVE USE OF TELEPATHOLOGY.</p> <p>Krsna Kothari, Joseph Okello Damoi¹, Nebras Zeizafoun², Penninah Asimwe³, Katie Glerum⁴, Moses Bakaleke¹, Angellica Giibwa¹, Melissa Umphlett², Michael Marin⁵, Linda Zhang^{5,1,5}Surgery, ^{2,3}Pathology, ⁴ Global Health. ^{1,3}Kyabirwa Surgical Center, ^{2,4,5}Mount Sinai Health System, New York, NY.</p>

LIST OF ABSTRACTS

41	BASELINE HEALTH STATUS AS MEASURED BY FUNCTIONAL STATUS INDEXES INTERACT WITH GEOSPATIAL FACTORS TO IMPACT COVID 19 MORTALITY. Jagdeesh Kottapalli , Jill Aguinaldo ¹ , Lemon Ni ¹ , Lilia Villarin ¹ , Anthony Martinez ² , ^{1,2} Critical Care Medicine. ¹ Saint Agnes Hospital, ² Saint Agnes Hospital, Baltimore, MD.
42	RUBICONMD: USING ECONSULTS IN HOME HEALTH CARE FOR GERIATRIC PATIENTS. Anagha Kumar , Kaitlyn McGarry ¹ . ¹ RubiconMD.
43	NATIONAL UTILIZATION AND INPATIENT SAFETY MEASURES OF LUMBAR SPINAL FUSION METHODS WITH AND WITHOUT COMPUTER ASSISTED NAVIGATION. Daniel Kwon , Ikaasa Suri ¹ , James Hu ¹ . ¹ Illuminant Surgical Los Angeles, California.
44	Abstract 44 has been withdrawn from the 2024 collection.
45	DIFFERENCES IN NEURAXIAL ANESTHESIA ADMINISTRATION BASED ON PRIMARY SPOKEN LANGUAGE OF HIP FRACTURE PATIENTS. Charles Laurore , Avanish Yendluri ¹ , Mateo Restrepo Mejia ¹ , Brocha Stern ² , Chang Park ³ , Garrett Burnett ³ , Jashvant Poeran ² , David Forsh ¹ , ¹ Orthopaedics, ² Population Health Science and Policy, ³ Anesthesiology. ^{1,2,3} Icahn School of Medicine at Mount Sinai, New York, New York.

LIST OF ABSTRACTS

46	<p>GENETIC SEQUENCING AND NOVEL THERAPEUTIC TARGETS IN PERIANAL EXTRAMAMMARY PAGET DISEASE.</p> <p>Leore Lavin, Anthony Rossi¹, ¹Dermatology. ¹Memorial Sloan Kettering Cancer Center. New York, NY.</p>
47	<p>HEALING IN COLOR: A QUALITATIVE STUDY OF THE UPBRINGINGS, CREATIVE PROCESSES, AND MENTAL HEALTH EXPERIENCES OF BIPOC AND IMMIGRANT ARTISTS.</p> <p>Alicia Leong, Stephanie Wu¹, Benetta Wang², Luchia Lee³, Kenneth Howell³, Eunice Yuen^{4,14} ¹Psychiatry, ²Psychology, ³Executive Director and Chief Curator. ¹Yale School of Medicine, New Haven, CT, ²College of William and Mary, Williamsburg, VA, ³Taiwanese American Arts Council, New York, NY, ⁴Yale Child Study Center, New Haven, CT.</p>
48	<p>ASSOCIATIONS BETWEEN A PRENATAL STRESS MIXTURE AND PRESCHOOLERS' TEMPERAMENT: EXPLORING EFFECT MODIFICATION BY RACE/ETHNICITY.</p> <p>Bonnie Lerman, Francheska Merced-nieves¹, Rosalind Wright¹, ¹Pediatrics. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>
49	<p>A CLOSER LOOK AT NONPROFIT HEALTH CARE ORGANIZATIONS' TAX EXEMPTIONS.</p> <p>Sunjay Letchuman, Elizabeth Plummer¹, Shunlan Fang², Ge Bai³. ^{1,2,3}Accounting. ¹Texas Christian University, Fort Worth, TX, ²Kent State University, Kent, OH, ³Johns Hopkins University, Baltimore, MD.</p>
50	<p>ASSESSING THE INCIDENCE OF SEVERE CORONARY OVERLAP WITH NEO-COMMISSURE AND THE CONSIDERATION OF CORONARY ALIGNMENT IN TRANSCATHETER AORTIC VALVE REPLACEMENT.</p> <p>Keva Li, Manish Vinayak¹, Parasuram Krishnamoorthy¹, Gilbert Tang², ²Cardiovascular Surgery. ^{1,2}Icahn School of Medicine at Mount Sinai, New York, New York.</p>

LIST OF ABSTRACTS

51	LONGITUDINAL DEEP NEURAL NETWORKS FOR ASSESSING METASTATIC BRAIN CANCER ON A LARGE OPEN. Katherine Link , Eric Oermann ¹ , ¹ Neurosurgery, ¹ NYU Langone, New York, NY.
52	PREDICTION OF CORONARY ARTERY DISEASE SUBTYPES WITH CLINICAL AND GENETIC RISK FACTORS. Lathan Liou , Judit Garcia Gonzalez ¹ , Hei Man Wu ¹ , Zhe Wang ¹ , Shing Wan Choi ¹ , Clive Hoggart ¹ , Amy Kontorovich ¹ , Jason Kovacic ¹ , Paul O'Reilly ¹ , ¹ Genetics and Genomic Sciences, ¹ Icahn School of Medicine at Mount Sinai, New York, New York.
53	DISPARITIES IN SURGERY DELAYS FOR NONMETASTATIC GALLBLADDER ADENOCARCINOMA PATIENTS. Martina Lopez May , Celia Divino ¹ , ¹ Surgery, ¹ Icahn School of Medicine at Mount Sinai, New York, New York.
54	HYPOGLYCEMIC EVENTS MAY TRIGGER ACUTE ISCHEMIC STROKE IN THE FIRST 30 DAYS: A CASE-CROSSOVER STUDY. Supriya Makam , Mandip Dhamoon ¹ , ¹ Neurology, ¹ Icahn School of Medicine at Mount Sinai, New York, New York.
55	NEW STRATEGIES FOR LOCALLY ADVANCED BREAST CANCER: A REVIEW OF INFLAMMATORY BREAST CANCER AND NON-RESPONDERS. Simran Malhotra , Audree Tadros ¹ , ¹ Surgery, ¹ Breast Service, Department of Surgery, Memorial Sloan Kettering Cancer Center.

LIST OF ABSTRACTS

56	<p>NON-LESIONAL TYPE 2 AND TYPE 17/22 IMMUNE ACTIVATION PRECEDES LESIONAL TYPE 1-ASSOCIATED INFLAMMATION IN SKIN OF VITILIGO PATIENTS.</p> <p>Meredith Manson, Patrick Brunner¹, Ester Del Duca¹, Eden David¹, Emma Guttman¹, ¹Dermatology. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>
57	<p>ASSOCIATION BETWEEN ANTICIPATED CERVICAL CANCER STIGMA AND SCREENING UPTAKE IN SEMI-URBAN NEPAL.</p> <p>Joshua Mathew, Bandana Paneru¹, Archana Shrestha¹, Rose House², ²Emergency Medicine. ¹Kathmandu University School of Medical Sciences, Dhulikhel, Nepal, ²Icahn School of Medicine at Mount Sinai, New York, New York.</p>
58	<p>ENGAGING MOTHERS IN A STUDY OF BODY SIZE AND STIGMA STRATIFIED BY RACE/ETHNICITY.</p> <p>Farimata Mbaye, Kimberly Glazer¹. ¹Obstetrics, Gynecology, and Reproductive Science. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>
59	<p>ANTI-XA TEST FOR PEDIATRIC AND NEONATAL ECMO.</p> <p>Noy Meshulami, Robert Green¹, Shubhi Kaushik¹, ¹Pediatrics. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>
60	<p>A1CDEFG: THE EFFECT OF TARGETED HEALTH-LITERACY FOCUSED A1C MATERIALS ON PATIENT UNDERSTANDING AND PATIENT ATTITUDES.</p> <p>Maria Meyer, Ka Ming Ngai¹, ¹Emergency Medicine. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>

LIST OF ABSTRACTS

61	A PROPENSITY SCORE MATCHING ANALYSIS OF THE IMPACT OF RETROGRADE ACCESS DURING ENDOVASCULAR REVASCULARIZATION. Andrew Min , Michael Daidone ¹ , William Beckerman ¹ , Ajit Rao ² , ² Surgery. ¹ Rutgers Robert Wood Johnson Medical School, ² Icahn School of Medicine at Mount Sinai, New York, New York.
62	THE EFFECT OF MANNITOL ON POSTREPERFUSION SYNDROME DURING ORTHOTOPIC LIVER TRANSPLANTATION. Victoria Mroz , Emily Bachner ¹ , Sophia Gamboa ² , Yuxia Ouyang ³ , Natalia Egorova ³ , Ryan Wang ¹ , Samuel DeMaria ¹ , Natalie Smith ¹ , ¹ Anesthesiology, ² Medical Education, ³ Center for Biostatistics. ^{1,2,3} Icahn School of Medicine at Mount Sinai, New York, New York.
63	EXAMINING THE ACCURACY OF TRAVEL SCREENINGS IN EMERGENCY DEPARTMENT TRIAGE. Neha Mukherjee , Connor Welsh ¹ , Nita Avrith ¹ , Benjamin Wyler ¹ ,Emergency Medicine. ¹ Icahn School of Medicine at Mount Sinai, New York, New York.
64	REAL-WORLD CHALLENGES IN US THROMBECTOMY TRANSFERS: DIFFICULTY FINDING AN ACCEPTING HOSPITAL, PROLONGED TRAVEL, AND DIFFERING PERCEPTIONS OF TRANSFER REQUIREMENTS. Jaan Nandwani , Diandra Adu-Kyei ¹ , Madeline Penn ² , Salonee Shah ² , Connor Davy ² , J Mocco ³ , Mandip Dhamoon ² , Nathalie Jette ² , Laura Stein ² . ^{1,2} Neurology, ³ Neurosurgery. ¹ Meharry Medical College, ^{2,3} Icahn School of Medicine at Mount Sinai, New York, New York.
65	CAN LARGE LANGUAGE MODELS RECOMMEND TREATMENT FOR ACUTE COMPARTMENT SYNDROME? Katrina Nietsch , Sarah Lu ¹ , Jamie Frost ² , Nancy Shrestha ³ , Alexander Yu ² , Akiro Duey ² , Bashar Zaidat ² , Laura Mazudie Ndjonko ⁴ , Pierce Ferriter ² , Jun Kim ⁵ , Samuel Cho ⁵ . ^{1,2,3,4} Medical Education, ⁵ Orthopaedics. ¹ California University of Science and Medicine School of Medicine, ^{2,5} Icahn School of Medicine at Mount Sinai, New York, New York, ³ Rosalind Franklin University of Medicine and Science, ⁴ Northwestern University.

LIST OF ABSTRACTS

66	<p>BURDEN AND DETERMINANTS OF HYPERTENSION, TYPE 2 DIABETES MELLITUS AND DYSLIPIDEMIA IN UNDERWEIGHT MIDDLE-AGED ADULTS: AN AWI-GEN SUB-STUDY.</p> <p>Uchechukwu Okoh, Vongai Tizora¹, Raymond Aborigo², Khadija Jones¹, Evan Alvarez¹, Godfred Agongo², Patrick Ansah², Abraham Oduro², David Heller³, Engelbert Nonterah². ¹Medical Education, ² Social Science, ³Medicine. ^{1,3}Icahn School of Medicine at Mount Sinai, New York, New York, ²Navrongo Health Research Center, Navrongo, Ghana.</p>
67	<p>GVHD SEVERITY AND LONG-TERM OUTCOMES IN BLACK PATIENTS FOLLOWING HCT.</p> <p>Carlos Ortega Rios, James Ferrara¹. ¹Oncological Sciences. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>
68	<p>VENTURE 4 MEDICAID - BRINGING ABOUT CHANGE IN THE MEDICAID INVESTMENT ECOSYSTEM.</p> <p>Tony Owusu, Adimika Arthur¹. ¹Population Health Science and Policy. ¹HT4M, San Francisco, CA.</p>
69	<p>IMPLEMENTATION OF A LONGITUDINAL NUTRITION COUNSELING SERVICE AT A STUDENT-RUN FREE PRIMARY CARE CLINIC.</p> <p>Yeji Park, Yasmin Meah¹. ¹Medicine, Geriatrics and Palliative Medicine. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>
70	<p>HEALTH EQUITY IN DIGITAL HEALTH: AN ASSESMENT OF THE STATUS QUO AND RECOMMENDATIONS TO MOVE FORWARD.</p> <p>Barbara Pereira Vera, Deonta Wortham¹. ¹Rock Health.</p>

LIST OF ABSTRACTS

71	<p>MULTIDISCIPLINARY AND TELEMEDICINE PRE-OPERATIVE EVALUATIONS FOR DEEP BRAIN STIMULATION CANDIDATES.</p> <p>Katharine Phillips, Christina Palmese¹, Martijn Figuee¹, Shannon O'Neill¹, Brian Kopell², Joochi Jimenez-Shahed¹;¹Neurology, ²Neurosurgery. ^{1,2}Icahn School of Medicine at Mount Sinai, New York, New York.</p>
72	<p>OPEN VS ENDOSCOPIC DISCECTOMIES FOR LUMBAR DISC HERNIATION: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS.</p> <p>Moutie Rajjoub, Mateo Restrepo Mejia¹, Rodnell Busigo Torres¹, Wasil Ahmed¹, Jashvant Poeran¹, Saad Chaudhary¹; ¹Orthopaedics. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>
73	<p>MAGNETIC HYPERTHERMIA THERAPY IN COMBINATION WITH CHEMORADIATION FOR THE TREATMENT OF GLIOBLASTOMA.</p> <p>Daniel Rivera, Alexandros Bouras¹, Maria Anastasiadou², Tori Chanenchuk², Hayden Carlton³, Alexander Schupper², Gabrielle Price², Robert Ivkov³, Constantinos Hadjipanayis^{1, 2}; ¹Neurosurgery, ²Radiation Oncology. ¹University of Pittsburgh, Pittsburgh, PA, ²Icahn School of Medicine at Mount Sinai, New York, New York, ³Johns Hopkins University, Baltimore, MD.</p>
74	<p>ROLE OF THE ORBITAL FRONTAL CORTEX IN THE EMERGENCE OF AGGRESSIVE BEHAVIORS IN MALE MICE.</p> <p>Julian Sackey, Romain Durand-de Cuttoli¹; ¹Neuroscience. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>
75	<p>PREVALENCE AND FACTORS ASSOCIATED WITH SHOW STATUS AMONG PATIENTS BOOKED FOR PROCEDURES AT AN AMBULATORY SURGERY CENTER IN UGANDA.</p> <p>Brittany Sacks, Daniel Haik¹, Winfred Nannozi², Katie Glerum³, Phoebe Kwagala², Joseph Okello Damoi², Michael Marin³, Linda Zhang³; ¹Medical Education, ^{2,3}Surgery. ¹University of California, Irvine, School of Medicine, Irvine, California, United States, ²Kyabirwa Surgical Center, Jinja, Uganda, ³Icahn School of Medicine at Mount Sinai, New York, New York.</p>

LIST OF ABSTRACTS

76	<p>PLASTIC SURGEON CLOSURE IN CERVICAL SPINE SURGERY: ENHANCING WOUND-RELATED OUTCOMES.</p> <p>Michael Saturno, Reanna Shah¹, Nargiz Seyidova¹, Olachi Oleru¹, Peter Taub¹. ¹Plastic and Reconstructive Surgery. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>
77	<p>EARLY ADVERSE CHILDHOOD EXPERIENCES AND REPEATED WHEEZING FROM 6 TO 30 MONTHS OF AGE: EXPLORING THE ROLE OF RACE/ETHNICITY.</p> <p>Marina Schechter, Francheska Merced-nieves¹, Elena Colicino¹, Allison Frost², Rosalind Wright¹. ^{1,2}Pediatrics, Environmental Medicine and Public Health. ¹Icahn School of Medicine at Mount Sinai, New York, New York, ²University of North Carolina, Chapel Hill.</p>
78	<p>RATES OF SURVIVAL TO HOSPITAL DISCHARGE WITH GOOD NEUROLOGIC OUTCOME AFTER OVERDOSE-ATTRIBUTABLE CARDIAC ARREST VERSUS NON-OVERDOSE CARDIAC ARREST.</p> <p>Aditya Shekhar, Ryan Coute¹. ¹Emergency Medicine. ¹University of Alabama-Birmingham.</p>
79	<p>EXPLORING AND MEASURING THE INFLUENCE OF RESILIENCE IN PATIENTS EXPERIENCING CHRONIC GASTROINTESTINAL ILLNESS.</p> <p>Wamia Siddiqui, Michelle Mendiolaza¹, Laurie Keefer¹. ¹GI / IBD Center. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>
80	<p>CONTRACEPTIVE USE DOES NOT INFLUENCE VITRIFIED OOCYTE YIELD IN PATIENTS UNDERGOING OOCYTE CRYOPRESERVATION.</p> <p>Saher Siddiqui, Alan Copperman¹, Carlos Hernandez-Nieto¹. ¹Obstetrics, Gynecology, and Reproductive Science. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>

LIST OF ABSTRACTS

81	<p>MEDICAL ACCESS AND CARE CONTINUITY: QUALITATIVE ASSESSMENTS OF BREAST CANCER PATIENTS' AND FAMILY MEMBERS' EXPERIENCES FOLLOWING THE 2011 TRIPLE DISASTER IN FUKUSHIMA, JAPAN.</p> <p>Priya Singh, Stephanie Montesino¹, Akihiko Ozaki², Chika Yamamoto³, Yudai Kaneda⁴, Michio Murakami⁵, Robert Yanagisawa⁶, Craig Katz⁷, Masaharu Tsubokura³. ¹Global Health, ²Breast and Thyroid Surgery, ³Radiation Health Management, ⁴Medicine, ⁵Infectious Disease Education and Research, ⁶Medicine, ⁷Psychiatry. ^{1,6,7}Icahn School of Medicine at Mount Sinai, New York, New York, ²Jyoban Hospital of Tokiwa Foundation, Iwaki, Fukushima, Japan, ³Fukushima Medical University School of Medicine, Fukushima, Japan, ⁴School of Medicine, Hokkaido University, Hokkaido, Japan, ⁵Osaka University, Japan.</p>
82	Abstract 82 has been withdrawn from the 2024 collection.
83	<p>IMPACT OF PROPHYLACTIC EPHEDRINE ON FETAL HEART TRACING AND UTERINE TETANIC CONTRACTION AFTER COMBINED SPINAL EPIDURAL ON LABORING PARTURIENTS.</p> <p>Rachel Sue, Daniel Katz¹. ¹Anesthesiology. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>
84	<p>A DEEP DIVE INTO DIGITAL TWINS TO ENHANCE CLINICAL TRIAL INNOVATION IN ALZHEIMER'S DISEASE AND BEYOND.</p> <p>Ikaasa Suri, Adriana Krasniansky¹Research. ¹Rock Health.</p>
85	<p>OPHTHALMIC DRUG WASTAGE DUE TO ARTIFICIAL EXPIRATION DATES.</p> <p>John Tan, Gareth Lema¹. ¹Ophthalmology. ¹Icahn School of Medicine at Mount Sinai, New York, New York.</p>

LIST OF ABSTRACTS

86	ENHANCING DETECTION OF DEPRESSION WITHIN PRIMARY HEALTH CARE IN GHANA: BARRIERS AND FACILITATORS. Vongai Tizora , Uchechukwu Okoh ¹ , David Heller ² , Khadija Jones ³ , Evan Alvarez ³ , Engelbert Nonterah ⁴ , Irene Kuwolamo ⁴ , Raymond Aborigo ⁴ . ¹ Medical Education, ² Medicine, ³ Global Health, ⁴ Social Science. ^{1,2} Icahn School of Medicine at Mount Sinai, New York, New York, ³ The Arnhold Global Health Institute, ⁴ Navrongo Health Research Center, Navrongo, Ghana.
87	REANIMATING THE HEPATECTOMIZED LIVER: NORMOTHERMIC MACHINE PERFUSION AS A NOVEL TRANSLATIONAL RESEARCH PLATFORM. Rachel Todd , Leonie van Leeuwen ¹ , Matthew Holzner ¹ , Daniel Puleston ² , Sander Florman ¹ , Zeeshan Akhtar ³ . ¹ Surgery, ² Microbiology, ³ Transplant Surgery. ^{1,2,3} Icahn School of Medicine at Mount Sinai, New York, New York.
88	ASSOCIATION BETWEEN INTRAOPERATIVE ANESTHESIOLOGY HANDOFF AND POSTOPERATIVE PATIENT OUTCOMES FOLLOWING CARDIAC SURGERY. Cindy Wang , Sharon Huang ¹ , Eric Rome ¹ , Sameer Lakha ¹ , Samuel DeMaria ¹ . ¹ Anesthesiology. ¹ Icahn School of Medicine at Mount Sinai, New York, New York.
89	PATIENT PERSPECTIVE AMONG US KIDNEYS DONORS FOLLOWING MINIMALLY INVASIVE DONOR NEPHRECTOMY. Daniel Wang , Christopher Connors ¹ , Micah Levy ¹ , Juan Arroyave ² , Chih Peng Chin ² , Francisca Larenas ² , Michael Palese ² . ¹ Medical Education, ² Urology. ^{1,2} Icahn School of Medicine at Mount Sinai, New York, New York.
90	ASSESSMENT OF ANESTHESIOLOGISTS' ATTITUDES AND KNOWLEDGE DURING EVALUATION OF PERI-PROCEDURAL DNR STATUS. Aminah Williams , Justin Kim ¹ . ¹ Anesthesiology. ¹ MSKCC.

LIST OF ABSTRACTS

91	NATURAL LANGUAGE PROCESSING AS A TOOL TO ASSIST CLINICIANS IN MAKING PERSONALITY DISORDER DIAGNOSES. Ivan Wolansky , Jihan Ryu ¹ , Xiaosi Gu ² , ² Psychiatry. ¹ Hamilton-Madison House, ² Icahn School of Medicine at Mount Sinai, New York, New York.
92	ASYLUM-STATUS AS A SOCIAL DETERMINANT OF HEALTH: PREVALENCE AND CONTROL OF CHRONIC DISEASES AMONG CLIENTS AT A NEW YORK CITY ASYLUM CLINIC. Alicia Yang , Dinali Fernando ¹ , Ben McVane ¹ . ¹ Emergency Medicine. ¹ Icahn School of Medicine at Mount Sinai, New York, New York.
93	THE ASSOCIATION BETWEEN PRIMARY SPOKEN LANGUAGE AND PERIOPERATIVE OUTCOMES AMONG HIP FRACTURE PATIENTS. Avanish Yendluri , David Forsh ¹ . ¹ Orthopaedics. ¹ Icahn School of Medicine at Mount Sinai, New York, New York.
94	THE CURRENT LANDSCAPE OF NEUROSURGICAL ONCOLOGY IN LOW-MIDDLE-INCOME COUNTRIES (LMIC): STRATEGIES FOR THE PATH FORWARD. Tirone Young , Maria Tropeano ¹ , Delia Cannizzaro ² , Alice Jelmoni ¹ , Franco Servadei ³ , Isabelle Germano ⁴ . ^{1,3,4} Neurosurgery, ² Biomedical Sciences. ¹ Department of Neurosciences, ASST Ovest Milanese – Legnano Hospital, Milan, Italy, ² Department of Neurosciences, ASST Ovest Milanese – Legnano Hospital; Humanitas University, Milan, Italy, ³ Humanitas University, Milano, Italy, ⁴ Icahn School of Medicine at Mount Sinai, New York, New York.
95	SCALP AND NECK MELANOMA IS ASSOCIATED WITH WORSE DISEASE-SPECIFIC SURVIVAL AND INCREASED METASTASIS AT DIAGNOSIS. Catherine Yu , Parul Agarwal ¹ , Maaïke van Gerwen ² . ¹ Population Health Science and Policy, ² Otolaryngology. ^{1,2} Icahn School of Medicine at Mount Sinai, New York, New York.

LIST OF ABSTRACTS

96	AN ECOLOGICAL STUDY OF SUPERFUND CONTAMINANTS AND THYROID CANCER INCIDENCE IN NEW JERSEY COUNTIES. Sara Zaat , Mathilda Alsen ¹ , Maaïke van Gerwen ¹ . ¹ Otolaryngology. ¹ Icahn School of Medicine at Mount Sinai, New York, New York.
97	DEEP LEARNING FOR AUTOMATED MEASUREMENT OF PATELLOFEMORAL ANATOMIC LANDMARKS. Alexander Zhou , Zelong Liu ¹ , Valentin Fauveau ¹ , Justine Lee ¹ , Philip Marcadis ¹ , Mingqian Huang ¹ , Xueyan Mei ¹ . ¹ Radiology. ¹ Icahn School of Medicine at Mount Sinai, New York, New York.
98	IDENTIFYING REGULATORS OF HUMAN ADVENTITIAL FIBROBLAST ACTIVATION THROUGH A GENOME-WIDE CRISPR SCREEN. Ashley Zhu , Wenduo Gu ¹ , Paul Cheng ¹ . ¹ Cardiology. ¹ Stanford University School of Medicine, Stanford, CA.
99	THE READABILITY OF ONLINE ENGLISH AND SPANISH PATIENT EDUCATION MATERIALS ON ORTHOPEDIC ANESTHESIA. Mariana Restrepo , Brocha Stern ¹ , Garrett Burnett ² , Chang Park ² , Jashvant Poeran ³ . ^{1,3} Orthopaedics, ² Anesthesiology. ^{1,2} Mount Sinai Health System, New York, NY, ³ Icahn School of Medicine at Mount Sinai, New York, New York.





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SECTION 2:
Abstracts

ABSTRACT 1

THE EFFECT OF BONE DENSITY ON SUBSIDENCE FOLLOWING ANTERIOR CERVICAL DISCECTOMY AND FUSION.

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BACKGROUND: Subsidence following anterior cervical discectomy and fusion (ACDF) procedure can lead to worse clinical outcomes. Graft material/size, comorbidities, and surgical technique can all contribute to subsidence, which can lead to reduced fusion stability, impaired fusion, pain, and revision surgery. Although studies have linked low bone density to cage subsidence, there is no consensus on the relationship between bone density and subsidence.

OBJECTIVE: The purpose of this study was to further evaluate the effect of bone density on anterior segmental subsidence.

METHODS: Patients undergoing ACDF at an academic tertiary care center (2016-2021) were identified using CPT codes 22551, 22552, and 22554. Radiographs were assessed with PACS imaging software. Disc height was measured on immediate post-op (<6 weeks) and final follow-up (>6 months) lateral cervical radiographs. Segmental subsidence was calculated as the difference between long-term and immediate post-op anterior disc heights, defining positive subsidence as a decrease in disc height. Bone density, measured on pre-op sagittal CT scans (<1 year pre-surgery), was assessed at upper and lower vertebral endplates for each fused level. Pearson correlation tests and scatter plots illustrated correlations between bone density and anterior segmental subsidence. Multivariable linear regression analyses, controlling for cage type, sex, age, and smoking status, further explored associations.

RESULTS: Bone density measurements were captured for 28 patients and 54 levels-fused. The average age for the cohort was 54.1 ± 9.8 years old. Patients underwent either one-level (n=8, 29%), two-level (n=14, 50%) or three-level (n=6, 21%) fusions. Patients received allograft (n=8, 29%), titanium (n=8, 29%), PEEK (n=5, 18%), and zero-profile (n=2, 7%) cages. The median follow up was 11.6 (range 5.3 to 44.9) months. In our scatter plots mapping subsidence as a function of bone density, we saw no notable correlations between subsidence and endplate bone density (Figure 1). In multivariable linear regression, we observed no difference in the amount of anterior subsidence based on endplate bone density above the fusion (beta=1.807; CI [-3.077, 6.691]; p=0.460) or endplate density below the fusion (beta=-2.583; CI [-7.658, 2.491]; p=0.311).

CONCLUSIONS: Subsidence is multifactorial, and low bone density alone may not be a strong predictor of subsidence following ACDF. Limitations include presence of multiple data points in the same patient.

ABSTRACT 2

BARRIERS IMPACTING ELIGIBILITY IN A CLINICAL TRIAL EVALUATING A NEW TREATMENT OPTION FOR PEOPLE WITH TYPE II DIABETES (T2D).

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PURPOSE: Clinical trials for patients with T2D offer opportunities for patients to determine new therapies for care, offering potential for improved glycemic outcomes. This particular trial has specific eligibility criteria to help ensure the treatment intervention is the reason for changes in glycemic outcomes. Investigating the validity of the three most common criteria that prevent patients from eligibility to participate in a clinical trial could lead to better optimization of screening for eligibility.

METHODS: EMR review of patients of the endocrinology clinic at 5 E 98th was performed to assess if patients had T2D, were able to communicate in English (per protocol), and were taking basal and prandial insulin, as baseline criteria to pre-screen patients for eligibility in a cohort of well over 500 people with T2D. Those who met these criteria were recorded in a password protected document and had their EMRs screened against the remainder of the inclusion and exclusion criteria for this FDA and IRB approved clinical trial. The criteria impacting eligibility were recorded. Analysis was performed to assess the proportion of patients who were excluded from trial participation for each specific criteria.

RESULTS: Of the 132 patients with T2D who were included in this review, the three most common reasons that patients were ineligible were hemoglobin A1c (HbA1c) levels below 8 (25%), concerns for patient lack of follow up for care (19.7%), and changes in doses of non-insulin medications within 3 months of enrollment (15.2%) due to potential impact on glycemic outcomes.

DISCUSSION: Many potential participants with higher HbA1c values had either multiple barriers to care or understandable medication titrations (GLP1s and SGLT2i) impacting eligibility. Limiting the bulk of trial participants (> 75%) to patients with higher HbA1c values has the potential to delay enrollment and fully assess the impact of a treatment option across all populations of people with T2D. Careful selection of individuals who will be able to complete the study is important, especially in trials with extensive patient follow-up schedules and close monitoring of interventional devices. For this reason, it may be beneficial to modify the study criteria to be more inclusive so that more people can be included in the trial who would be able to fully adhere to the study intervention. This would allow for a more accurate evaluation of the efficacy of the new treatment.

ABSTRACT 3

FOCAL NODULAR HYPERPLASIA PREVALENCE AMONG PEDIATRIC NEUROBLASTOMA SURVIVORS.

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INTRODUCTION: Neuroblastoma (NB) is a rare pediatric cancer originating in immature nerve cells in the abdomen. About 60% of high-risk cases relapse within the first two years post-treatment. Therefore, surveillance, including physical exams and imaging (MRI or CT), is crucial post-treatment. Incidental findings of focal nodular hyperplasia (FNH), a perceived benign liver tumor, are increasingly detected on imaging. FNH is otherwise rare and may be confused with hepatic malignancy, triggering increased evaluation and anxiety. We sought to define the prevalence of FNH in a cohort of patients with NB and explore the natural history of these liver lesions.

METHODS: This study is a retrospective review of children with NB treated at Memorial Sloan Kettering Cancer Center (MSK). Eligible survivors were: (1) aged <10 years at the time of diagnosis of NB; (2) enrolled since 2000 on clinical trials that used the anti-GD2 monoclonal antibody (MoAb) 3F8 plus granulocyte-macrophage colony-stimulating factor and isotretinoin (160 mg/m²/day x 14 days/cycle x 6 cycles), (3) survived ≥ 24 months from the first dose of the anti-GD2 MoAb; with (4) at least one abdominal CT with contrast performed at MSK. All suspicious lesions on abdominal CT had follow-up dedicated MRIs of the liver or abdomen performed before being classified as possible or probable FNH. Summary statistics including median and range, were used to describe the preliminary results in this study.

RESULTS: Among 529 pediatric survivors of NB (n= 311 [59%] male, median age at primary diagnosis: 3.5 years [range: 0.3-8.7]), 81 were diagnosed with FNH on MRI at a median of 1.4 years after therapy completion (range, 0.2-19.6). Survivors with FNH had a median of 3 follow-up MRIs (range, 0-18) and a median of 4.5 follow-up appointments following FNH diagnosis (range, 0-14.2). Only six biopsies were performed on survivors with FNH, and all were benign lesions. At the time of last follow-up, none of the affected individuals had developed subsequent hepatic malignancies.

CONCLUSION: This report suggests that FNH is prevalent among pediatric NB survivors and does not appear to progress to malignancy. The frequency of MRI scans performed to follow these lesions may be reduced, which will reduce health care costs and missed school/workdays. However, further investigation in larger cohorts of survivors treated with diverse therapies will be needed to determine the optimal frequency of surveillance imaging.

ABSTRACT 4

RENAL RECOVERY AND CLINICAL OUTCOMES AFTER SURGERY FOR A RENAL MASS IN A SOLITARY KIDNEY.

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PURPOSE: We assess long-term renal function and oncologic outcomes and identify predictive factors for post-operative estimated glomerular filtration rate (eGFR) in patients undergoing partial nephrectomy (PN) for a renal mass in a solitary kidney (RMSK).

PATIENTS AND METHODS: This single-institution retrospective review included patients who underwent PN for RMSK between December 1989 and June 2019. Clinical and surgical predictors of long-term eGFR outcomes were assessed using univariable models. Predictors of post-operative dialysis were assessed using Wilcoxon rank sum and Fisher's exact tests. Kaplan-Meier method determined cancer-specific and overall survival (OS).

RESULTS: A total of 145 patients underwent PN for RMSK. Higher baseline eGFR and warm ischemia time using a minimally invasive approach were positively associated with higher post-operative eGFR. Open approach, older age, longer ischemia time, and higher blood loss were associated with post-operative eGFR decline in patients with renal ischemia. Twelve patients (8.3%) required dialysis within 6 days of PN, exhibiting significantly longer hospital stays and a higher proportion of T3 tumor staging compared to patients not requiring dialysis. Median OS was 11 years. Kidney cancer-related deaths were the most common cause of death at all follow-up time points, with a doubling of cancer-related deaths between the 5- and 10-year time points.

CONCLUSIONS: Following PN, patients experienced modest long-term eGFR decline, minimal dialysis risk, and appropriate oncologic control. PN for RMSK is safe with minimal detriment to renal function. Clinical factors are associated with post-operative eGFR changes and may help in counseling patients and identifying risk factors for post-operative eGFR decline.

ABSTRACT 5

INVESTIGATING THE ASSOCIATION BETWEEN HASHIMOTO'S THYROIDITIS AND PAPILLARY THYROID CANCER AGGRESSIVENESS.

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BACKGROUND: The impact of Hashimoto's thyroiditis (HT) on the aggressive lymph node (ALN) status of papillary thyroid carcinoma (PTC) remains unstudied.

RESEARCH QUESTION: Does the coexistence of HT with PTC influence tumor aggressiveness?

METHODS: Retrospective chart data was performed for patients with PTC at a New York academic medical center's Department of Otolaryngology-Head and Neck Surgery from 2018-2020. A diagnosis of HT was determined through pathologic criteria. Pathology reports were reviewed for pathological indicators of cancer aggressiveness that included angioinvasion, lymphatic invasion, perineural invasion, extrathyroidal invasion, margin of resection, tumor focality, TNM staging, and ALN status. Positive ALN status is defined as either > 5 positive lymph nodes, or ≥ 1 positive lymph node > 3 cm, and/or ≥ 4 positive lymph nodes with extranodal extension. Univariate analyses were used to compare demographic and histopathological characteristics between PTC + HT and PTC only groups. Multivariable logistic regression models were used to compare PTC aggressiveness pathological markers between groups, while adjusting for sex, age, race, smoking status, and BMI.

RESULTS: Of 533 patients with PTC, 19.1% concurrently had HT. In comparison to PTC alone, PTC + HT patients were more often female ($p < 0.001$), younger ($p = 0.034$), non-smokers ($p = 0.035$), and had a higher prevalence of N0 stage tumors ($p < 0.001$). PTC + HT was associated with lower odds of N1 stage (Adjusted Odds Ratio (OR_{adj}), 0.50; 95% Confidence Interval (CI), 0.29-0.86) and lymphatic invasion (OR_{adj}, 0.53; 95% CI, 0.29-0.97). No significant differences were observed in positive ALN status (OR_{adj}, 0.87; 95% CI, 0.45-1.69).

DISCUSSION: There is no evidence that PTC with concurrent HT is more aggressive than PTC alone in the context of ALN status, an important prognosticator which considers cumulative metastatic burden. Although PTC + HT patients seem to have a lower odds of positive lymph nodes, binary lymph node status is not a meaningful prognosticator. Medical surveillance of HT patients potentially contributed to earlier PTC detection and thus less advanced tumors in relation to N stage. These findings are noteworthy to clinicians consulting HT patients and contribute to the discussion regarding surveillance and early PTC detection.

ABSTRACT 6

EFFECTS OF A MULTIDISCIPLINARY CLINIC ON ADMISSIONS AND EMERGENCY DEPARTMENT VISITS FOR CHILDREN WITH NEUROMUSCULAR DISORDERS.

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BACKGROUND: Children with cerebral palsy (CP) face increased hospitalization and emergency department (ED) visits. Despite the recognized efficacy of multidisciplinary care for children with CP and other neuromuscular disorders (NMD), research on its impact on healthcare utilization is limited.

OBJECTIVE: This study evaluated a clinic with 13 specialties providing coordinated care to pediatric patients with NMD, assessing changes in admissions, length of stay (LOS), and ED visits.

METHODS: Pediatric patients with NMD enrolled in a single institution's clinic between 2019 and 2021 were eligible for this retrospective study. Though our analyses utilized de-identified data, given that they were conducted as part of a larger series of survey studies at the clinic, only those patients who consented to participate in research at the clinic were included in this study (N=32). The exclusion criterion was death during the period (N=1). Electronic medical records were analyzed for hospital admissions, LOS, and ED visits 12 months before and after clinic enrollment. A paired t-test was utilized to assess the data.

RESULTS: Of included children (N=31), mean age was 5.9 years (SD=4.6), 61.3% (N=19) were male, and 19.4% were non-Hispanic Black (N=6). When comparing 12 months pre-clinic enrollment versus 12 months post-clinic enrollment, analysis showed a statistically significant difference at $p=0.05$ for LOS (7.06 ± 11.8 days vs. 3.48 ± 7.41 days; $t(30)=2.17, p=0.038$). However, in the same time frame of 12 months pre-clinic enrollment versus 12 months post-clinic enrollment, analysis showed no statistically significant decreases in hospital admissions (1.39 ± 2.01 admissions vs. 0.77 ± 0.99 admissions; $t(30)=1.99, p=0.055$) (Figure 1) or ED visits (0.68 ± 1.08 visits vs. 0.65 ± 1.05 visits; $t(30)=0.162, p=0.87$).

CONCLUSION: Findings suggest that multidisciplinary NMD clinics may reduce LOS, potentially due to improved care coordination. Insignificant changes in hospital admissions and ED visits may reflect the high healthcare utilization of this population, warranting further efforts for outpatient management. Future research should explore these findings over a more extended period, with a larger cohort, and considering the impact of COVID-19 on healthcare utilization.

ABSTRACT 7

EARLY PREGNANCY WARM SEASON EXPOSURE IS ASSOCIATED WITH INCREASED RISK OF OBSTETRIC COMPLICATIONS AND ADVERSE BIRTH OUTCOMES.

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BACKGROUND: Climate change presents a threat to the health of vulnerable populations, including pregnant people living in urban environments. Prenatal exposure to warmer temperatures is known to confer an increased risk of pregnancy complications and adverse birth outcomes, but the critical periods for heat exposure are still uncertain.

OBJECTIVES: Here, we employed a season-based analysis to examine the associations between prenatal warm season exposure in the first, second, or third trimester and poor health outcomes during pregnancy.

METHODS: We leveraged a socioeconomically and racially diverse cohort from the Stress in Pregnancy study (n = 820), a longitudinal study conducted from 2009-2014 in New York City. Generalized linear models were used to examine the association between the trimester of warm season exposure and the rates of obstetrics complications and birth outcomes, adjusting for parental demographics, parity, substance use during pregnancy, and socioeconomic status. We performed a stratified analysis by race and socioeconomic status to identify particular demographic groups bearing the greatest risk of complications after warm season exposure.

RESULTS: Warm season exposure in the first trimester was associated with increased risk of gestational diabetes (adjusted odds ratio or AOR 3.31), gestational hypertension (AOR 4.16), and preeclampsia (AOR 4.86). Further, offspring of pregnant people exposed to the warm season during the first trimester had 0.76 weeks lower gestational age at birth (p = 0.03) relative to the control. White pregnant people (AOR = 3.39) and people of higher socioeconomic status (AOR 2.82) showed particular vulnerability to gestational diabetes after first trimester warm season exposure, while those of lower socioeconomic status were more vulnerable to gestational hypertension (AOR 2.37). Among non-White pregnant people, the risk of preeclampsia was also increased with third trimester warm season exposure (AOR 2.93).

CONCLUSIONS: Our findings demonstrate a considerable elevation in the risk of obstetric complications, including gestational diabetes, gestational hypertension and preeclampsia, as well lower birth weight and shorter gestational age after exposure to warm weather in early pregnancy. The increase in risk was generally greater for minorities and individuals with lower socioeconomic status, motivating targeted heat mitigation strategies to prevent heat-associated morbidity in vulnerable groups.

ABSTRACT 8

ASSOCIATION OF PRIMARY LANGUAGE WITH OUTCOMES AND PATIENT ENGAGEMENT PROCESS METRICS AFTER TOTAL JOINT ARTHROPLASTY.

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INTRODUCTION: Previous research has indicated language-based disparities in outcomes following total hip/knee arthroplasty (THA/TKA). In this study, we examined the relationship between primary spoken language, postoperative outcomes, and patient engagement process metric in a multi-hospital academic health system.

METHODS: This retrospective cohort study included elective primary THA/TKA patients in 2018-2022. Primary language was categorized as English, Spanish, and Other. Associations were examined between language and same-day discharge, extended length of stay, non-home discharge, 30-day hospital returns, 90-day readmissions, preoperative joint class attendance, and patient-reported outcome measure completion. All models were adjusted for age, gender, race/ethnicity, Charlson-Deyo Comorbidity Index, tobacco use, insurance status, surgery type, and hospital.

RESULTS: Our cohort encompassed 9,156 patients (10% Spanish, 5% other non-English). In terms of perioperative outcomes, there were no significant associations between language and same-day discharge, 30-day hospital returns, or 90-day readmissions. Other (versus English) language was significantly associated with decreased odds of extended length of stay (OR 0.48, 95% CI 0.32-0.72, $P < 0.001$) and non-home discharge (OR 0.73, 95% CI 0.54-0.99, $P = 0.04$). In terms of patient engagement, Other (versus English) language was associated with significantly decreased odds of preoperative class attendance (OR 0.73, 95% CI 0.55-0.96, $P = 0.02$). Those who spoke Spanish or Other language (versus English) had significantly decreased odds of preoperative PROM completion (Spanish: OR 0.78, 95% CI 0.67-0.92, $P = 0.003$; Other: OR 0.58, 95% CI 0.47-0.72, $P < 0.001$). Similarly, Spanish (versus English) was associated with decreased odds of 1-year PROM completion (OR 0.32, 95% CI 0.20-0.51, $P < 0.001$).

CONCLUSION: Our findings highlight language-based disparities in patient engagement metrics but comparable (or even favorable) perioperative outcomes. Differences in findings compared to past literature may be related to differences in language-related support systems across institutions. There is a need for additional resources to support patients' active participation in their care regardless of their primary spoken language.

ABSTRACT 9

HEALTHCARE SERVICES UTILIZATION PATTERNS AMONG PATIENTS WITH ALCOHOL USE DISORDER.

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BACKGROUND: Alcohol use disorder (AUD) is the most common substance use disorder in the United States and the third leading cause of preventable death. Despite the enormous public health, physical, and emotional costs of AUD, only 9% of affected patients receive medication-assisted treatment (MAT) and only 15% of EDs screen for AUD. Understanding the emergency department utilization patterns of patients with AUD will allow us to better design strategies to treat those affected by AUD.

METHODS: The project is a retrospective cohort analysis examining the healthcare utilization patterns of patients with AUD initiated on MAT compared with matched AUD and healthy controls. The two control cohorts are ED patients with ICD-10 codes for AUD and patients with codes for back or abdominal pain, which represent 1-17% and 5-10% of all ED visits respectively and are often used as proxies for average ED patients. Chart review was utilized to abstract data for each patient's age, gender, DOB, date of initial visit, chief concern, and number of healthcare service visits (ED, in-patient, out-patient) 12 months before and 12 months after the index visit. The primary outcome is the difference in healthcare utilization between cases and controls in the 12-months before and 12-months after their ED visit. Statistical tests were conducted through R version 4.3.2. Sample sizes were determined via a priori power analysis.

RESULTS: Our study included 25 cases with a total of 100 controls split evenly between 2 cohorts. Due to patients in our study enrolling within the past 3 months and having incomplete "12 months post" data, we performed a truncated analysis on the healthcare services utilization 3 months pre- and post-initial ED visit. We found a significant difference in median ED visits 3 months prior to the index visit between cases and AUD controls (0 and 3 visits respectively, $p=0.01$ Wilcoxon signed-rank test.) However, no significant difference was seen between any of the other time point comparisons. Interestingly, there was a slight increase in mean ED, in-patient, and out-patient services utilization among all 3 cohorts comparing "3 months post" and "3 months pre" index visit, though the changes were not significant. Looking forward, we will examine the "12 months post" data to see how the clinical trial intervention changes health services utilization patterns among our 3 cohorts over a longer time frame.

ABSTRACT 10

ARID1A MUTATION ASSOCIATED WITH RECURRENCE AND SHORTER PROGRESSION-FREE SURVIVAL IN ATYPICAL MENINGIOMAS.

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PURPOSE: The oncologic outcomes for atypical meningiomas can be poor. Generally, patients that have had a prior recurrence have a substantially elevated risk of a future recurrence. Additionally, certain tumor genomic profiles have been shown as markers of poor prognosis. We sought to characterize the genomic differences between primary and recurrent tumors as well as assess if those differences had implications on recurrence.

METHODS: We identified primary and recurrent gross totally resected WHO grade II meningiomas with > 30 days of post-surgical follow-up at our institution. For genes with a prevalence of > 5% in the cohort, we compared the mutational prevalence in primary and recurrent tumors. For a gene of interest, we assessed the time to radiographic recurrence using adjusted cox-regression.

RESULTS: We identified 88 meningiomas (77 primary, 16 recurrent) with a median follow-up of 5.33 years. Mutations in ARID1A found in association with recurrent tumors (7/16 recurrent tumors vs 5/72 primary tumors, $p < 0.001$). In the whole cohort, mutations in ARID1A were not associated with alterations in time to recurrence after adjusting for recurrence status ($p = 0.713$). When restricted to primary tumors, ARID1A is associated with a 625% increase in the hazard of recurrence (HR = 7.26 [1.42-37.0]; $p = 0.017$).

CONCLUSION: We demonstrate mutations in ARID1A, a chromatin remodeling gene, in a higher prevalence in recurrent tumors. We further demonstrate that when mutations in ARID1A are present in primary atypical meningiomas, these tumors tend to have worse prognosis. Further prospective study may validate ARID1A as a prognostic marker.

ABSTRACT 11

TRANSCRIPTOMIC PROFILING OF THE IMMUNE AND INFLAMMATORY SIGNATURE OF SCLEROTIC-TYPE CHRONIC GRAFT-VERSUS-HOST DISEASE (SCGVHD) TAPE STRIPS.

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Sclerotic-type chronic graft-versus-host disease (ScGvHD) represents a serious complication from allogeneic hematopoietic stem cell transplantation. Skin biopsy samples can lead to scarring and discomfort, making them impractical for most patients, as well as for conducting longitudinal studies. An alternative, minimally invasive method is offered by tape stripping, which captures the stratum corneum and upper stratum granulosum while enabling the assessment of various skin conditions. However, a comprehensive tape strip molecular profile that accurately reflects the overall gene signature of ScGvHD is lacking. In this study, we analyzed the transcriptome found in tape strips extracted from pediatric and young adult (<25 years) patients affected by ScGvHD (n=9) and that of demographically matched healthy controls (n=10) using RNA-seq. Differential expression was identified when $|\text{fold-change}/\text{FCH}| > 1.5$ and false discovery rate/ $\text{FDR} < 0.05$.

A total of 192 genes displayed differential expression in ScGvHD tape strips in comparison to healthy controls. In ScGvHD tape strips, there was significant upregulation of genes associated with antiviral defense (e.g. OAS2), inflammation (e.g. CCL24), and movement (e.g. PNKD, SNCA). Conversely, genes linked to electron transport chain functions (e.g. UQCR11, NDUFB8, SDHD) and apoptosis (e.g. IER3IP1, PSMA2) were downregulated. Gene Set Variation Analysis (GSVA) revealed a modest increase in Th17-related inflammation in ScGvHD patients relative to healthy controls ($p < 0.05$). Furthermore, ScGvHD demonstrated marked upregulation of genes related to fibroinflammatory, affected, and diffuse systemic sclerosis (SSc). A significant correlation emerged between differentially expressed genes in ScGvHD tape strips and biopsy samples ($p < 0.01$).

RNA-seq analysis of tape strips highlights distinct epithelial inflammatory and immune signatures present in pediatric and young adult ScGvHD patients. These findings indicate that ScGvHD is characterized by a moderate elevation in Th17-related markers, featuring a distinct OAS2-CCL24 signature that proposes novel therapeutic avenues for this severe disease. The non-invasive tape stripping method holds promise as an alternative to biopsies for detecting disease biomarkers.

ABSTRACT 12

CHRONIC HAND ECZEMA SHARES A COMMON MOLECULAR SIGNATURE REGARDLESS OF ATOPIC DERMATITIS STATUS.

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Chronic hand eczema (CHE), an inflammatory skin condition, affects around 14.5% of the United States population and characterizes many types of eczematous lesions that affect the hands and wrists. Patients with CHE present with scaling and fissures, with the rashes lasting for either over three months or coming back twice or more over the span of a year. These rashes, often accompanied by burn, itch, and pain, can severely affect the quality of life of those with the disease. Studies show that patients suffering from CHE have a similar quality of life index as those with asthma and psoriasis, and they have difficulty engaging in both personal daily tasks and their occupational duties. To better understand the pathogenesis of CHE and potential treatments, we examined the molecular skin profile of 95 subjects with CHE and 20 matched healthy controls, 45 of which also had atopic dermatitis (AD). These samples were collected using tape strips, and molecular profiles were examined using RNA-seq. The tape strip data showed upregulation of several immune pathways and genes, such as Th1 (OASL, IL12B, STAT1), Th2 (IL7R, CCL22/CCL24, OX40), and Th17/Th22 (CXCL3, IL23A). We also observed downregulations in negative regulators (IL34), terminal differentiation (FLG, LOR), and lipid metabolism (FA2H, GAL) genes. Other noteworthy findings included a higher expression of Th2 and Th17/22 axes, along with barrier dysregulation genes, in patients with both CHE and AD, and that those without AD also had positively correlated Th1/Th2/Th17 markers (i.e. CCR4, STAT3, IL2RB, PDE4B). These results highlight the similarities in the molecular profiles of patients suffering from CHE with and without AD, suggesting the possibility for shared therapeutic targets.

ABSTRACT 13

PERCEPTIONS AND USE OF CANNABIDIOL AMONG PATIENTS IN TREATMENT FOR OPIOID USE DISORDER.

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BACKGROUND: Cannabidiol (CBD) is a widely available and popular cannabis product. Previous studies have suggested its potential therapeutic use for individuals with opioid use disorder (OUD).

OBJECTIVE: In considering cannabidiol as a medication for OUD, it's important to understand patient perspectives on CBD, including patient use.

METHODS: Survey participants were voluntarily recruited via convenience sampling from clinical sites at the Addiction Institute of Mount Sinai in New York City from 07/2021 to 8/2023. Participants were eligible to participate in the study if they were over 18 years old, diagnosed with OUD, and in treatment for opioid use disorder at Mount Sinai. Survey was administered via iPad provided by study personnel, and assessed basic demographic information, OUD history, CBD familiarity/use history, and Likert scale questions assessing perceptions of CBD. No incentives were provided.

RESULTS: 587 individuals accessed the survey and 550 completed it. Participants were 51.9 ± 12.6 (Mean \pm SD) years of age, the majority were men (71.8%), non-white (69.3%), unemployed (55.3%), and had an opioid use disorder over 10 years (62.9%) managed on methadone (91.6%). 51.5% had heard of CBD. These individuals felt that CBD use is becoming more socially acceptable (91.9%), and that one could use CBD and still be "in recovery" (59.7%). Most were comfortable discussing/disclosing CBD use to family/friends (66%) or healthcare provider (73.1%). 57.6% believed healthcare providers should offer CBD to patients with OUD, and 70% would use CBD for OUD treatment if prescribed. 60.1% believed that CBD will be used for addiction in the future. 23% (n=129) of survey respondents had used CBD, with most participants using CBD rarely (79.8%). Reasons for use included anxiety (62.8%), depression (48.1%), sleep (48.8%), pain (50.4%), controlling their addiction (17.1%), recreation (24.8%), or other (6.2%). Of note, 41.9% (n=54) of CBD users reported using CBD to ease opioid withdrawal symptoms, and of those participants, 79.7% of them agreed that CBD helped their withdrawal symptoms.

CONCLUSION: These findings demonstrate that a significant proportion of patients with OUD are aware of or have used CBD. Most patients aware of CBD are open to considering CBD as a potential addiction treatment, with some reporting that CBD helped their opioid withdrawal. Physicians should consider discussing CBD with their patients to better understand how they are managing their addiction.

ABSTRACT 14

ELUCIDATING THE ROLE OF Δ FOSB IN STRESS AND COCAINE RESPONSES: A PATHWAY TO UNDERSTANDING ANHEDONIA AND ADDICTION BEHAVIORS.

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BACKGROUND: Some similar biological processes modulate symptom progression in stress, addiction, and stress-associated drug relapse. Understanding these shared mechanisms at a molecular level is imperative for developing targeted treatments for substance use disorders, especially those potentiated by anxiety and depression.

METHODS: This preliminary study uses the chromatin mapping technique Cleavage Under Targets and Release Using Nuclease (CUT&RUN) and next-gen sequencing to explore protein-DNA interactions in mice subjected to chronic social defeat stress (CSDS) or chronic cocaine exposure (CCE). We focused on the transcription factor Δ FOSB in the nucleus accumbens (NAc), known for its roles in drug- and stress-related behavioral and transcriptional modulation.

RESULTS: We first demonstrated that CSDS mice exhibit reduced social interaction and increased social avoidance, and CCE mice exhibited increased reward-seeking tendencies. CUT&RUN and sequencing analyses revealed distinct genome-wide protein binding patterns within the NAc across different exposure groups. Both CCE and CSDS altered Δ FOSB binding with unique patterns across treatment groups

DISCUSSION: These results highlight specific alterations in protein-DNA interactions due to CCE and CSDS, particularly in these brain regions associated with reward and aversion. This study provides crucial insights into the gene regulatory mechanisms driving stress-induced anhedonia and addiction behaviors.

FUTURE DIRECTIONS: 1. In collaboration with Dr. Gabrielle Rudenko's Lab at UTMB and Dr. Jeannie Chen's lab at Baylor, we are evaluating a novel Δ FOSB inhibitor, YL0441. Preliminary results suggest YL0441's potential as a targeted therapy for SUDs and stress-related conditions. Next steps are to assess behavior and epigenetic signatures via CUT&RUN in CCE and CSDS mice treated with YL0441. 2. Validation of these findings will be pursued using comparison of existing RNA-seq datasets.

CONCLUSION: Integrating CUT&RUN with differential binding, motif enrichment, and gene ontology analyses, this study advances our understanding of epigenetic regulation in response to chronic cocaine and stress. We demonstrate how CUT&RUN opens new avenues for pharmacotherapeutic interventions targeting comorbidity in substance use disorders and stress-related neuropsychiatric conditions, marking a significant step towards innovative treatments and improved patient outcomes in the realm of addiction and mental health.

ABSTRACT 15

USE OF LIVE, PERFUSED MOUSE LUNGS TO VISUALIZE NEUTROPHIL MIGRATION TO ALVEOLI.

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RATIONALE: Neutrophils protect against lung infection by migrating from microvessels to airspaces of lung alveoli, where they clear bacteria. Mechanisms of neutrophil migration in alveoli are not clear. Using confocal imaging of live, intact, perfused lungs (IPLs), we previously identified neutrophils in alveolar airspaces after intranasal instillation of *S. aureus* (SA) in mice. Here, we sought to define whether the IPL can be used to induce neutrophil migration to airspaces after SA microinstillation directly into alveoli.

METHOD: Mouse lungs were excised, inflated, and perfused with a solution of buffer and autologous blood at constant airway and vascular pressures (n=3). We microinstilled alveolar airspaces with the cytosolic dye, calcein, then GFP-tagged SA (SA-GFP) or PBS using micropipettes. At approximately 5h post-instillation, we microinstilled the airspaces with fluorophore-tagged antibodies against the neutrophil surface proteins CD11b and Ly6G. Alveoli were imaged by confocal microscopy. Leukocytes were quantified in blood and perfusate using a hemocytometer.

RESULTS: Calcein fluorescence delineated alveolar walls and indicated the epithelium was viable. SA-GFP clustered at alveolar niches, where septa converge. Loss of epithelial calcein fluorescence ($-34\pm 2\%$ versus $-25\pm 2\%$ within 3h of instillation in SA- versus PBS-instilled alveoli, $P < 0.001$ by two-tailed t test) indicates SA caused an alveolar response, namely epithelial membrane damage. Gain of GFP fluorescence (27% within 3h of instillation) suggests SA number increased. Neutrophil fluorescence was rare in SA- and PBS-instilled alveoli (5 ± 4 vs 5 ± 3 neutrophils per imaging field of at least 30 alveoli; $P = \text{NS}$ by two-tailed t test). Leukocyte counts were 539 (98% of blood) and 44 (8% of blood) cells/ μL in the perfusate at 0 min and 3h, respectively, after IPL setup.

DISCUSSION: Our findings show SA microinstillation did not induce airspace neutrophil migration in the timeframe of our studies. Major decrease of perfusate leukocyte counts suggests neutrophil migration was blocked by leukocyte loss or dilution. Calcein fluorescence loss and GFP fluorescence gain rule out lack of SA-epithelium interactions and SA non-viability as factors underlying the absence of neutrophils in alveoli. We conclude that SA microinstillation in IPLs fails to induce sufficient neutrophil migration to alveoli to support future mechanistic studies.

ABSTRACT 16

TARGETING POTENTIALLY INAPPROPRIATE MEDICATIONS IN HOSPITALIZED ELDERLY PATIENTS: DESCRIPTION OF A PROCESS TO OPTIMIZE YIELD OF QUALITY IMPROVEMENT EFFORTS.

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BACKGROUND: Up to 50% of hospitalized older adults are prescribed potentially inappropriate medications (PIMs) leading to potential patient harm due to downstream outcomes. Given the number of potentially inappropriate medications (PIMs) that quality improvement interventions could target, it is essential to systematically identify high-yield PIMs.

AIM: To describe a 3-tiered proposal for selecting PIMs in hospitalized elderly to be targeted in an electronic health record-based crossover randomized controlled trial (RCT) across an urban safety net health system (11 hospitals).

METHODS: Three separate steps were applied to identify high-yield PIMs: 1) literature review, 2) local PIM use data, and 3) expert input. The literature review identified >11 explicit criteria endorsed by different geriatric associations; most referenced criteria, the AGS Beers Criteria and the Screening Tool of Older People's Prescription (STOPP), were scanned for overlapping PIMs. We then queried 1) how often these drugs were prescribed in our health system among elderly inpatients, and 2) the discrepancy between lowest recommended dose (source: Geriatrics At Your Fingertips) and average and most frequently prescribed dose. Based on this, a list of 25 PIMs was presented to an interdisciplinary "High Value Care" council (3 geriatricians, 1 pharmacist, 3 hospitalists, 4 other specialties). Members were asked to vote on 10 drugs to be targeted by an RCT to reduce PIMs among elderly inpatients.

RESULTS: 340 distinct medications were prescribed from 6/13/2021 to 6/29/2021. 99 (29%) medications were prescribed to ≥ 20 patients. 53 of which were included in either the STOPP or the Beers criteria. 25 medications with the largest discrepancies between recommended dose and frequently prescribed dose were presented for voting to the High Value Care council. The 10 drugs and their default doses with the most votes were selected to be implemented in an RCT.

CONCLUSION: We present a systematic approach to select PIMs to be targeted in a large multi-site RCT in order to maximize the impact. Given the heterogenous nature of inpatient populations and care characteristics, this approach may be useful for quality improvement standardization efforts.

ABSTRACT 17

DIFFERENCES IN CANCER PRESENTATION, TREATMENT, AND MORTALITY BETWEEN RURAL AND URBAN PATIENTS DIAGNOSED WITH KIDNEY CANCER IN THE UNITED STATES.

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INTRODUCTION: Rural-urban discrepancies in care and outcomes for kidney cancer (KCa) in the United States (US) remains poorly understood. Our study aims to improve our understanding of the influence of rurality on KCa outcomes in the US by analyzing differences in presentation, treatment, and mortality between urban areas (UAs) and rural areas (RAs) in the Surveillance, Epidemiology, and End Results (SEERs) database.

METHODS: SEERs data was queried from 2000-2019 for KCa patients. Patient counties were classified as UAs, rural adjacent areas (RAAs), or rural nonadjacent areas (RNAs) using Rural Urban Continuum Codes. Demographic and clinical variables were compared. Propensity score matching was performed to create matched UA-RAA and UA-RNA cohorts. Multivariate regression evaluated rural-urban status as a predictor of treatment selection. Multivariate cox regression assessed the predictive value of rural-urban status for overall survival (OS) and cancer-specific survival (CSS). Kaplan-Meier analysis was used to generate survival curves for OS and CSS.

RESULTS: 179,509 KCa patients were identified (UA = 87.0%, RAA = 7.7%, RNA = 5.3%). Patients in RAs were more likely to present with tumors of higher grade and stage than UAs. Following multivariate analysis, rural residency predicted undergoing nephrectomy (RAA: OR=1.177, RNA: OR=1.210) but was a negative predictor of receiving partial nephrectomy (RAA: OR=0.744, RNA: OR=0.717), all $p < 0.001$. Multivariate cox regression demonstrated that RAA or RNA residency was predictive of overall and cause-specific mortality. After matching, median OS was 151, 124, and 118 months for UA, RAA, and RNA cohorts respectively; mean CSS was 152, 147, and 144 months for UA, RAA, and RNA cohorts, respectively, all $p < 0.001$. Stage-specific analysis of CSS demonstrated significantly poorer CSS among RNA patients for localized, regionalized, and distant KCa after matching. Only RAA patients with localized KCa experienced significantly lower CSS than UA patients.

CONCLUSIONS: Patients in RAs are more likely to present with advanced KCa at diagnosis compared to those in UAs and may also experience different treatment options including a lesser likelihood of undergoing partial nephrectomy. Rural patients with KCa also demonstrated significantly worse OS and CSS compared to their urban counterparts. Further patient-level studies are required to better understand the discrepancy in CSS between urban and rural patients diagnosed with KCa.

ABSTRACT 18

SEX DIFFERENCES IN THE ASSOCIATIONS BETWEEN MATERNAL PLACENTAL MITOCHONDRIAL DNA MUTATIONS AND EARLY CHILDHOOD NEUROBEHAVIORAL OUTCOMES.

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INTRODUCTION: Placental oxidative stress (OS) is critical in fetal brain development, relying on mitochondrial function for optimal placental oxidant balance. Placental mitochondrial DNA (mtDNA) heteroplasmy mutation load has been conceptualized as a dosimeter of lifetime exposure to OS-inducing environmental factors influencing neurodevelopment, yet related studies are scarce.

AIM: We examined associations between placental mtDNA mutational load and infant negative affectivity, investigating sex-specific effects.

METHODS: Placenta samples (N=302) were collected at delivery and whole mtDNA sequencing was performed to identify total, non-synonymous, and gene-specific mutational loads. Mothers completed the Infant Behavior Questionnaire-Revised when children were 6 months old and the Negative Affectivity (NA) overarching factor was derived. Multivariable regression analyses were performed to model NA in relation to placental mtDNA mutational load, adjusting for child sex, and maternal age, haplogroup, and education. Weighted quantile sum (WQS) regression was performed to predict NA using sums of empirically weighted percentiles. Effect modification by sex and maternal lifetime stress was examined with interaction terms.

RESULTS: Women identified primarily as Black (45%) or Hispanic (30%) and 35% reported < high school education. A significant positive association ($P < 0.05$) between MT_CYB and non-synonymous mutational load and NA was found. Stratified analyses showed strongest associations in girls ($P < 0.01$) for MT_CYB, MT_ATP, and non-synonymous mutational load. WQS indicated CYB as the primary driver when considering gene regions as mixtures. Three-way interactions between mutational load, child sex, and maternal lifetime stress were significant for ND and ATP gene mutational load as well as total mutational load.

CONCLUSIONS: Placental mtDNA heteroplasmy, reflecting cumulative maternal-fetal OS, was associated with infant negative affectivity in a sex-specific manner. These findings may portend heightened psychopathology risk in later life.

ABSTRACT 19

REINFORCEMENT LEARNING FOR OPTIMAL GLUCOSE CONTROL AFTER CARDIAC SURGERY.

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BACKGROUND: Hyperglycemia is common in patients within 24 hours after cardiac surgery and is associated with increased incidence of wound infections, morbidity, and mortality. This study aims to develop a reinforcement learning (RL) algorithm to optimize insulin dosing within 24 hours after cardiac surgery to improve glycemic control among these patients.

HYPOTHESIS: We hypothesize that offline RL can optimize insulin dosing in patients in the initial 24 hours following cardiac surgery.

METHODS: We stratified post-cardiac surgery patients from the Medical Information Mart for Intensive Care-IV database into 70% training, 15% internal validation (tuning), and 15% testing subsets, and from the multicenter eICU-Collaborative Research Database as external validation. Dosing insulin post-operatively is dependent on patient characteristics and glucose levels and is a sequential decision-making problem that can be represented as a Markov Decision Process (MDP). We defined the MDP as a set of patient states, actions (hourly insulin dosing), and rewards. Patient states are composed of clinical features in 1-hour time-bins. We developed a reward structure to encourage hourly glucose values to stay within 140-180 mg/dl range, as is standard clinical practice for critically ill patients. We used Conservative Q-Learning to learn dynamic, hourly insulin dosing strategies. Marginalized importance sampling for off-policy evaluation was used to estimate accumulated rewards for the agent's actions and compare against the observed reward. We then assessed performance in the external validation cohort.

RESULTS: We identified 6,619 patients in the development cohort (mean age: 67.7 years, SD: 11.3; 71.8% male, 73.8% white) and 649 for external validation (mean age: 67.0 years, SD: 11.1; 67.18% male, 66.6% white). The RL strategy outperformed the observed policy in the training set, indicated by a higher estimated mean reward of 17.18 (95% CI: 16.91-17.4) compared to 14.46 (95% CI: 14.35-14.59) for the clinician strategy. This pattern persisted in the testing set where the RL strategy achieved 16.31 (95% CI: 15.66-16.90) versus 14.57 (95% CI: 14.29-14.83), and the external validation cohort with 18.15 (95% CI: 17.36-18.96) compared to 14.76 (95% CI: 14.29-15.18).

CONCLUSION: The RL strategy for insulin dosing for the first 24 hours after cardiac surgery provided a reproducible performance improvement compared against clinician actions. Next steps include prospective assessment.

ABSTRACT 21

IMPROVING ACCURATE DOCUMENTATION OF LIMITED ENGLISH PROFICIENCY PATIENTS AT MOUNT SINAI EXPRESS CARE.

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BACKGROUND: The US healthcare system serves a diverse population, with nearly 25 million individuals identifying as Limited English Proficiency (LEP). Despite the large presence of LEP patients, there is often inaccurate documentation of their preferred language in Electronic Health Records (EHR), with error rates up to 20%. While interventions have sought to improve the frequency of language preference documentation, improving the accuracy of documentation through cost-effective means remains unaddressed.

RESEARCH QUESTION: How does the implementation of a cost-effective intervention affect the accuracy of language preference documentation for LEP patients at Mount Sinai Express Care?

METHODS: The study was conducted at Mount Sinai Express Care from January 1 to June 30, 2023. The intervention, beginning on April 1, asked triage nurses to attach pink flags to LEP patient room doors as a reminder to document both preferred language and “Language Interpreter Used” in EPIC (EHR system). Error rates were defined as the percentage of patients whose preferred language was recorded as English amongst those documented as “Language Interpreter Used”. A segmented regression analysis was conducted to evaluate changes in error rates over time and measure the intervention’s immediate and long-term impact.

RESULTS: The study involved 6,604 patients with mean age of 46 years and no significant age or gender differences pre- (January 1–March 31) and-post intervention (April 1-June 30). Pre-intervention, 164 English-labeled and 35 non-English-labeled patients utilized interpreter services, increasing to 197 and 43, respectively, afterwards. Segmented regression analysis revealed an initial baseline error rate of 79.3%, increasing by 0.8% weekly pre-intervention ($\beta_1=0.8, p=0.62$), followed by an immediate one-week post-intervention drop of 21.1% ($\beta_2=-21.1, p=0.55$), and a subsequent decrease of 0.4% weekly post-intervention ($\beta_3=-0.4, p=0.87$). The findings indicate that immediate and long-term effects of the intervention were not statistically significant.

DISCUSSION: Despite the lack of statistical significance, the immediate post-intervention error rate drop serves as a clinically important finding, emphasizing the need for consistent reminders and education to improve error rates long-term. These findings also underscore the necessity for holistic strategies that integrate entire teams and implement systemic EHR changes to make language documentation required.

ABSTRACT 22

INSULIN RECEPTOR SIGNALING AND RACIAL DISPARITIES IN TRIPLE NEGATIVE BREAST CANCER.

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INTRODUCTION: Obesity and type 2 diabetes are associated with poor breast cancer (BC) prognosis. These disorders, along with hyperinsulinemia are more common in Black than in White women. Black women also have higher rates of triple negative breast cancer (TNBC), and greater breast cancer mortality than White women. We hypothesized that Black women with TNBC have worse outcomes in part due to tumor promoting effects of hyperinsulinemia via the insulin receptor (IR) signaling pathway.

METHODS: From our IRB-approved, multi-institutional, cross-sectional, NIH-funded, study of women with newly diagnosed BC, we identified women with TNBC. We performed immunohistochemistry (IHC) analysis of formalin-fixed-paraffin-embedded tumor samples from 45 self-identified Black women and 48 self-identified White women. We quantified the BC expression of IR (n=92), IGF1R (n=92), pERK (n=91), FOXO3a (n=90) for intensity (none=0, weak=1, moderate=2, intense=3). In subsequent analysis, 0 and 1 intensity IHC staining were considered negative, and 2 and 3 were considered positive. Quantification was performed with reviewers blinded to clinical information. Clinical information (age, race, body mass index [BMI], waist circumference, fasting insulin, BC Nottingham Prognostic Index [NPI]) was evaluated after IHC scoring. Statistical proportions were compared using Fishers Exact test, and continuous variables were evaluated using parametric or non-parametric tests, as appropriate.

RESULTS: Positive IR staining was seen in 64% of samples (n=59), 74% (n=68) for IGF1R, 68% (n=62) for FOXO3a and 43.3% (n=39) for pERK. Positive IR staining was more prevalent in Black women than White women (P=0.003) but was not significantly associated with age or NPI. IGF1R, FOXO3a, pERK positive staining were not associated with race or NPI. Positive IR staining was also associated with higher BMI, waist circumference, and fasting insulin (P<0.05 for all). Positive IGF1R, FOXO3a, pERK staining were not associated with any of these factors.

CONCLUSION: We found that 64% of TNBCs had positive expression of IR, and IR expression was more prevalent in tumors from Black women and associated with higher insulin levels, suggesting that tumors from Black women may be more sensitive to the tumor promoting effects of systemic hyperinsulinemia.

ABSTRACT 23

HEALTHCARE UTILIZATION AND MEDICAL CONDITIONS IN CHILDREN EXPERIENCING FOOD INSECURITY AT A CLINIC IN EAST HARLEM, NEW YORK CITY.

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BACKGROUND: Food insecurity (FI) impacts children's health and development. Mount Sinai Pediatric Clinic's social determinants of health (SDH) screening program identifies families with FI and refers them to community resources. Analyzing diagnoses, healthcare utilization, and preventive health metrics among children with FI is critical to optimize interventions that address and improve SDH in underresourced populations.

OBJECTIVE: To characterize demographics, vaccine/well-visit compliance, Emergency Department/UrgentCare (ED/UC) use, and comorbidities in children with FI at an NYC pediatric clinic.

METHODS: We screened families for FI prior to pediatric visits using Hunger Vital Signs. Families with FI were offered an emergency food package, food pantry referral, and those who had a child ages 0-10 years and spoke English/Spanish were offered enrollment in a prospective study. Enrolled parents completed a self-administered survey using the 18-item USDA Household Food Security Survey to assess food security status. We conducted chart review to identify insurance type, comorbidities, ED/UC use, and vaccine/well-visit compliance. We used ANOVA, chi-square, and linear regression to explore relationships between FI and weight status, compliance with well-visits, and ED visits, respectively.

RESULTS: We enrolled 125 parents. 66% identified their child's ethnicity as Hispanic. 38% reported race as Black. 92% of children had Medicaid; 59% of parents were unemployed. 14% of families had high food security; 21% marginal, 44% low, and 21% very low food security. In addition to FI, families had an average of 3.1 unmet social needs; home environmental issues (54%) and affordable childcare (29%) were most common. 27% of children were vaccine delayed and 26% had 2 or more ED visits in the past year. 24% of children 2 years and above were obese; 5.6% were overweight. 8% had asthma. 16.8% were speech delayed. An ANOVA found no significant association between FI score and obesity prevalence. Chi-square found no significant association between FI level and well-child visit compliance. Linear regression showed no significant association between FI level and ED visits.

CONCLUSION: For children with FI, it is critical to identify barriers to care and have onsite resources to address health issues. Future research will explore whether interventions to ameliorate FI affect prevalence of comorbidities, routine pediatric care compliance, and ED/UC usage after 12 months of enrollment.

ABSTRACT 24

DONOR RISK FACTORS AND OUTCOMES OF INTRACARDIAC THROMBOSIS DURING LIVER TRANSPLANTS.

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BACKGROUND: Intracardiac thrombosis (ICT) is a rare and lethal complication during liver transplant surgery. It is thought that disordered coagulation and endothelial damage from end-stage liver disease leads to ICT, however the exact mechanism is unknown. Previous research has found that recipient risk factors, including male sex, high MELD score, PRS, and transfusion requirements are associated with ICT. However, there is limited research on donor risk factors, including donor demographics, graft function, and medical history, and the incidence of ICT in a larger cohort of liver transplants.

AIMS: The aim of this study is twofold: to explore the relevant donor characteristics associated with ICT during liver transplant and to describe the impact on survival for patients who experience ICT intraoperatively.

METHODS: This study is a retrospective observational, single-center study on liver transplant recipients at Mount Sinai Hospital from January 2011 to February 2021. We collected demographic data on all recipients and extracted relevant donor characteristics from a data set maintained by SRTR. All liver transplants in which the anesthetic record indicated a “clot”, “thrombus”, or “pulmonary embolism”, included the administration of heparin, tissue plasminogen activator, or a cardiac arrest event were manually screened for ICT. Cases in which ICT occurred secondary to cardiac arrest were excluded, as were those in which ICT occurred prior to implantation of the graft, as these events were unlikely to be affected by donor factors. Data collection included donor factors, graft factors, recipient factors, recipient lab values, and postoperative outcomes. Descriptive statistics were used to characterize the donor and recipient risk factors associated with the development of ICT and postoperative outcomes associated with ICT.

RESULTS: Out of 1549 liver transplants, there were 18 cases of post-implantation ICT (1.2%). 27 cases of pre-implantation ICT were excluded from this study. All cases of ICT occurred with grafts from male donors ($n=18$, $p<0.005$). Grafts from donors with a past history of diabetes were more likely to be associated with ICT ($n=17$, $p<0.05$). No other factors were associated with ICT incidence. No factors or events were associated with the incidence of ICT. Notably, ICT was associated with 30-day mortality, but not 1-year mortality. ($p<0.005$).

ABSTRACT 25

DNA DAMAGE RESPONSE MUTATIONS ASSOCIATED WITH WORSE OUTCOMES IN KRAS/TP53 CO-ALTERED PANCREAS CANCER.

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BACKGROUND: Despite curative-intent surgery and systemic therapy, patients with resectable pancreatic ductal adenocarcinoma (PDAC) have poor long-term survival. Genomic profiling of PDAC has identified that alterations in KRAS, TP53, CDKN2A, and SMAD4 are common, and up to 25% of patients harbor actionable molecular alterations.

OBJECTIVE: We aim to assess how the presence of alterations in one or more functionally distinct genetic pathways impact patient outcomes following pancreatectomy.

METHODS: A retrospective study was performed on patients with PDAC who underwent pancreatectomy between 2013 and 2022 with next generation panel sequencing data. STRING v12.0 functional link analysis and k-means clustering were performed to create clusters of functionally similar mutations. Patients were classified into these clusters based on their tumor mutational profile, and disease-free survival (DFS) and overall survival (OS) of each cluster was compared.

RESULTS / DISCUSSION: In total, 80 patients met the inclusion criteria at our institution. 76 patients (95%) received neoadjuvant or adjuvant chemotherapy. We identified alterations in 81 unique genes, with the most common alterations occurring in KRAS (88.8%), TP53 (73.8%), CDKN2A (28.8%), SMAD4 (15%), and ATM (10%). Because most patients in our cohort experienced concurrent alterations in KRAS and TP53 (73.5%), we limited our k-means clustering and survival analysis to the 59 patients with these co-alterations. Within this co-altered cohort, we identified 67 unique alterations (not including KRAS and TP53). K-means clustering yielded 5 functionally distinct clusters, with an average of 13.4 genes and 21 patients per cluster. Most patients had multiple functionally distinct mutations and were placed into multiple clusters accordingly (1: PI3K/PTEN signaling, 2: Cell cycle regulation, 3: ERBB2-EGFR signaling, 4: Chromatin remodeling, 5: DNA damage response). We found that patients (N=21) with mutations in cluster 5 (ATM, ATR, ATRX, BRCA2, etc.) had shorter DFS than patients (N=38) without alterations in this cluster (median DFS 10.2 months [IQR 6.9-16.9 months] vs. 15.8 months [8.9-52.8 months]; P=0.013). We identified a non-significant trend in shorter OS in these patients as well (median OS 28.2 months [17.1-76.4 months] vs. 35.8 months [21.3-N/A months]). These findings may inform prognosis, surveillance schedules, and targeted treatment.

ABSTRACT 26

EXAMINE THE IMPACT OF RADIATION THERAPY ON OVERALL SURVIVAL AND RESPIRATORY FUNCTION OF LUNG CANCER PATIENTS WITH PULMONARY FIBROSIS.

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BACKGROUND: In this study, we are interested to see the clinical factors that contribute to the status of post treatment respiratory function and overall survival rate for lung cancer patients with IPF.

METHODS: We did a retrospective study of 38 patients with underlying idiopathic pulmonary fibrosis that were diagnosed with primary lung cancer from 2000-2022 at Memorial Sloan Kettering Center. Data about demographics, comorbidities, and treatment of these patients was extracted from the Healthcare Information System. The age of the patients ranged from 58 to 89 years with a median age of 73. There were 23 male and 15 female patients studied. The KPS score of 30 patients was known and ranged from 50 to 90 with a median of 80. 34 out of the 38 patients had a smoking history. Treatment related pulmonary complications and survival rate were determined following completion of treatment.

RESULTS: The histopathology of the 38 patients was that 17 had adenocarcinoma, 19 had squamous cell carcinoma, and 2 had SCLC. The number of patients with stages I, II, III and IV were 18, 2, 15, and 3 patients respectively. The average length of survival after diagnosis was 16 months for stage I and II patients and 11 months for stage III and IV patients. In stage I and II patients, the average length of survival in patients with adenocarcinoma and squamous cell carcinoma were 20 months and 10 months respectively. Similarly, patients with adenocarcinoma and squamous cell carcinoma in stage III and IV patients had average survival length of 13 months and 10 months respectively. Radiation pneumonitis (RP) incidence of 34 patients was analyzed. Stage I and II patients had 0.9 (95% CI 0.2-5.0) times the odds of having radiation pneumonitis than stage III and IV patients. Similarly, male patients have 2.3 (95% CI 0.4-12.3) times the odds of having radiation pneumonitis than female patients. The use of steroids and oxygen therapy were also found to increase post-radiation treatment. The use of steroids in stages I and II patients showed an increase of 53% (95 CI 29.8-68.7) with a $p < 0.001$. Likewise, in stage III and IV patients, steroid use increased by 60% (95 CI 37.2-74.2) with a $p < 0.001$. For oxygen use, there was an increase of 21% with a p-value of 0.07 in stage I and II patients, and a 40% increase in stage III and IV patients with a p-value of less than 0.001.

CONCLUSION: ILD patients have short survival length and require increased use of steroid and oxygen post-treatment.

ABSTRACT 27

A QUALITATIVE ANALYSIS OF PATIENT ADVOCATE PERSPECTIVES ON ADDRESSING DISPARITIES IN BREAST CANCER IMMUNOTHERAPY ACCESS.

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INTRODUCTION: Triple negative breast cancer (TNBC) is a breast cancer type that is often aggressive and difficult to treat. TNBC diagnosis odds are triple for non-Hispanic (NH) Black women and 22% greater for Hispanic women, compared to NH white women. In 2020, it was discovered that immunotherapy targeting programmed death-receptor 1 improves rates of pathologic complete response to chemotherapy in TNBC. However, patients who identify as Black, have public insurance, lack insurance, or are of lower socioeconomic status are less likely to receive immunotherapy.

QUESTION: From patient advocates' perspectives, what are implications for interventions on addressing disparities in access to immunotherapy for TNBC?

METHODS: Patient advocates affiliated with organizations that advocate for patients with breast cancer in the NYC area were recruited via email by internet search and snowball sampling from May 2020 to July 2023. Patient advocates participated in semi-structured 30-minute video or telephone interviews, guided by the Consolidated Framework for Implementation Research, about immunotherapy implementation. Thematic text analysis was conducted by 3 coders to reach consensus about themes.

PRELIMINARY RESULTS: Thirteen patient advocates were interviewed (Black n=6, White n=5, Other n=2; Hispanic n=3) from 10 advocacy organizations. Ten themes emerged: need for (1) comprehensive resources that include information on immunotherapy function, eligibility, and side effects; (2) information on how patients can access treatment; (3) the dissemination of information through media sources patients already engage with; (4) the intervention to be culturally and linguistically tailored to Black and Hispanic women; (5) patient navigators to assist patients with managing insurance, hospital, and community resources; (6) education on self-advocacy in the healthcare space; (7) connecting patients with others who have received immunotherapy; (8) better surveillance of adverse side effects; (9) financial support for treatment-related costs; (10) financial support for living and other non-medical expenses.

CONCLUSION: Results highlight how disparities in immunotherapy implementation for women with TNBC are driven by multiple forces. Themes indicate that addressing these inequities warrants a multifaceted approach. Further research that explores the perspectives of other healthcare leaders and patients is warranted to design an effective intervention to improve immunotherapy access.

ABSTRACT 28

COMPARING THE EFFECTIVENESS OF AUGMENTED REALITY AND VIDEO LEARNING IN TEACHING A PROCEDURAL SKILL.

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BACKGROUND: Augmented reality (AR) technology has been developed for medical education, providing trainees with interactive experiences to enhance their learning. While some studies have shown the effectiveness of AR-based medical training, there is limited research on the capacity for AR to teach procedural skills compared to other independent learning tools such as video learning. This study examines the superiority of AR versus video learning in teaching how to tie a nautical knot, with potential implications for future anesthesiology educators.

METHODS: 68 subjects were recruited at a research station at an international simulation conference and randomly assigned to learn to tie an Angler Loop via either an AR-based head-mounted device (HoloLens2) or a YouTube video. All subjects then filled out two surveys evaluating task load (NASA-TASLI) and system usability (SUS). Subjects were then taken to a separate room where they attempted to tie the Angler Loop independently while a blinded study team member timed and graded them. All subjects then filled out NASA-TASLI again. Wilcoxon rank sum and signed rank tests were used to conduct univariate analyses for quantitative values and chi-squared tests were used to conduct univariate analyses for categorical values.

RESULTS: Members of the AR group were more likely to succeed in tying the knot ($p < 0.01$), tie a higher quality knot ($p = 0.01$), and self-assess their performance as better ($p < 0.01$). Among successful subjects only, no differences in knot quality and time to tie the knot were observed between learning groups. Members of the AR group rated their learning system as better integrated ($p < 0.01$) and requiring less support to use ($p < 0.01$) on the SUS. On initial administration of NASA-TASLI after the assisted knot tie, members of the AR group rated their task as more mentally demanding ($p = 0.01$), temporally demanding ($p < 0.01$), effort-requiring ($p = 0.02$), and frustration-inducing ($p < 0.01$). On the second administration of the NASA-TASLI after the independent knot tie, no differences between AR and video groups were observed.

CONCLUSION: Subjects who learned to tie a nautical knot with AR technology were more likely to succeed and tie a higher quality knot. AR learning was rated as better on a system usability survey on multiple dimensions. Further research evaluating AR-based teaching for other procedural skills is needed to better understand how educators can leverage the benefits of AR for independent learning.

ABSTRACT 29

INCREASE IN CRANIOMAXILLOFACIAL CASE VOLUME WITH THE INTRODUCTION OF GENDER AFFIRMING SURGERY CURRICULUM: RESULTS FROM A SINGLE INSTITUTION.

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BACKGROUND: As gender affirming care is becoming more available to both patients and providers, many plastic and reconstructive residency programs are incorporating gender affirming surgery rotations into their curriculum. The purpose of this study is to quantify the change in case volume as a result of including gender affirming surgery in resident curriculum.

METHODS: Following IRB approval, de-identified case logs from all PRS residents at the authors' institution were analyzed from 2013 to 2022. Only case logs from residents who had completed the full six-year program were used, and only surgeries classified as "Craniomaxillofacial Reconstruction" or "Head and Neck Aesthetic Deformity" (CMF/HN) were considered during analysis. The latter includes cases such as facelifts, browlifts, rhinoplasties, and other aesthetic deformities in this category. Case volume was compared before and after 2017, the year that gender affirming curriculum was incorporated at the authors' institution. Averages were calculated based on the number of residents present during each individual year.

RESULTS: From the years 2013 to 2016, the average CMF/HN case number per resident per year, respectively, was 4.5, 12.5, 24.3, and 26.8; this leads to a yearly average of approximately 17 cases during this time. From the years 2017 to 2021, the average CMF/HN case number per resident per year, respectively, was 44.5, 42.8, 13.5, 26, and 19; this leads to a yearly average of approximately 29 cases during this time. The yearly average case number increased by 71% after the curriculum change in 2017. Each resident saw a 30% average increase in yearly CMF/HN cases after the curriculum change.

CONCLUSION: This study revealed that the inclusion of transgender patients in the PRS residency curriculum increased the residents' exposure to surgeries that included CMF reconstruction or HN deformities. Based on the data, the average resident would have doubled their exposure to these types of procedures after the curriculum change. Further studies may observe how similar changes at other institutions have impacted resident exposure to CMF/HN surgeries and address limitations such as concurrent curricular and institutional changes and the trends of other types of operations. Residency programs should be aware how vital this curriculum is towards training the next generation of PRS physicians to be prepared and knowledgeable on how to help their transgender patients and any patients with CMF/HN needs.

ABSTRACT 30

OUTCOMES IN INCIDENTALY VERSUS SCREENING DETECTED STAGE I LUNG CANCER SURGERY PATIENTS.

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INTRODUCTION: While the importance of lung cancer screening for early diagnosis is established, due to poor enrollment, incidental findings still play a role in diagnosis of patients that qualify. However, analysis of this incidental cohort is lacking. We present a retrospective analysis comparing thoracic surgery patients with incidental versus screening detected stage I lung cancer.

METHODS: Thoracic surgery cases at Mount Sinai Hospital from 3/1/2012-6/30/2022 were queried for patients eligible for lung cancer screening and a stage I diagnosis. The basis of lung nodule detection (incidental vs. screening detected) was identified. We compared demographic variables, comorbidities, tumor staging, procedure details, and post-operative outcomes between cohorts.

RESULTS: Of the patients eligible for screening with lung cancer resection and stage I diagnosis at Mount Sinai, 153 were identified incidentally and 67 through screening. For patients with incidentally identified lung cancer, the finding was made using computed tomography (CT) (108/153, 70.6%), X-ray (29/153, 19.0%), positron emission tomography (PET) (13/153, 8.50%), or magnetic resonance imaging (MRI) (3, 2.0%). The patients in the incidental cohort versus screening cohort were older (71.2 vs. 68.3, $P = 0.005$), more likely to have quit smoking (79.7% vs. 67.2% former smokers, $P = 0.04$), and had a greater number of comorbidities (1.50 vs. 0.97, $P = 0.0002$). There was no significant difference between the groups with regards to pack-year smoking history, lung cancer histology, location or size of tumor, and surgical approach, length of surgery or stay, number of post-operative outcomes, and survival.

CONCLUSIONS: In stage I lung cancers, no significant differences were identified between incidentally and screening detected lung nodules with regards to tumor characteristics, surgical approach, and post-operative outcomes. Imaging conducted for other reasons should be considered as a valid and important diagnostic tool, similar to traditional low-dose CT (LDCT), in patients who qualify for screening.

ABSTRACT 31

A MIXED-METHODS ANALYSIS OF THE SOCIAL DETERMINANTS OF HEALTH AND NEEDS MET IN A COMMUNITY-BASED DOULA CARE PROGRAM IN NYC PUBLIC HOSPITALS.

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BACKGROUND: Doula care, trained lay birth support, is an evidence-based and cost-effective strategy to improve maternal and child health. Community-based doulas are uniquely positioned to serve marginalized communities as they focus on social determinants of health: health literacy and access to community support, services, and resources. Yet, limited studies focus on community-based doula care and its ability to reach those in need, especially in minority communities. The HoPE (Helping Promote Birth Equity through Community-Based Doula Care) study aims to fill this gap by evaluating doula care for Queens and Elmhurst patients. This sub-analysis focuses on the program's effectiveness in reaching high-needs doula clients and addressing their social determinants of health.

METHODS: This analysis is part of a mixed-methods evaluation using an implementation science framework (IRB 21-01571). We conducted interviews (n=19) and surveys (n=45) in English or Spanish with HoPE doula clients and interviews with doulas (n=10). Survey data was collected in-person or via phone on REDCap and analyzed using SAS v9.4. Interviews were recorded, transcribed, and translated (if needed), with coders extracting themes to construct an analytical narrative.

RESULTS: Preliminary findings suggest the HoPE program serves a high-needs population. HoPE doula clients were primarily immigrants and first-time parents. 55% reported an annual household income of less than \$25,000, and 93% were covered by Medicaid or other public insurance. Notably, participants had multiple social needs, with 59% expressing stress about rent payments and 50% concerning food costs. HoPE doulas, as community members sharing cultural, linguistic, and socioeconomic backgrounds, provide essential connections to services tailored to their clients' needs. 64% of doula clients received community referrals, and 76% utilized these resources. In interviews, participants discussed parenting classes, baby supplies, WIC, technology, transportation, and legal services.

CONCLUSION: In preliminary findings, the HoPE program effectively reached a population with pronounced social needs and provided community-based referrals. Community-based doula care addresses social determinants of health for patients with low medical knowledge and confidence, limited health literacy, and minimal support systems by improving connections to needed local resources. This care is uniquely tailored to fill health gaps and advance health equity.

ABSTRACT 32

TELEMEDICINE SOLUTIONS FOR VULNERABLE POPULATIONS: ASSESSING THE IMPACT OF ECONSULTS IN MATAMOROS, MEXICO.

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BACKGROUND: RubiconMD is a private company founded in 2013 that established the first electronic consultation (eConsult) platform, an asynchronous telemedicine service in which specialist physicians deliver recommendations to requesting providers electronically and has a leading multi-specialty network. In 2019, RubiconMD partnered with Global Response Medicine, an international non-profit organization providing humanitarian aid to vulnerable populations, to service an eConsult platform for a medical clinic based in Matamoros, Mexico.

OBJECTIVE: To describe the effectiveness and utilization patterns of an eConsult platform in a medical clinic based in Matamoros, Mexico dedicated for migrant and asylum seeker patients.

METHODS: We conducted a retrospective review of de-identified eConsult records (n=121) from the Global Response Medicine clinic between November 13, 2019 to May 20, 2021. A descriptive analysis was conducted characterizing the patient outcomes, educational outcomes, and the distribution of specialties that eConsults were submitted to. The association between patient outcomes and educational outcomes was analyzed as odds ratios.

RESULTS: Among the submitted eConsults, 78/121 (64.5%) improved a patient's care plan, 74/121 (61.2%) helped avoid a medical service, 71/121 (58.7%) helped avoid an unnecessary referral, and 40/121 (33.1%) helped avoid unnecessary diagnostics and procedures. Further, 55/121 (45.5%) of the requesting providers found their eConsult educational, particularly in managing, treating or counseling a patient (43/121; 35.5%). Pediatrics (24/121), dermatology (16/121), and orthopedic surgery (14/121) were the three most consulted specialties. Finding educational value with an eConsult was significantly associated with improved patient outcomes. When the eConsult allowed the requesting provider to screen for a medical condition, this was associated with avoided referrals (OR = 12.14, 95% CI = 3.45 - 42.71), avoided diagnostics/procedures (OR = 4.79, 95% CI = 2.05 - 11.15), an avoided service (OR = 10.57, 95% CI = 3.01 - 37.18), and improvement of care plans (OR = 3.45, 95% CI = 1.30 - 9.19).

DISCUSSION: Our results suggest that eConsults provide notable educational benefits for requesting providers and lead to improved patient outcomes for a vulnerable population. The utility of eConsult usage was particularly considerable in a low-resource setting that requires efficient and cost-effective clinical strategies for patients.

ABSTRACT 33

MULTIMODAL FUSION LEARNING FOR DIAGNOSIS OF INHERITED ARRHYTHMIA SYNDROMES USING THE ELECTROCARDIOGRAM.

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BACKGROUND: Sudden cardiac arrest is the most common cause of cardiovascular death. Monogenic inherited arrhythmia syndromes, such as Brugada (BrS) and long QT syndrome (LQTS), are caused by genetic variants and can result in up to 50% of SCA, especially among younger individuals. However, characteristic ECG patterns can be transient and provokable, and genetic testing is not readily accessible especially among racial and ethnic minorities.

RESEARCH QUESTION: Can deep learning leveraged on electrocardiograms (ECG) and electronic health record (EHR) data identify risk genotypes for BrS and LQTS?

OBJECTIVE: We developed two multimodal fusion models to detect whether patients were genotype-positive for pathogenic variants causing BrS or LQTS.

METHODS: Cases were matched with controls for age, sex, and self-reported race in a 1:20 ratio. Raw ECG from leads I, II, V1-6 and the tabular data extracted from EHR served as inputs to a fusion model that used a convolutional neural network for waveforms and multi-layer perceptron for EHR data. For BrS, model weights were pre-trained for racial/ ethnic diversity using data from Mount Sinai BioMe Biobank and fine-tuned with data from the United Kingdom Biobank (UKBB). Meanwhile, for LQTS, weights were pre-trained using UKBB and fine-tuned with BioMe. A hold-out set of 25% of data from BioMe and UKBB was saved for testing. Group-stratified 5-fold splitting was implemented to divide the remaining data into 80% training and 20% validation within each cross-fold. The best model was selected based on performance on hold-out data after 500x bootstrapping.

RESULTS: For both BrS and LQTS, most genotype-positive patients from BioMe were non-White, whereas the majority of those from UKBB were White. For LQTS, the fine-tuned model achieved an area under the precision-recall curve of 0.29 (95% confidence interval [CI] 0.28-0.29), an improvement in baseline prevalence of 0.05, and an area under the receiver operating curve of 0.83 (0.82-0.83) on hold-out BioMe data. For BrS, the fine-tuned model had AUPRC of 0.18 (0.18-0.18) and AUROC of 0.93 (0.93-0.93) on hold-out UKBB data.

DISCUSSION: Artificial intelligence for ECGs and EHRs offers promise in recognizing individuals with pathogenic genetic mutations predisposing to BrS and LQTS to enable patient prioritization for expert referral and genetic testing. Future study is warranted to externally validate the model and correlate with clinical events to inform risk stratification.

ABSTRACT 34

THE IMPACT OF INTENSITY AND DURATION OF SMOKING ON LUNG CANCER SCREENING AND SEVERITY.

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Lung cancer is the leading cause of cancer-related death in the US for males and females. A major criterion for screening eligibility is the patient's pack-year (PY) history, which combines smoking intensity (cigarettes smoked per day) and smoking duration (years). This approach is partly responsible for screening disparities; Black patients may be exposed to lower screening rates as their PY history falls below the eligibility criteria.

In this retrospective cohort study, we examined the influence of smoking intensity and duration on a patient's likelihood of undergoing screening and their subsequent cancer staging.

Out of 617 patients, 94 were excluded (81: missing data, 13: lung cancer \leq five years). The 523 patients' average age was 67.7 years old (SD=9.0); amongst current and former smokers, the average PY history was 36.6 (SD=29.4), featuring 1.1 packs/day (SD=0.7) for 32.4 years (SD=15.1). Former smokers quit 19.9 years ago (SD=15.3). 53.2% of the patients were female, 63.5% White, 16.1% African American, 4.6% Asian, and 5.5% Hispanic.

Following the screening criteria, 35% of patients were eligible; 34.4% of which were screened, had a history of 52.5 PY (SD=24.1), and smoked 1.2 packs/day (SD=0.5) for 44 years (SD =8.2). Their cancer stage distribution was: Stage I (82.5%), Stage IIb (9.5%), Stage III (7.9%). Those eligible but not screened had a history of 62.0 PY (SD=31.7) and smoked 1.5 packs/day (SD=0.7) for 42.4 years (SD=9.3). Their staging was: Stage 0 (0.8%), Stage I (70.0%), Stage IIa (5.0%), Stage IIb (15%), Stage III (9.2%). Black patients smoked 0.34 less packs/day ($p < 0.001$), 2.17 years longer ($p = 0.242$), and had greater odds of being diagnosed \geq Stage IIa compared to White patients (OR:1.04, 95% CI:0.99-1.08, $p = 0.066$). Asian patients smoked 0.38 less packs/day ($p = 0.005$), 2.7 less years ($p = 0.401$), and were less likely to develop Stage IIb (OR:0.26, 95% CI:0.06-1.17, $p = 0.08$) than White patients. Hispanic patients smoked 0.42 more packs/day ($p = 0.006$), 5.1 years longer ($p = 0.15$), and were more likely to be screening eligible (OR:2.58, 95% CI:0.98-6.80, $p = 0.055$) than non-Hispanic patients. Female patients smoked 0.06 less packs/day ($p = 0.264$), 2.67 less years ($p = 0.046$), and were less likely to be eligible (OR:0.60, 95% CI:0.41-0.87, $p = 0.007$) than male patients.

This study provides an opportunity to delve into a social determinant of health and disparities in screening eligibility.

ABSTRACT 35

DEVELOPING AN EMR-BASED APPROACH FOR NORSE SURVEILLANCE.

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BACKGROUND: New onset refractory status epilepticus (NORSE) is a rare variant of status epilepticus (SE) presenting with no acute toxic, metabolic, or structural etiology in patients without active epilepsy. Given its low incidence and often unclear etiology, NORSE remains poorly understood. There is currently no electronic medical record (EMR)-based case definition for NORSE. An EMR-based definition of NORSE could optimize disease identification and aid in future elucidation of NORSE risk factors.

OBJECTIVE: To develop an EMR-based algorithm capable of identifying NORSE patients among intensive care unit (ICU) admissions.

METHODS: We conducted a retrospective study of ICU patients in the Mount Sinai Health System (MSHS). Initially, records for all patients except neonates from 2019 were reviewed and all encounters with an ICD-CM 9/10 code for seizure or epilepsy were screened for SE or NORSE. SE and NORSE cases were identified by a reviewer and confirmed by 2 epileptologists. We designed >40 algorithms for NORSE identification using the following variables: ICD9/10 code for SE; anti-seizure (ASM), immunomodulatory, or anti-microbial drugs; procedures; length of stay. The 5 highest performing algorithms were applied to MSHS ICU data from 2020-21. Retrospective chart review of the resultant cohort was conducted by 2 reviewers and SE and NORSE cases were again confirmed by 2 epileptologists. We will calculate sensitivity, specificity, negative (NPV) and positive predictive value (PPV) for each algorithm.

RESULTS: We identified 378 patients with SE (173 in 2019, 205 in 2020-21) of whom 10 had NORSE (2.65%). In the 2019 cohort, calculated sensitivity for all top 5 algorithms was 1. The highest-specificity algorithm tagged charts containing a) ICD9/10 for SE + ≥ 2 ASM + brain biopsy (Sp=0.995). The lowest-performing algorithm (ICD9/10 for SE + ≥ 2 ASM) still had a calculated specificity of 0.916. The highest PPV detected was 0.036. Data from 2020-21 is being extracted and adjusted values will be calculated shortly.

DISCUSSION: We report 5 new algorithms capable of identifying NORSE patients among ICU admissions with high sensitivity (Sn=1) and specificity (Sp>0.900). Due to the condition's rarity, PPV for these algorithms remain low. Future research leveraging AI or complex language processing may improve PPV. Collaborative efforts with a consortium of research groups across NY health systems will allow us to externally validate these algorithms among a larger population.

ABSTRACT 36

ANALYZING RACIAL AND ETHNIC DISPARITIES IN THE UTILIZATION OF ELECTIVE VS. NON-ELECTIVE COLECTOMIES AMONG GERIATRIC PATIENTS: A RETROSPECTIVE MULTIVARIATE ANALYSIS OF THE NSQIP DATABASE.

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RESEARCH QUESTION: Are there racial/ethnic differences in utilization of elective vs. non-elective colectomies amongst geriatric patients registered in the National Surgical Quality Improvement Project (NSQIP) database?

OBJECTIVE: Non-elective colectomies are associated with worse health outcomes, including higher risk of morbidity and mortality. It remains unclear whether certain populations are more likely to receive non-elective colectomies than others. This study aims to determine if there are racial/ethnic disparities in the utilization of elective vs. non-elective colectomies among geriatric patients in the NSQIP database.

METHODS: We used the 2018-2020 NSQIP colectomy file to conduct a nationwide retrospective analysis of patients undergoing a colectomy. Patients were identified using target colectomy CPT codes. Exclusion criteria included age <65, BMI > 55, and unknown BMI, ASA category, elective status and/or race/ethnicity. Primary outcome was elective vs non-elective surgery status. We implemented a multivariate logistic regression model to test for associations between race/ethnicity and elective vs. non-elective surgical status, controlling for age, sex, frailty, BMI, ASA status, NSQIP mortality predictor, disseminated cancer, and smoking status.

RESULTS: The study population included 79,497 patients (64,487 White non-Hispanic; 7,095 Black; 3,219 Asian; 494 Native American/Pacific Islander; 4202 Hispanic). Among them, 45,609 were female, 33,888 were male, and the mean age was 74 (SD 6.9). 54,953 (69%) received elective surgery and 24,544 (31%) received non-elective surgery. Univariate analysis revealed statistically significant odds ratios for receiving non-elective vs. elective colectomy for across all racial/ethnic groups (Black = 1.30, 95% CI 1.23-1.37; Asian = 0.81, 95% CI 0.75 - 0.88; Native American/Pacific Islander = 1.24, CI 1.032 - 1.50; Hispanic = 1.23, 95% CI 1.15 - 1.31). Multivariate logistic analysis revealed that this relationship persisted for Black and Hispanic patients (Black = 1.38, 95% CI 1.30 - 1.47; Hispanic = 1.54, 95% CI 1.43 - 1.67).

CONCLUSIONS: This nationwide retrospective multivariate analysis revealed that Black and Hispanic geriatric patients were more likely to receive non-elective colectomies than their counterparts. These findings are consistent with existing literature describing racial and ethnic disparities in the utilization of higher-risk surgeries.

ABSTRACT 37

MODELING THE SPATIOTEMPORAL PROPERTIES OF CROSSTALK BETWEEN RYR AND IP₃R-MEDIATED Ca²⁺ RELEASE IN FAILING CARDIOMYOCYTES.

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Ryanodine receptors (RyR) and IP₃ receptors (IP₃R) are Ca²⁺ release channels expressed on the endoplasmic/sarcoplasmic reticulum (ER/SR) membranes in various cell types. Both the spatial localization and the distinct gating properties of these channels contribute to the diverse cellular functions controlled by intracellular Ca²⁺ signaling. It is known that both RyRs and IP₃Rs are expressed on the SR membrane of ventricular cardiomyocytes and that the expression of IP₃Rs on the SR at dyadic junctions is increased in cardiac diseases such as hypertrophy and heart failure (HF), and evidence that Ca²⁺ release through IP₃Rs can influence RyR-mediated Ca²⁺ release has been described. However, despite the suggested functional role for crosstalk between RyRs and IP₃Rs, especially under pathological conditions, most previous mathematical models of cardiomyocyte Ca²⁺ signaling have accounted for only RyRs in isolation. Here, we propose a mathematical model of intracellular Ca²⁺ signaling that incorporates both RyRs and IP₃Rs and can be used to develop quantitative predictions about crosstalk between the two channels. This model considers the spatial arrangement of RyRs and IP₃Rs relative to one another in clusters based on published immunohistochemistry co-localization studies in healthy and failing cardiomyocytes and simulates the stochastic opening and closing of individual receptors based on single RyR and IP₃R channel patch clamp measurements. We hypothesized that the fragmentation and dispersion of RyR clusters and increased expression of IP₃Rs at sarcoplasmic reticulum (SR) junctions in HF cause more frequent Ca²⁺ sparks, which may increase susceptibility to arrhythmogenic Ca²⁺ waves. Our simulations using this model support such a hypothesis and show that (1) the increased spark probability in HF clusters with high IP₃R expression sometimes manifests as multi-sparks, and that (2) differences in spark behavior between healthy and HF clusters are mitigated by increasing IP₃R expression, suggesting a compensatory role in response to changes due to cluster fragmentation and dispersion.

ABSTRACT 38

OUTCOMES OF CHILDREN AND ADOLESCENTS IN ACUTE PSYCHIATRIC CRISIS WITH AND WITHOUT PEDIATRIC OBSERVATION UNIT UTILIZATION.

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BACKGROUND: Pediatric emergency departments (PED) are increasingly relied on for management of acute mental health concerns. Pediatric observation units (POU) can provide ongoing care to youth requiring psychiatric admission. There is limited data on the impact of POU on PED disposition, length of stay (LOS), and outcomes in patients with psychiatric complaints.

OBJECTIVES: To identify differences in PED length of stay (LOS) and completed admission to the inpatient psychiatric (IP) unit between patients admitted directly to IP unit and patients admitted first to POU.

METHODS: This study utilized a retrospective cohort design at two PEDs in an urban, academic healthcare system, one of which has a POU offering ongoing psychiatric co-management (monitored medication adjustment, social work, and child-life services); only social work is available to patients at the comparison site. Inclusion criteria were <18 y.o. with an initial decision to admit to an IP psychiatric unit. Data were collected from PED+POU site 1/2022-12/2022 and from comparison site 1/2022-6/2022. Charts were reviewed and patient demographics, PED and POU course, and disposition were collected. Primary outcomes were rate of completed admission to IP psychiatric unit and LOS.

RESULTS: 88 patients (mean age 14, 82% non-White, 65% female, 66% Medicaid) from the PED+POU site and 82 patients (mean age 15, 72% non-White, 67% female, 68% Medicaid) from the comparison site fit inclusion criteria. In the PED+POU, 64% presented with suicidal ideation (SI) and 36% with other psychiatric concerns; 67% of patients at the comparison site presented with SI. There were no differences between groups for age, sex, race, payor, or chief complaints. There was a difference in PED LOS between groups (POU site average 3.5 hours, IQR 2.2, 5.6; comparison 10.1 hours IQR 6.5, 28.9; $p < 0.001$); there was no difference in treatment hours (POU+IP vs IP) or IP LOS. 48% of PED+POU patients had their admission decision reversed and sent home with appropriate follow up, while no decisions were reversed at the comparison site. Patients at the site with a POU were 1.9 times less likely to have completed admission to an IP psychiatric unit (95% CI 1.6-2.3).

CONCLUSION: Psychiatric co-management in a POU may decrease the burden of care in PEDs and reduce the need for IP admission among children with psychiatric emergencies. POU may be able to address patient and system needs amidst rising rates of youth psychiatric distress.

ABSTRACT 39

ASSESSING EQUITY WITHIN HEALTHCARE INSTITUTIONS: FINDINGS FROM STAFF OF A COMMUNITY HEALTH CENTER NETWORK.

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BACKGROUND: The United States has a persistent gap in care and outcomes between racial and ethnic groups. To our current knowledge, there is no standardized way to measure health equity within healthcare organizations to target and reduce racial and ethnic health disparities. Furthermore, no research has examined stakeholder input into developing health equity measurements.

OBJECTIVE: This study is a generative pilot qualitative study looking to examine stakeholder ideas regarding three main research questions, including: (1) Where health disparities exist in the organization and in healthcare, (2) Steps to address disparities, and (3) Ways to measure disparities within and between organizations.

METHODS: A group of administrators, patients, and clinicians was convened to frame the question of how to best measure health care equity within a healthcare organization. The group developed a semi-structured interview guide and advised on participant recruitment procedures. This group also performed the coding of transcripts and data analysis. Transcripts were created of each focus group session. Both an inductive and deductive approach were employed in data analysis. A codebook of the a priori codes based on previous literature was created prior to coding the 7 transcripts. For in vivo codes, inter-rater reliability was established by having two reviewers analyze each transcript; codes were reconciled, collaboratively defined, and added to the codebook.

RESULTS: Ultimately, 24 patient-facing employees and trainees from a New York based federally qualified community health center were recruited for a total of 7 focus groups. Transcripts showed that nearly all focus groups discussed the following themes: disparity in treatment, quality of care, access, care integration, language concordance, and implicit bias. Overall, there was unanimous enthusiasm among all participants about the importance of measuring disparities and inequities within healthcare organizations.

CONCLUSION: This pilot study demonstrates the feasibility of using stakeholder perspectives to develop measures of health equity within healthcare institutions and provides a framework that can be expanded for further qualitative research in this area. Future research should be conducted to explore the perspectives of stakeholders at other institutions, as well as stakeholder groups that were not included in this study, in particular patients and patient advocates.

ABSTRACT 40

INCREASING ACCESS TO PATHOLOGY SERVICES IN LOW-AND MIDDLE-INCOME COUNTRIES THROUGH INNOVATIVE USE OF TELEPATHOLOGY.

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INTRODUCTION: In many low- and middle-income countries (LMICs), surgical care and management is limited by access to pathology services. In Uganda, the pathologist to population ratio is 1/1,000,000. In response to this, the Kyabirwa Surgical Center in Jinja, Uganda created a telepathology service in collaboration with an academic institution in New York City. This study demonstrates the feasibility of implementing a telepathology model to supplement the critical pathology needs of a low-income country.

METHODS: This was a retrospective, single-center study of an ambulatory surgery center with pathology capability using virtual microscopy. The microscope was controlled by the remote pathologist, who reviewed histology images transmitted across the network in real time. Demographics, clinical history, surgeon's preliminary diagnosis, and pathologist's final conclusion were collected from the pathology reports and center's electronic medical record.

RESULTS: Nikon's NIS Element Software was used as the telemicroscopy platform to view and interact with the digitized light microscope images. Internet connectivity was established by an underground fiber optic cable. The lab technician and pathologist were able to use the software after a two-hour tutorial session. Pathology sessions were held approximately once every two weeks reviewing an average of 4 patients in a one hour session, with each patient's sample consisting of up to 21 slides. The average time from the collection of tissue to the final pathology report was 18 days. Between April 2021 to June 2022, tissue samples of 113 patients were examined. This telepathology program was able to confirm the surgeon's clinical suspicion of cancer in 65% (n=64) of tissue samples. Of the cases not tagged as suspicious for malignancy by the surgeon, 12% (n=6) had malignant features detected by the pathologist. The most common malignancies on histology were squamous cell carcinoma of the esophagus, invasive ductal carcinoma of the breast, and colorectal adenocarcinoma.

CONCLUSION: With increasing availability of video conference platforms and network connections, a telepathology model can be easily implemented in countries with poor access to pathology services. Telepathology is an emerging field that can be used by surgeons in LMICs to confirm clinical suspicion and histological diagnosis of malignancies to assure appropriate treatment for patients.

ABSTRACT 41

BASELINE HEALTH STATUS AS MEASURED BY FUNCTIONAL STATUS INDEXES INTERACT WITH GEOSPATIAL FACTORS TO IMPACT COVID 19 MORTALITY.

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INTRODUCTION: In addition to social determinants of health, we hypothesize that baseline health status upon admission may significantly impact outcomes from Covid-19. We explore the impact of baseline health/functional status in this study through the Canadian Frailty Score (CFS) to demonstrate how such an index can be incorporated into ICU adverse-event registries.

METHODS: We conducted an urban, single-center, observational study of patients with Covid-19 infection admitted to the Saint Agnes Hospital (SAH) adult ICU over ten months (3/2020 - 1/2021). The study was approved by the SAH's IRB. Weekly prospective data on the Covid-19 study population were entered routinely in the Saint Agnes Hospital ICU quality assurance database. Additional data specific to test our hypothesis—zip code of residence, functional status, and Canadian Frailty Score (1-7)—were collected from retrospective chart review. The studied population was dichotomized to assess patients who resided in long-term care facilities or home residence. Five zip code regions based on sample size and the distance from the patient's residence to the hospital allowed random sampling. Statistical significance was determined using ANOVA and T-test as indicated.

RESULTS: A total of 324 patients were enrolled. Across the designated cohort-based zip code regions, the mean frailty score of patients who resided at home differed significantly ($2.9 \pm SE .16$ vs. $3.8 \pm SE .21$, $p < 0.01$) when adjusted. Differences in admission frailty scores were observed between survivors and patients who died or were discharged to hospice (3.27 vs 4.18). Favorable frailty scores of 1-2 had a combined death and hospice rate of 23%. In contrast, patients with unfavorable frailty scores of 6-7 had a combined death and hospice rate of 83%. The relative risk of estimated final mortality increased with increasing admission frailty score. Patients with scores of 4-7 had a 1.8 greater relative risk of estimated final mortality compared to those with scores of 1-3.

CONCLUSIONS: In the adult Covid-19 population, geospatial factors were associated with significant variances in frailty determined on ICU admission. Worsening frailty scores were associated with marked differences in both survival and final disposition, with combined death and hospice rates as high as 80%. We recommend that these metrics be added to routine data reporting to help better characterize ICU populations and stimulate efforts to improve frailty in vulnerable populations.

ABSTRACT 42

RUBICONMD: USING ECONSULTS IN HOME HEALTH CARE FOR GERIATRIC PATIENTS.

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BACKGROUND: The primary purpose of e-consults in healthcare is to improve access to specialized care, streamline communication, and enhance overall efficiency in the healthcare system. The aging demographic presents unique challenges, as older individuals often face a higher prevalence of chronic illnesses and complex health conditions. Through e-consults, geriatric healthcare providers can collaborate on medication management, ensuring the most appropriate and safe treatment regimens for their patients. This case report aims to understand the impact of e-consults on a timely solution to polypharmacy.

METHODS: A case review was conducted to assess the utilization of e-consults for the pharmacologic management of complex geriatric, home-based cases. A case consists of the PCP's background information and question for the specialist, along with the specialist's response on how to proceed. We used the platform, Case Explorer, which is an internal tool developed by RubiconMD engineering and data teams to improve accessibility of eConsult reviews for stakeholders to identify all cases related to pharmacological management and geriatric healthcare. We then conducted case reviews to see the importance of e-consults in the home health care center and chose to center three cases that highlighted the manifestation of polypharmacy in older adults and the utilization of e-consults to simplify medication regimens.

PRELIMINARY RESULTS: Three cases were chosen for how they highlighted the ability of e-consults to address polypharmacy and create a plan to deprescribe patients from unnecessary medications. e-consults have been shown to shorten clinic wait times or the perception of wait times, but this impact has not been specifically studied within the context of geriatric populations and managing multicomplexities. With Rubicon MD, e-consults typically have a turnaround time of 3 hours to receive a specialist response. The three cases are shown to highlight the utility of e-consults for managing polypharmacy and the adverse outcomes that are avoided as a result.

CONCLUSION: Polypharmacy can often be a manifestation of a lack of coordinated care for older adults. By enabling primary care providers to consult with specialists virtually, e-consults streamline care coordination, reduce wait times, and facilitate timely access to expert guidance.

ABSTRACT 43

NATIONAL UTILIZATION AND INPATIENT SAFETY MEASURES OF LUMBAR SPINAL FUSION METHODS WITH AND WITHOUT COMPUTER ASSISTED NAVIGATION.

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BACKGROUND: Computer assisted navigation (CAN) has revolutionized the field of spine surgery by providing real-time guidance and improved operability. However, little has been published on the impact of CAN on spinal fusion outcomes.

OBJECTIVE: The aim of this study was to assess inpatient safety measures of lumbar spinal fusion (LSF) with and without CAN through a large national database.

METHODS: A database retrospective cohort study was conducted using hospital discharge information from the 2019 National Inpatient Sample (NIS). Discharge information was obtained for patients who fulfilled ICD-10 Procedure Coding System (ICD-10 PCS) classification for LSF surgery, regardless of the specific technique. The cohort was then stratified by whether or not their procedures used CAN through a corresponding ICD-10 PCS code. To assess inpatient safety, a single reviewer collected data for demographics, hospital characteristics, hospital length of stay (LOS), total charges for the procedure, rate of prolonged LOS (defined as LOS greater than the 90th percentile for navigated or non-navigated), and inpatient mortality, inpatient medical complications (IMC), and inpatient surgical complications (ISC).

RESULTS: Between January 1, 2019, and December 31, 2019, there were a total of 199,980 LSF patients within 7,083,805 discharges. Of those, 7,355 had navigated surgery (3.7%) and 192,625 had non-navigated (96.3%). Mean LOS was longer for navigated [4.18 days (95% CI 4.00-4.36)] compared to non-navigated [3.79 days (95% CI 3.76-3.83)]. Mean total charges was also higher for navigated [\$167,738 (95% CI \$161,572-\$173,902)] than non-navigated [\$156,357 (95% CI \$155,067-\$157,646)]. Furthermore, the rate of prolonged LOS was higher in navigated (13.94%) compared to non-navigated (11.41%) ($p=0.003$). However, there was no difference in mortality [0.27% navigated, 0.10% non-navigated ($p=0.073$)], IMS [7.95% navigated, 7.11% non-navigated ($p=0.219$)], and ISC [5.10% navigated, 5.10% non-navigated ($p=0.997$)].

CONCLUSION: This national database analysis provides evidence that CAN does not produce higher rates of mortality or complications than non-navigated LSF. However, this study also highlights several areas of improvement for development of novel CAN.

ABSTRACT 45

DIFFERENCES IN NEURAXIAL ANESTHESIA ADMINISTRATION BASED ON PRIMARY SPOKEN LANGUAGE OF HIP FRACTURE PATIENTS.

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INTRODUCTION: Disparities related to race/ethnicity, insurance status, and other socioeconomic factors have been documented across all areas of medicine, including various orthopedic subspecialties in terms of care processes and outcomes. However limited research exists examining the role of primary spoken language in perioperative processes across orthopedic surgery. Our group has previously described differences in the receipt of neuraxial (NA) versus general anesthesia among total joint arthroplasty recipients.

OBJECTIVE: To determine if patients' primary spoken language (English versus non-English) is associated with odds of receiving NA versus general anesthesia among surgical hip fracture cases.

METHODOLOGY: This retrospective cohort study included data on adult surgical hip fracture patients from four hospitals at a single academic health system (January 1, 2016 to August 31, 2023). Surgeries included total hip arthroplasty, partial hip arthroplasty, open reduction internal fixation, and closed reduction percutaneous pinning. Mixed-effects generalized linear models with a binary distribution and logit link and a random intercept for the hospital evaluated the association between primary spoken language (English, Spanish, other non-English) and NA (versus GA) use, adjusting for age, sex, race/ethnicity (White, Black, Asian, Hispanic, other), insurance status, procedure type, American Society of Anesthesiologists (ASA) physical status classification score, Charlson Comorbidity Index, obesity, and smoker status. We report adjusted odds ratios (OR) and 95% confidence intervals (CIs).

RESULTS: NA was used in 1039 (35.4%) of 2935 hip fracture repair cases. PSL was not associated with administration of NA in a multivariable model (Spanish versus English: OR 0.90, 95% CI 0.68-1.20, P=0.48; Other versus English: OR 0.71; 95% CI 0.49-1.03, P=0.07). Similarly, in a sensitivity analysis pooling the Spanish and other language subgroups, non-English primary spoken language was not associated with administration of NA (OR 0.83; 95% CI 0.65 to 1.05; P=0.12). Additionally, in a sensitivity analysis adding race/ethnicity, there was also no association between PSL and NA (Spanish: OR 1.18, 95% CI 0.85-1.65, P=0.33; Other: OR 0.74, 95% CI 0.50-1.10, P=0.13).

CONCLUSION: In contrast to our findings in an elective joint arthroplasty cohort, patients' primary spoken language was not associated with NA receipt in this non-elective cohort.

ABSTRACT 46

GENETIC SEQUENCING AND NOVEL THERAPEUTIC TARGETS IN PERIANAL EXTRAMAMMARY PAGET DISEASE.

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BACKGROUND: Molecular drivers of perianal Extramammary Paget Disease (EMPD) are poorly understood. Targeted treatment options for invasive and metastatic EMPD are limited. There has been no large study of perianal EMPD genetics. This observational, retrospective study investigated the genetic profiling and clinical course of 26 biopsy-confirmed perianal EMPD cases at Memorial Sloan Kettering Cancer Center (MSKCC) with primary or secondary perianal EMPD treated at least once from 2000 to 2022. Data analysis was performed January 2022 to November 2023. The aim was to identify genomic alterations as potential therapeutic targets in extramammary Paget disease (EMPD) of the perianal area.

METHODS: Clinical disease was measured by recurrence after primary treatment, tumor invasiveness, metastases, and death from disease. Genetic data were measured using paired tumor-normal parallel sequencing of 410-468 cancer-related genes (MSKCC-IMPACT test). OncoKB was used to identify clinically relevant mutations.

RESULTS: Of 26 cases, TP53 mutation was the most frequent mutation followed by ERBB2, ERBB3, and PI3KCA mutations. MYC amplification was significantly associated with disease metastases and disease-specific death. ERBB2 mutation was significantly associated with disease recurrence after primary treatment.

CONCLUSIONS: Perianal EMPD has a chronic, locally recurring course that may lead to mortality. There are few effective treatments outside of surgery. We identified MYC amplification and ERBB2 as significant predictors of disease progression and recurrence. Additional research regarding targetable MYC and ERBB2 therapies are warranted.

ABSTRACT 47

HEALING IN COLOR: A QUALITATIVE STUDY OF THE UPBRINGINGS, CREATIVE PROCESSES, AND MENTAL HEALTH EXPERIENCES OF BIPOC AND IMMIGRANT ARTISTS.

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BACKGROUND: Identity development can be challenging for racial/ethnic minority youth from immigrant families who must make sense of their identity while accommodating themselves to different cultures. Arts-based programming has been previously shown to positively influence the development of racial/ethnic minority youth. However, little is known about the lived experiences of racial/ethnic minority and immigrant artists.

OBJECTIVE: In order to inform holistic forms of mental health care and identity-based support for Black, Indigenous, and People of Color (BIPOC) and immigrant youth, we qualitatively examined the relationships between creative expression, identity formation and development, and mental health among BIPOC and immigrant artists.

METHODS: From March to June 2023, we conducted semi-structured in-depth interviews with BIPOC and immigrant visual artists (n=10) who were recruited on a volunteer basis from NYC Art Bridge with particular attention to diverse representation across gender, racial and ethnic identity, art media of choice, and (im)migrant experience. Each interview focused on the participant's childhood experiences, development as an artist, creative process, meaning making in their artwork, their various identities, and mental health and wellness. We analyzed transcripts through iterative coding using thematic analysis, aided by NVivo software.

RESULTS: At the time of submission, we completed a first iteration of analyses. We identified six domains in which art making and art appreciation can contribute to identity development and mental health: 1) art as a form of powerful communication, 2) connection with self through art making, 3) connection with others through art making, 4) process of art making as therapeutic, 5) building resilience through art making, and 6) art appreciation as therapeutic.

DISCUSSION: Art serves as a potential avenue for the exploration, creation, maintenance, and recreation of individual and group identities. Art making and art appreciation, by allowing participants to transcend the perceived limits of linguistic, cultural, and physical differences, can help nurture a sense of shared understanding, compassion, belonging, empowerment, and resilience. Our preliminary findings are consistent with the Psychological Framework of Radical Healing in Communities of Color, which calls for a move beyond conventional treatment modalities towards community-based healing.

ABSTRACT 48

ASSOCIATIONS BETWEEN A PRENATAL STRESS MIXTURE AND PRESCHOOLERS' TEMPERAMENT: EXPLORING EFFECT MODIFICATION BY RACE/ETHNICITY.

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BACKGROUND: The prenatal period is a critical window for fetal brain development and later behavior. Maternal psychosocial wellbeing plays a crucial role in this process. While extant research focuses on the impact of prenatal maternal stress on infant temperament, whether effects extend to later childhood temperament has not been investigated.

OBJECTIVE: We extended mixtures methodology to examine associations between prenatal maternal psychosocial stress and psychological functioning and child temperament, while considering modifying effects of maternal race/ethnicity.

METHODS: Analyses included N=382 mother-infant pairs from the Programming of Intergenerational Stress Mechanisms (PRISM) longitudinal pregnancy cohort. Mothers completed the Lifetime Stressor Checklist-Revised, Edinburgh Postnatal Depression Scale, and Spielberger State-Trait Anxiety Scale during pregnancy. The maternal-reported Children's Behavior Questionnaire was ascertained when children were 3-5 years of age, which yielded the Negative Affectivity (NA) dimension, reflecting expressions of fear, sadness, and distress that has been linked to greater risk of later psychopathology. We used weighted quantile sum regression to derive a weighted maternal stress index encompassing lifetime stress, depression, and anxiety symptoms. We examined associations between the stress index and child NA, as well as differential contributions of each stress domain by race/ethnicity.

RESULTS AND CONCLUSIONS: Most women were Black (46.1%) or Hispanic (31.9%), and 65% had at least a high school education. In general linear models, children whose mothers had higher lifetime stress, anxiety, and depressive symptoms had greater NA. In WQS regression models with race-specific weighting, there was a 0.72 (95% CI=0.35, 1.10) point increase in NA with each quartile increase in the stress index. Lifetime stress was the strongest contributor of the mixture among Hispanic (36.7%) and White (17.8%) mothers, whereas depressive symptoms was the strongest contributor among Black (16.7%) mothers. Identifying malleable factors contributing to early risk for psychopathology will inform interventions to promote more optimal development in those at highest risk.

ABSTRACT 49

A CLOSER LOOK AT NONPROFIT HEALTH CARE ORGANIZATIONS' TAX EXEMPTIONS.

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BACKGROUND: Many large health insurers and advocacy groups obtain broad tax exemptions as “social welfare organizations” under §501(c)(4) of the Internal Revenue Code. As such, these groups receive substantial taxpayer subsidies at the federal, state, and local levels because they do not pay corporate or state income tax, sales tax, or property tax. Unlike §501(c)(3) organizations, which must serve charitable, religious, scientific, or educational purposes, §501(c)(4) entities are primarily geared towards promoting social welfare. They enjoy broader operational flexibility, including the ability to engage in unlimited lobbying and some political activities, without the stringent oversight or reporting requirements typical of §501(c)(3) organizations. Despite their substantial tax exemptions and influential roles in health care, their finances, lobbying activities, and adherence to social welfare objectives have been largely overlooked.

OBJECTIVE: To analyze the financial activities of §501(c)(4) health care organizations and discuss policy options for enhancing their transparency and oversight, drawing parallels with similar challenges around §501(c)(3) nonprofit hospitals.

METHODS: An analysis of IRS Form 990 filings for 2021 was conducted for 318 health care-related social welfare organizations, examining revenues, profits, and lobbying expenditures. Statistical analyses were conducted using SAS and GraphPad Prism.

POLICY FINDINGS: Health care social welfare organizations comprise just 3% of all social welfare entities but account for 70% of total revenues and nearly 50% of the profits in the sector. Several entities demonstrated considerable tax-exempt profits. This situation mirrors issues seen with §501(c)(3) nonprofit hospitals, where the level of charity care provided is often questioned against the backdrop of their significant tax exemptions.

POLICY IMPLICATIONS: Enhanced financial transparency is imperative for both §501(c)(4) health care organizations and §501(c)(3) nonprofit hospitals. Policymakers should consider requiring detailed reporting of foregone taxes on IRS Form 990 to better evaluate whether the tax benefits these organizations receive are justified by their contributions to social welfare and community benefit.

ABSTRACT 50

ASSESSING THE INCIDENCE OF SEVERE CORONARY OVERLAP WITH NEO-COMMISSURE AND THE CONSIDERATION OF CORONARY ALIGNMENT IN TRANSCATHETER AORTIC VALVE REPLACEMENT.

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BACKGROUND: The true need for coronary alignment as an alternative to commissural alignment in transcatheter aortic valve replacement (TAVR) has not been studied.

METHODS: This retrospective study includes 1,851 CT from 4/2018 to 12/2022 in patients with aortic native aortic stenosis undergoing TAVR evaluation. Type 0 bicuspid anatomy was excluded. A virtual valve simulating 1) commissural and 2) coronary alignment was superimposed on axial aortic root images created on 3Mensio Valves software. For simulation of optimal coronary alignment, one of the valve neo-commissures was positioned at the bisector of the angle between the two coronary artery orifices. Intercoronary angles and the overlap angles between the coronary arteries and closest neo-commissures were measured. Moderate, severe, and no coronary overlaps were defined as angles 15-30°, 0-15°, and 45-60°, respectively.

RESULTS: The average age of the patients was 79 years (55% males) with a mean STS (Society of Thoracic Surgeons) PROM (Predicted Risk of Mortality) score of $4.36 \pm 0.03\%$. In this cohort, 6% had Type 1 Bicuspid with the most common type being the left-right cusp fusion. With commissural alignment, the incidence of moderate/severe and severe overlap was low at the left coronary artery (LCA: 0.32% and 0.05%, respectively) and at the right coronary artery (RCA: 2.97% and 0.65%, respectively). Compared to commissural alignment, coronary alignment reduced the incidence of moderate/severe (2.97% vs. 0.38%, $p < 0.0001$) and severe overlap (0.65% vs. 0.00%, $p < 0.0005$) for the RCA only. Compared to commissural alignment, coronary alignment did not reduce the incidence of moderate/severe (0.32% vs. 0.38%, $p = 1.0$) and severe overlap (0.05% vs. 0.00%, $p = 1.0$) for the LCA. However, commissural alignment was likelier to have no left coronary overlap than coronary (91.1% vs. 84.9%, $p < 0.0001$). With commissural alignment, the mean angle from the coronary artery ostium to the closest neocommissure was lower for the RCA than LCA (45° vs. 52°).

CONCLUSIONS: Using CT simulation, the incidence of neo-commissure to coronary overlap in TAVR with commissural alignment is rare. Coronary alignment can further reduce right coronary overlap. However, commissural alignment had higher rates of no left coronary overlap. Given the technical challenges with coronary alignment, coronary alignment should be reserved for rare cases where severe coronary overlap is predicted with commissural alignment.

ABSTRACT 51

LONGITUDINAL DEEP NEURAL NETWORKS FOR ASSESSING METASTATIC BRAIN CANCER ON A LARGE OPEN BENCHMARK.

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BACKGROUND: The detection and tracking of metastatic cancer over the lifetime of a patient remains a major challenge in clinical trials and real-world care. Recent advances in deep learning combined with massive, real-world datasets may enable the development of tools that can address this challenge. Automatic detection and segmentation of metastases less than 10 mm³ remains a challenge, which may be improved via comparing prior imaging.

OBJECTIVE: The goal of this research is to develop a deep learning tool for detecting and segmenting small metastases in metastatic brain cancer using a large real-world longitudinal MRI dataset.

METHODS: Magnetic resonance imaging, demographics, and treatment data of patients with metastatic brain cancer were obtained from across our comprehensive cancer center using a custom ingestion and processing pipeline. Using this dataset, we first pretrained a 3D UNet using self-supervised learning, then performed supervised fine-tuning with the UNet encoder and decoder weights using our novel Segmentation Through Time (STT) architecture, which explicitly utilizes the data's longitudinal structure through the addition of convolutional long short-term memory (ConvLSTM) layers. We evaluated performance on detection and segmentation of metastases on our internal held-out test set as well as an external test set.

RESULTS/DISCUSSION: Our dataset is the world's largest real-world dataset of cancer consisting of the imaging, clinical follow-up, and medical management of 1,429 patients with an average of six MRI studies obtained over 17 months per patient. The dataset includes 8,003 multi-sequence MRI studies, 2,367 segmentations, and 81,562 medical prescriptions. Detection of metastases less than 10 mm³ is comparable with prior studies on our test set (recall=0.120) and exceeds prior studies on the external test set (recall=0.536). We are also the first to report segmentation metrics of metastasis less than 10 mm³ (internal test set: DSC=0.41; external test set DSC=0.33). Per-tumor Dice scores and predicted tumor volumes are both positively correlated with actual tumor volumes in the internal (R²=0.221; R²=0.872) and external (R²=0.509; R²=0.989) test sets. We release the entire dataset, codebase, trained model weights, and an interface for dataset access for other cancer researchers to build upon our results and to serve as a public benchmark.

ABSTRACT 52

PREDICTION OF CORONARY ARTERY DISEASE SUBTYPES WITH CLINICAL AND GENETIC RISK FACTORS.

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BACKGROUND: Coronary Artery Disease (CAD) is a complex heterogeneous disease with multiple known etiological mechanisms. Consequently, CAD could have multiple subtypes, reflecting alternative driving etiologies that may warrant distinct therapeutic approaches. Motivated by this, we developed and optimized statistical models to predict CAD subtypes informed by genetic and clinical risk factors.

OBJECTIVE: To use a computational genomic approach to evaluate whether CAD subtypes can be differentiated by a blend of clinical and genetic risk factors

METHODS: We developed three models (a) clinical risk factors only, (b) clinical risk factors plus genome-wide polygenic risk scores (PRS), and (c) clinical risk factors and pathway-based PRSs. We defined 5 different CAD subtypes on the basis of the literature: (1) stable vs. unstable, (2) occlusive vs non-occlusive, (3) high vs normal LDL, (4) high vs normal Lp(a), and (5) high vs normal ASCVD score. Clinical risk factors included: ASCVD score, ApoA, ApoB, LDL, HDL, triglycerides, and C-reactive protein. We computed 4,402 pathway PRSs obtained from six genomic pathway databases (e.g. KEGG). We optimized the models using 80% of the samples as training and then performed model evaluation (Bonferroni-corrected P-values) in an unseen 20% of the samples as validation.

RESULTS: Among 20,935 UK Biobank participants with CAD (mean age 63 years, 58% female), we most notably found the addition of pathway-based PRSs improved prediction of high LDL ($P=1e-19$) and high Lp(a) subtypes ($P=1.8e-78$). Our computational approach revealed pathways highly associated with the high Lp(a) subtype of CAD: Fibronectin Binding ($P=6e-260$), Apolipoprotein Binding ($P=6.2e-252$) and Serine-Type Endopeptidase Activity ($P=1.7e-203$). In an external multi-ancestry validation dataset, All of Us, among 9,962 participants with CAD (52% non-White), pathway PRS significantly improved prediction of the LDL subtype ($P=3.5e-3$). Finally, to assess whether models incorporating genetic pathway information could influence clinical risk stratification, we found that 22% of participants not diagnosed with CAD had an increased risk of developing a high LDL CAD subtype.

CONCLUSION: We demonstrate that prediction models distinguish CAD subtypes and a novel pathway PRS approach can increase predictive power and provide insights into the genetic underpinnings of CAD subtypes. Pathway PRSs hold promise for the targeted therapeutic management for subgroups of CAD patients.

ABSTRACT 53

DISPARITIES IN SURGERY DELAYS FOR NONMETASTATIC GALLBLADDER ADENOCARCINOMA PATIENTS.

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INTRODUCTION: Gallbladder adenocarcinoma (GBA) is an aggressive cancer with a 5-year-survival of less than 5%. Due to its aggressive nature, quick diagnosis and intervention are critical to increase the chance of survival. This study looks at the disparities present in patient distance to hospital, a variable associated with extended time to surgery. Understanding these disparities is essential to improve health outcomes from this cancer.

METHODS: This study used the National Cancer Database to query for adult patients with primary non-metastatic GBA. We assessed if distance to hospital was independently associated with wait time to surgical intervention after diagnosis. Wait time was considered as a binary variable of either same admission surgery or separate admission surgery and tested for association with distance to hospital using a multivariate logistic regression adjusted for age, sex, race, insurance status, type of metropolitan area, and type of medical center. A secondary analysis explored demographic factors affecting distance to hospital. We compared the top 15th percentile (furthest distance) to the bottom 85th percentile (shorter distance). T-tests compared age and the binary distance while Chi-square tests compared categorical variables. Analyses were conducted using R (version 2023.03) and two-tailed p-values <0.05 were statistically significant.

RESULTS: A total of 13,432 patients met the inclusion criteria for this study. The sample was majority white (79.2%), women (70%) with 3.17% uninsured patients, and a mean age 69.78 years. Distance to hospital was an independent factor positively associated with separate admission surgery ($p < 0.01$). In our secondary analysis the furthest distance (top 15th percentile) group had a drastically higher wait time of 10.5 days versus 5.6 days for the shorter distance group. We found several factors associated with further distance. Specifically, the further distance group (vs. shorter distance) had lower age (67.6 vs. 70.2 years) and was less likely to be white (59% vs. 78.3%). Further distance was also more likely to have lower income (60.6% vs. 38.9%), get treatment at an academic center (58.3% vs. 30.2%), and more likely to live in a rural setting (7.7% vs. 0.6%); all $p < 0.0001$.

CONCLUSION: The farther a patient lives from a hospital, the higher the chance of delay in primary surgical intervention is for GBA patients.

ABSTRACT 54

HYPOGLYCEMIC EVENTS MAY TRIGGER ACUTE ISCHEMIC STROKE IN THE FIRST 30 DAYS: A CASE-CROSSOVER STUDY.

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BACKGROUND: Stroke triggers, or factors that may precipitate stroke within a given time interval, can help predict when a stroke will occur. While hypoglycemia has been established as a risk factor for cardiovascular events such as acute ischemic stroke (AIS), there is limited research demonstrating hypoglycemic events as stroke triggers. We hypothesize an association between hypoglycemic events and the occurrence of stroke among patients with diabetes mellitus (DM).

METHODS: We used Medicare inpatient, outpatient, emergency department, and subacute nursing facility datasets from 1/1/2016 - 12/31/2019, and used validated ICD-10 codes to identify conditions. We used a case-crossover study design, testing whether exposure to a hypoglycemia encounter within progressively longer case periods (up to 30 days before index AIS) was associated with the subsequent occurrence of AIS, compared to control periods of equal length exactly one year before the case period. We used conditional logistical regression models to estimate odds ratios (OR) and 95% confidence intervals (CI).

RESULTS: There were 237,667 index admissions with AIS and DM during the study period. There was an increased odds of AIS following an encounter for hypoglycemia. Risk was highest immediately in the first day following the hypoglycemia encounter (OR 3.694, 95% CI 2.694-5.065, $p < 0.0001$), and gradually became lower as the case-control period lengthened. At a 30-day case-control interval, risk was lowest, but still significant (OR 2.345, 95% CI 2.179-2.523, $p < 0.0001$).

CONCLUSIONS: We found that hypoglycemic events in patients with DM are associated with a more than three-fold greater risk of AIS in the first day but can trigger AIS in the 30-days following the event. More research is needed to assess the link between the severity of hypoglycemia and stroke occurrence, as well as the severity of the stroke. These results, if confirmed in other studies, emphasize the importance of avoiding hypoglycemic events in patients with DM.

ABSTRACT 55

NEW STRATEGIES FOR LOCALLY ADVANCED BREAST CANCER: A REVIEW OF INFLAMMATORY BREAST CANCER AND NON-RESPONDERS.

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This review explores the new strategies around the management of locally advanced breast cancer (LABC), particularly for non-responsive tumors and/or initially unresectable tumors at diagnosis, inclusive of inflammatory breast cancer. Non-responders to neoadjuvant systemic therapy present a unique clinical challenge and are defined clinically through Response Evaluation Criteria in Solid Tumors and Residual Cancer Burden guidelines or pathologically (i.e. pathologic complete response or non-response).

Future advancements for the management of non-responsive LABC—whether they be emerging medical therapeutics such as new antibody-drug conjugates or emerging locoregional strategies currently undergoing investigation such as altering the sequence of trimodality therapy through the use of neoadjuvant radiotherapy, lymphedema prevention through microsurgical methods, or the possibility of axillary surgery and radiotherapy de-escalation—will aim to increase the survival and quality of life for patients while minimizing treatment related sequelae. The resultant treatment algorithm for patients with LABC who are non-responsive to standard therapy can be summarized pictorially below.

ABSTRACT 56

NON-LESIONAL TYPE 2 AND TYPE 17/22 IMMUNE ACTIVATION PRECEDES LESIONAL TYPE 1-ASSOCIATED INFLAMMATION IN SKIN OF VITILIGO PATIENTS.

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Vitiligo is a chronic autoimmune skin depigmenting disorder, affecting up to 2% of the general population, with a major impact on overall quality of life. Despite ongoing research, therapeutic options are still very limited, with only one topical JAK inhibitor being FDA-approved so far. Although vitiligo is considered to be a primarily Th1/IFN-driven disease, emerging evidence suggests involvement of additional immune axes. The primary research goal of this study is to investigate the involvement of additional immune axes and their role in disease pathogenesis of vitiligo. A secondary goal involves investigating the presence of any early markers (and possible therapeutic targets) of disease pathogenesis in non-lesional skin of vitiligo patients. We collected lesional/LS and non-lesional/NL skin biopsies from 15 vitiligo patients, as well as normal/N skin from 14 healthy control individuals, and analyzed their transcriptomic profile using RNA-Seq, validated with RT-PCR and immunohistochemistry. Differentially expressed genes/DEGs (fold change/FCH>2 and false discovery rate/FDR<0.05) were evaluated. Biomarkers were correlated using Pearson coefficient with clinical severity scores (i.e. VASI, VIDA). The global vitiligo transcriptome showed 3521 (1492 Up, 2029 Down) DEGs in LS vs. N skin, but also 1989 (800 Up, 1189 Down) DEGs in NL vs. N skin, with only 392 (190 Up, 202 Down) DEGs differentiating LS vs. NL biopsies. In line, we found an increased inflammatory tone both in LS and NL skin samples compared to normal skin, with upregulation of multiple immune pathways and genes, including type 1 (i.e. OASL, IFNGR2, IRF1, CXCL9), type 2 (i.e. IL4R, CCL13/17/22), and type 17/22 (i.e. PI3, LCN2, S100A7/8/9) associated markers. Importantly, type 1 mediators were most strongly upregulated in LS skin, whereas NL biopsies already showed considerable upregulation of both type 2 and type 17/22 inflammation, often comparable to LS skin. By contrast, skin pigmentation and melanin-related markers (i.e., MLANA, TRYP1, TYR) showed downregulation only in LS, but not NL skin. Clinical severity scores (VASI and/or VIDA) significantly and positively correlated with IL9 ($r=0.60$, $p<0.05$) and type 17 (IL36A/G ($r=0.58$, $p<0.05$), IL17A ($r=0.54$, $p<0.05$), IL17RC ($r=0.69$, $p<0.05$)) related markers, and negatively correlated with melanocyte related products (i.e. MCOLN3 ($r=-0.65$, $p<0.05$), TYR ($r=-0.60$, $p<0.05$), TYRP1 ($r=-0.56$, $p<0.05$), LEF1 ($r=-0.68$, $p<0.05$)) in LS and/or NL vitiligo skin.

ABSTRACT 57

ASSOCIATION BETWEEN ANTICIPATED CERVICAL CANCER STIGMA AND SCREENING UPTAKE IN SEMI-URBAN NEPAL.

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BACKGROUND: Cervical cancer is the leading cancer among women in Nepal. There is no national cervical cancer screening program in Nepal, although in recent years, screening programs have been rolled out in the private and public sectors for women 30 to 60 years of age. These efforts have been hindered by limited awareness of cervical cancer and the benefits of screening, as well as challenges in servicing isolated regions of the country. Stigma associated with cervical cancer can also pose a barrier to utilization of screening services. The purpose of this study was to evaluate the association between anticipated cervical cancer stigma—defined as the prejudice a respondent might expect to face from others if they were to be diagnosed with cervical cancer and that diagnosis were known to others—and screening uptake among women in Dhulikhel and Banepa, Nepal.

METHODS: In a convenience sample of women ages 30 to 60 residing in Dhulikhel and Banepa, the Stigma and Discrimination Scale was used to measure anticipated cervical cancer stigma. Screening uptake information was self-reported by the respondents. Univariable and multivariable logistic regressions were used to evaluate the association between anticipated stigma and cervical cancer screening uptake. Multivariable regression was adjusted by age, ethnicity, education, occupation, religion, number of children, age at menarche, and age at first sexual encounter.

RESULTS: 302 women (mean age 41.6 ± 8.6 years) were enrolled in the study. 37% of respondents reported receiving prior cervical cancer screening. After adjusting for potential confounders, the odds of having been screened were 50% lower in women who reported any anticipated stigma associated with cervical cancer compared to those who did not ($P = .009$). Three of the nine items in the Stigma and Discrimination Scale were found to have a significant negative effect on women's odds of screening uptake: anticipation of experiencing breakup of their relationship (aOR = 0.50, $P = .045$); becoming a social outcast (aOR = 0.47, $P = .020$); and losing their friends (aOR = 0.45, $P = .013$).

CONCLUSIONS: Among women residing in Dhulikhel and Banepa, stigma associated with cervical cancer is a considerable barrier to their participation in screening. Campaigns to increase awareness and reduce stigma around cervical cancer may boost utilization of cervical cancer screening and HPV vaccination programs and lessen the burden of cervical cancer in Nepal.

ABSTRACT 58

ENGAGING MOTHERS IN A STUDY OF BODY SIZE AND STIGMA STRATIFIED BY RACE/ETHNICITY.

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While maternal obesity in the United States obstetric population can increase maternal and fetal health risks, weight stigma and discrimination have also been shown to have adverse effects on mental and physical health outcomes for women during and after birth making them culpable threats to maternal health. Simultaneously in the literature surrounding the pregnancies of Black and Latina women, racial bias, and stigma from providers and within the healthcare system are associated with adverse birth outcomes such as maternal and infant mortality. Research studies have separately examined connections between weight stigma, racial bias, and adverse birth outcomes, but the intersectionality of both as they relate to obstetric care has been understudied. Thus, this research study sought to qualitatively compare how women of differing race and ethnicity with obesity experience their obstetric care. To elucidate similarities and differences in the ways that women with obesity of varying races and ethnicities experience their obstetric care, we conducted five focus groups consisting of 2 to 8 participants each. There was one group of each of the five self-identified race/ethnicity categories (non-Latina Black, Latina Black, Latina, non-Latina Asian, non-Latina white). We recruited 16 participants who delivered an infant in the Mount Sinai Hospital system within the past year. Participants self-reported height and weight to determine eligibility (BMI ≥ 30). The focus groups were conducted virtually through a HIPAA-compliant Zoom. We then used a semi-structured focus group discussion guide to explore topics of weight stigma, weight internalization, provider interactions, and general satisfaction. The focus group transcripts were analyzed using Dedoose software which involved gaining familiarity with the data, searching for meaning and themes, developing a codebook, and organizing those themes into a whole. Across all racial/ethnic categories, participants noted the negative impact of societal assumptions about obesity, paternalistic interactions with providers, and external and internal pressures to quickly return to an ideal pre-pregnancy body. Participants also noted protective factors that minimized the effects of weight stigma in their care. Both the unique challenges of and protective factors against weight-based stigma should be considered to provide higher quality care when managing the pregnancies of individuals with high BMIs of different race/ethnicities.

ABSTRACT 59

ANTI-XA TEST FOR PEDIATRIC AND NEONATAL ECMO.

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INTRODUCTION: To determine if anti-Xa testing is associated with improved outcomes for patients <19-years-old on ECMO.

METHODS: We evaluated the clinical benefit of anti-Xa heparin monitoring utilizing the Bleeding and Thrombosis during ECMO (BATE) database of 514 patients <19-years-old. The BATE database includes incidences of bleeding, thrombosis, and mortality. The database also describes anti-coagulation test utilization. We grouped and analyzed patients based on ECMO indication (cardiac, respiratory, or extracorporeal cardiopulmonary resuscitation [E-CPR]) and age (neonatal vs pediatric). We constructed multivariable logistic regression models to analyze the impact of anti-Xa testing on mortality, bleeding, and thrombosis in each group.

RESULTS: Across the entire population, anti-Xa testing did not have a significant effect on the incidence of mortality (43% with anti-Xa testing vs 49% without), bleeding (68% vs 74%), or thrombosis (37% vs 39%). However, among cardiac indicated patients on ECMO (n = 207), anti-Xa testing was significantly associated with reduced odds ratio (OR) of mortality (adjusted OR 0.527, p = .040) and bleeding (adjusted OR 0.369, p = .021). In addition, among neonatal patients on ECMO (n = 264), anti-Xa testing was associated with a significant reduction in the odds ratio of bleeding (adjusted OR 0.534, p = .046).

CONCLUSION: Anti-Xa testing is associated with improved outcomes among cardiac indicated and neonatal patients on ECMO. Additional research to find the optimal heparin monitoring regimen is needed to better support these critically ill patients. In the interim, we recommend clinicians consider utilizing anti-Xa assays as part of their heparin monitoring plan for neonatal and cardiac indicated patients on ECMO.

ABSTRACT 60

A1CDEFG: THE EFFECT OF TARGETED HEALTH-LITERACY FOCUSED A1C MATERIALS ON PATIENT UNDERSTANDING AND PATIENT ATTITUDES.

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One thing is certain in today's healthcare landscape—doctors love to talk. The traditional role of the doctor is one of advice-giver: take this medication, I recommend this blood test, the list goes on. Patients, on the other hand—in particular, patients underserved by medicine—experience many barriers that prevent them from being able and willing to follow the advice of their physicians. At the East Harlem Health Outreach Partnership (EHHOP) at Mount Sinai, there is little nuance to the patient educational materials that aid clinicians in their quest as advice-givers. The goal of this project is to redesign the materials available to patients that explain the importance of the Hemoglobin A1C (HbA1C) test. We aim to survey EHHOP patients with diabetes by distributing a survey as well as educational materials in the waiting room. The survey contains both objective and subjective questions that directly query the topics of the handouts. There are pre- and post-education portions of the survey. Preliminary results of this project indicate an average increase in the scores of both the objective and subjective portions of the survey after the implementation of the intervention. On the individual survey level there were many cases of significant improvement noted: one patient's objective score showed an improvement of 3/5 points and subjective score showed one of 7/15 points. Interestingly, there is no strong correlation between pre-survey objective score and pre-survey subjective score. This indicates that patients are also not often aware of their own levels of knowledge pertaining to A1C. In addition, the patient-reported number of A1C counseling sessions in the last year was only weakly correlated with improved objective score. With further data collection and analysis, more information about the nature of patients' knowledge could be ascertained and the statistical significance of the level of improvement associated with the visual aid intervention could be confirmed. However, even these preliminary results give us important quality improvement action items that could be applicable in primary care contexts. Namely, more visual educational materials seem to improve both objective knowledge and subjective impressions of patients' own knowledge. In addition, some of the preliminary correlations indicate that EHHOP could be more intentional about how the quality and quantity of diabetes education are incorporated into its current model for primary care.

ABSTRACT 61

A PROPENSITY SCORE MATCHING ANALYSIS OF THE IMPACT OF RETROGRADE ACCESS DURING ENDOVASCULAR REVASCULARIZATION.

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BACKGROUND / OBJECTIVE: In treatment of Peripheral Artery Disease (PAD), the contralateral femoral artery is the most utilized access point. However, for some patients, retrograde access from a tibial and/or pedal vessel is used. This study aims to explore the impact of retrograde stenting on longitudinal outcomes using a Propensity Score Matching analysis to emulate a randomized controlled trial.

METHODS: This retrospective analysis included unique patients who underwent endovascular revascularizations from the Mount Sinai Hospital health system and the Robert Wood Johnson University Hospital from 2014 to 2022. Retrograde access patients were defined as patients who underwent endovascular access from the anterior tibial, posterior tibial, peroneal, or dorsalis pedis artery. Major Adverse Limb Events (MALE) were defined as open arterial bypass surgery, minor amputation, or major amputation. Previous studies have shown that chronic kidney disease (CKD), gangrene, history of previous PAD surgery, chronic total occlusion (CTO) as a lesion type, and number of patent preoperative tibial vessel runoffs are significant in predicting need for retrograde access. Propensity score matching was performed using these covariates, as well as age and gender. A full matching method was used to match covariates to prevent discarding many patients. Univariate logistic regression with MALE, reintervention, and death were performed to estimate the effect size of retrograde access.

RESULTS: After matching, there were 57 retrograde access patients and 276 antegrade access patients. Propensity score matching resulted in good covariate balance, evidenced by the decreased absolute mean differences between covariates shown in Figure 1. Univariate logistic regression demonstrated that retrograde access did not result in a higher or lower odds ratio of MALE (OR=1.32, CI [0.67–2.51], p=0.4), reintervention (OR=1.88, CI=[0.97–3.73], p=0.065), or death (OR=1.74, CI=[0.84–3.46], p=0.12).

CONCLUSION: This propensity score matching study demonstrates that retrograde access does not change the likelihood of adverse longitudinal outcomes. Therefore, retrograde access is a viable option for lesion treatment when antegrade crossing is not possible. However, this study is limited by its sample size, and the elevated odds ratios for adverse longitudinal outcomes warrant future investigation into the impact of retrograde access.

ABSTRACT 62

THE EFFECT OF MANNITOL ON POSTREPERFUSION SYNDROME DURING ORTHOTOPIC LIVER TRANSPLANTATION.

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BACKGROUND: Postreperfusion syndrome (PRS) is well recognized as an early sign of ischemia-reperfusion injury and is associated with several clinically significant complications, including postoperative acute kidney injury (AKI) and early graft failure in liver transplantation (LT). Oxygen-derived free radicals may contribute to PRS. Mannitol reduces oxidative stress in kidney transplantation but its efficacy in attenuating PRS in LT is unclear. This study evaluated the association between intraoperative mannitol administration and the incidence of PRS and post-operative AKI in LT.

METHODS: A retrospective analysis of 495 LT cases at the Mount Sinai Hospital was performed between 2019 and 2022. 81 patients received 25% mannitol before graft reperfusion, while 414 patients did not. PRS was defined as a drop in mean arterial pressure (MAP) by at least 30% within 5 minutes of reperfusion. Demographic, laboratory, and hospital course data were extracted from an institutional data warehouse. Negative binomial and logistic regressions were used to associate mannitol administration with PRS, AKI and secondary outcomes, including length of stay (LOS), early allograft dysfunction, and postoperative cardiac events.

RESULTS: There was no significant difference in the incidence of PRS or AKI between the two groups. Mannitol administration was associated with longer hospital LOS (20.9 vs. 17.4 days; OR 1.51, 95% CI 1.20-1.91; $p < 0.001$), ICU LOS (11.4 vs. 10.3 days; OR 1.36, 95% CI 1.05-1.78; $p = 0.021$), and increased postoperative cardiac events (OR 3.13, 95% CI 1.33-7.16; $p = 0.007$) compared to the control group by negative binomial and logistic regressions.

CONCLUSION: Mannitol administration during LT was not associated with a reduction in PRS or postoperative AKI. However, these patients had a higher rate of postoperative cardiac events and longer LOS. These results suggest that 25% mannitol should not be administered for free radical scavenging and renal protection during LT. Mannitol administration was not protocolized and may have been administered to sicker patients, resulting in selection bias. Prospective studies are needed to corroborate these findings.

ABSTRACT 63

EXAMINING THE ACCURACY OF TRAVEL SCREENINGS IN EMERGENCY DEPARTMENT TRIAGE.

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BACKGROUND: Surveillance of infectious disease in the US includes universal travel screening in emergency departments (EDs). Factors associated with failure to identify travelers on ED travel screening are unknown.

METHODS: Factors hypothesized to have association with the accuracy of travel screening (age, gender, race, primary language, presence of or complaint of fever in triage, triage acuity, method of arrival, time of day, and estimated number of concurrent ED arrivals) were selected based on past literature. A natural language processing (NLP) algorithm looking for 2-3 word ngrams and country names was developed to search key language associated with recent travel history for ED visitors with a negative screening for international travel. A sample of NLP selected charts were manually screened to confirm provider documentation of foreign travel within 21 days. In this pilot study, a random sample of 100 charts with false negative travel screenings and 100 charts with true positive travel screenings from the same hospital system were reviewed. A case-control analysis was performed using multivariate logistic regression to analyze hypothesized predictive variables.

FINDINGS: The NLP algorithm screened 1,490,106 charts with negative triage screening and found 6,843 charts with high likelihood of recent travel in provider notes. After controlling for site of evaluation, compared with false negatives, patients who were correctly identified as a recent traveler had a significantly higher chance of being febrile (triage temperature $> 38^{\circ}$, OR = 8.6, $p = .018$), arriving outside of the hours of 10pm to 3pm (OR 4.3, $p=0.004$), and having a primary language other than English (OR 2.5, $p=0.03$). Recent travelers missed in triage screening were significantly more likely to have traveled to Africa (10% vs. 4%, respectively, $p = 0.0061$). Non-significant associations with false negative travel screening were seen for patients with higher emergency severity index (ESI =2, $p = .114$) and with a dermatologic chief complaint ($p = .08$).

INTERPRETATION: Potential systematic errors in ED travel screening may limit sensitivity for identifying patients with risk of transmitting emerging infectious diseases. English speaking patients are less likely to be identified on travel screening which could be due to cognitive bias in triage. Further study is required to validate these findings and to explore solutions to improve accuracy of travel screening.

ABSTRACT 64

REAL-WORLD CHALLENGES IN US THROMBECTOMY TRANSFERS: DIFFICULTY FINDING AN ACCEPTING HOSPITAL, PROLONGED TRAVEL, AND DIFFERING PERCEPTIONS OF TRANSFER REQUIREMENTS.

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INTRODUCTION: Transfers can improve access to endovascular thrombectomy (ET). However, benefit is highly time-dependent and transferred patients experience poorer outcomes. We assessed perceptions of transfers processes between sending and receiving hospitals.

METHODS: We utilized an ongoing 2023 nationwide US electronic survey of hospitals that treat stroke patients with revascularization therapy and have publicly available contact information. Respondents were stroke directors or coordinators. Survey items analyzed included questions on certification status, transfer processes, volumes, times, delays, and requirements for transfers. We performed cross-sectional analyses of hospitals that send/receive ET transfers. We used descriptive statistics and chi-squared tests to compare sending and receiving cohorts.

RESULTS: Of 144 responding hospitals at the time of analysis, 70.1% (n=101) receive and 29.9% (n=43) send ET transfers. Most (76.2%) receiving hospitals are comprehensive stroke centers and most (95.3%) sending hospitals primary stroke centers (p<0.01). Only 39.5% of sending hospitals send ≥20 transfers annually vs. 64.4% of receiving hospitals that receive ≥20. More than 1/2 send/receive transfers to/from facilities >60 miles away, and 50% pass a closer capable hospital en route. Average door-in-door out time is >90 minutes for 51.2% of sending hospitals, and 35.0% spend >50% of this time on non-care coordination. Concerningly, 34.9% of sending hospitals are sometimes/always unable to find an accepting hospital. Perceptions of requirements for transfer vary between receiving and sending hospitals: 30.7% vs. 76.7% require large vessel occlusion confirmation, 1% vs. 14% perfusion imaging and 14.9% vs. 32.6% an available bed prior to transfer (p<0.05).

CONCLUSION: In this real-world sample, transfers are common, perceptions of requirements for transfer differ, and there are actionable delays. Concerningly, sending hospitals are often unable to find an accepting hospital and closer hospitals are frequently passed en route. Future interventions could standardize and provide oversight of regional stroke systems of care.

ABSTRACT 65

CAN LARGE LANGUAGE MODELS RECOMMEND TREATMENT FOR ACUTE COMPARTMENT SYNDROME?

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BACKGROUND: Acute Compartment Syndrome (ACS) is a unique condition where prompt action can prevent ischemia and tissue necrosis, thus decreasing the risk of amputation. Given scenario-specific diagnostic markers, physicians can utilize the power of large language models like ChatGPT-4.0 to assist with making decisions on the appropriate treatment. The purpose of this study was to evaluate the accuracy of ChatGPT by comparing its appropriateness scores for ACS treatments given various clinical scenarios. After comparing Appropriate Use Criteria with ChatGPT recommendations for the treatment of ACS, there are statistically significant differences in appropriateness scores.

METHODS: The American Academy of Orthopedic Surgeons (AAOS) developed the Appropriate Use Criteria (AUC) for ACS in 2019 to serve as an aid for physicians to best inform their clinical decision-making process. For each set of indications, a score of 1-9 was assigned to each treatment method based on its appropriateness. To determine the error, the AUC scores were subtracted from the ChatGPT scores and the mean error, mean absolute error, and mean squared error were calculated.

RESULTS: Pearson correlation testing found that there was a significant positive correlation between AAOS and ChatGPT scores for fasciotomy (.82, $P < .001$), considering an alternate diagnosis (.63, $P < .001$), frequent/serial observation (.46, $P = .016$), and obtaining/repeating pressure measurements (.50, $P = .009$). There was a nonsignificant weakly positive correlation between scores for obtaining/repeating serum biomarkers (.26, $P = .191$). Using a paired t-test, there were statistically significant differences between scores for considering an alternate diagnosis ($P < .001$), frequent/serial observation ($P = .010$), and obtaining/repeating serum measurements ($P < .001$).

CONCLUSION: The appropriateness scores for fasciotomy, considering an alternate diagnosis, frequent/serial observation, and obtaining/repeating pressure measurements determined by ChatGPT were weakly positively correlated with the AUC scores. ChatGPT underestimated the appropriateness of considering an alternate diagnosis, frequent/serial observation, obtaining/repeating serum biomarkers, and obtaining/repeating pressure measurements. Although there was no difference between fasciotomy scores, the scores to consider an alternate diagnosis, frequent/serial observation, and obtain/repeat serum measurements were non-equivalent. Therefore, ChatGPT requires improvement.

ABSTRACT 66

BURDEN AND DETERMINANTS OF HYPERTENSION, TYPE 2 DIABETES MELLITUS AND DYSLIPIDEMIA IN UNDERWEIGHT MIDDLE-AGED ADULTS: AN AWI-GEN SUB-STUDY.

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BACKGROUND: Sub-Saharan Africa (SSA), historically burdened by infectious diseases, is currently experiencing a substantial rise in noncommunicable disease such as cardiovascular disease (CVD), especially in the middle-aged population (30-70 years old). In the underserved Upper East Region of Ghana, the Navrongo Health and Demographic Surveillance System (NHDSS) has identified hypertension (HTN), type 2 diabetes mellitus (T2DM), and dyslipidemia (DLD) as the primary cardiometabolic diseases (CMDs) responsible for CVD, and increased body weight as a significant risk factor. Yet little is known about CMDs in underweight adults in Ghana or other parts of SSA. We conducted a cross-sectional study, nested in a larger demographic survey, to examine how being underweight and cardiometabolic risk factors are associated with CMDs in the Kassena-Nankana districts of the Upper East Region of Ghana.

METHODS: A population cross sectional study was conducted in the NHDSS among adults aged 40-60 years old. Weight and height were collected to determine body mass index (BMI), which was used to define underweight (<18.5 kg/m²), normal weight (18.5-24.9 kg/m²), and overweight/obese (>25.0 kg/m²). Sociodemographic and behavioral information was collected, as well as biometric data on HTN, T2DM, and DLD status. We conducted multivariate logistic regression using STATA to determine risk factors for HTN, T2DM, and DLD within the underweight population.

RESULTS: In the study cohort of 2014 participants, the overall prevalence of underweight individuals was 15.49% (95% CI .14-.17%). This demographic displayed varying degrees of CMD statuses, notably, with 22.76% affected by HTN, 5.13% by T2DM, and 59.62% by DLD. Upon conducting a multivariate analysis focusing on the underweight subset, subcutaneous fat emerged as a significant factor associated with HTN and DLD. Specifically, increased subcutaneous fat thickness was linked to higher rates of HTN (OR 1.77 [95% CI 1.36, 2.32]) and DLD (OR 1.44 [95% CI 1.10, 1.90]).

CONCLUSIONS: This study shows that increased subcutaneous fat correlates with higher rates of hypertension and dyslipidemia among underweight study participants, independent of numerous other biological and behavioral factors, in this understudied sub-Saharan African population. This finding warrants further confirmation and evaluation for plausible causal mechanisms.

ABSTRACT 67

GVHD SEVERITY AND LONG-TERM OUTCOMES IN BLACK PATIENTS FOLLOWING HCT.

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BACKGROUND: Hematopoietic stem cell transplantation (HCT) is a potentially curative therapy for hematologic malignancies. Graft-versus-host disease (GVHD) occurs when donor T-cells damage host tissues and is the main cause of non-relapse mortality (NRM) after HCT. Studies have found that ethnic minorities have decreased survival after HCT compared to White recipients, possibly due to worse GVHD outcomes though the mechanism for this disparity is complex.

OBJECTIVE: My main objective was to assess race as an independent risk factor for GVHD outcomes in the MAGIC database population.

METHODS: A total of 279 Black patients and 3516 non-Hispanic White patients who received allogeneic HCT between 2014-2021 were identified in the MAGIC database. Descriptive statistics were used to identify differences between the groups in key risk factors for GVHD. Multivariable models and a 1:3 matched control cohort (234 Black, 702 White) were used to estimate the effect of race on GVHD outcomes after accounting for key risk factors. The primary endpoint was NRM at 12 months following HCT. Secondary endpoints were overall survival (OS) and the cumulative incidence of GVHD requiring systemic treatment, moderate and severe GVHD.

RESULTS/DISCUSSION: In the whole cohort, there were significant differences between the Black and White patients in several GVHD risk factors: donor type, GVHD prophylaxis, age at HCT, comorbidity score, sex mismatch, and primary diagnosis. Black patients had a significantly lower cumulative incidence of GVHD requiring systemic treatment (34% vs 17%, $P = 0.003$), although there was no significant difference in NRM, OS, or incidence of moderate/severe GVHD. Multivariable analysis showed Black patients had a slightly higher hazard for NRM (HR = 1.31, CI 0.96-1.80; $P = 0.09$) and slightly reduced hazard for the incidence of GVHD requiring systemic treatment (HR = 0.84, CI 0.67-1.05; $P = 0.12$), but these were not statistically significant. After matching for all key GVHD risk factors, the matched cohort analysis showed a significantly higher NRM (18% vs 12%, $P = 0.009$), trend to lower OS (73% vs 79%, $P = 0.07$), and significantly higher incidence of severe GVHD (17% vs 12%, $P = 0.05$) in black patients. The matched cohort analysis results align more closely with what we expected based on historical data. Furthermore, the discrepancies in outcomes found in this study emphasize the need for a nuanced understanding of GVHD progression and treatment among diverse groups.

ABSTRACT 68

VENTURE 4 MEDICAID - BRINGING ABOUT CHANGE IN THE MEDICAID INVESTMENT ECOSYSTEM.

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OBJECTIVE: How does the risk of investing in companies focused on Medicaid populations balance with the potential lucrative returns? What are the factors that affect how investment firms invest, specifically in Medicaid?

BACKGROUND: In the health sector, venture capital firms have invested in companies involved in digital health, wearable devices, mobile health applications, telemedicine, personalized medical tools and more. In 2022, venture funds raised \$22 billion for healthcare companies. Currently, there are over 94 million individuals on Medicaid. Additionally, \$730 billion was spent on Medicaid in FY 2021. The Medicaid market encompasses a large number of people, with each group being diverse with diverse health needs.

METHODS: In order to explore why investment firms invest in Medicaid population focused companies, numerous sources from the Kaiser Family Foundation (KFF), the Centers for Medicare and Medicaid Services (CMS), articles from major firms and reviews on successful and unsuccessful Medicaid focused companies were used. In order to recommend specific firms to HT4M to partner and or collaborate with, the underrepresented founders database (UR Founders database) was used. The UR founders database contains all of the companies associated with HT4M (not necessarily member companies) that are led by members of underrepresented groups. The firms that invested the most in these companies were chosen as recommendations for HT4M to increase collaboration with.

RESULTS: Many firms avoid investing in companies focused on Medicaid populations because of the uncertainty surrounding a return on investment. Reimbursement rates for Medicaid are often lower than alternatives. Additionally, Medicaid eligibility frequently changes, making it difficult to build relationships with healthcare providers and maintain patient engagement to promote adherence to treatment plans in order to deliver high-quality care. Based off of the investors in the member companies of the underrepresented founders database, HT4M should partner or increase collaborations with companies and organizations like the National Science Foundation, Backstage Capital, the Founders Fund.

CONCLUSION: In order to address these issues and questions, HT4M should strive to partner with specific players in the Medicaid space as well as use its position as a facilitator in the ecosystem to urge important members to pledge to do more to encourage investments in Medicaid focused companies.

ABSTRACT 69

IMPLEMENTATION OF A LONGITUDINAL NUTRITION COUNSELING SERVICE AT A STUDENT-RUN FREE PRIMARY CARE CLINIC.

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INTRODUCTION: A poor diet is the leading risk factor for death worldwide, implicated in diseases such as cardiovascular disease, hypertension, diabetes, and obesity. The evidence is clear that dietary management can both prevent and manage chronic diseases, highlighting the importance of counseling patients on healthy eating. The East Harlem Health Outreach Partnership (EHHOP) at Mount Sinai is a student-run free primary care clinic that serves uninsurable patients living in East Harlem, a population that experiences particularly high rates of the aforementioned chronic diseases. Nutrition Corps (NC) at EHHOP historically conducted one-time nutrition counseling sessions with patients who were waiting to be seen by providers, but this lacked continuity of care for patients, which was not conducive for effective behavioral change. Therefore, a longitudinal nutrition counseling model was implemented at EHHOP to overcome the shortcomings of the prior model.

METHODS: First, a referral system using Google Forms was created so that patients could be referred at the end of a primary care visit. Patients were assessed on the need for nutrition counseling services by severity of cardiometabolic diseases, patient's motivation to change, and status of food security. Then, telehealth was implemented to deliver nutrition care more flexibly and frequently via the use of over-the-phone medical interpretation services.

RESULTS: Under the new model, each patient with a need for nutrition counseling and who are motivated to change are paired with one NC member that will counsel and follow their progress for upwards to a full academic year. Since the implementation of the new model, 150 patients have been referred to NC, representing 43.5% of the total population at EHHOP. From February 2018 to March 2020, NC members conducted 127 appointments, an average of 1.57 appointments per patient. In the two years following the implementation of the new model, NC conducted 369 appointments, and patients had an average of 6.96 appointments per patient.

CONCLUSION: The transformation of nutrition care delivery into a patient-centered longitudinal model has achieved greater continuity of care and a deeper understanding of each patient's needs and progress that was previously not possible with the old model at EHHOP. Telehealth also added the benefit of greater scheduling flexibility for both NC members and their patients which increased the accessibility of NC services.

ABSTRACT 70

HEALTH EQUITY IN DIGITAL HEALTH: AN ASSESMENT OF THE STATUS QUO AND RECOMMENDATIONS TO MOVE FORWARD.

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OBJECTIVE: Rockhealth.org strives to make the digital healthcare space more equitable by fostering an inclusive digital health community and advancing solutions for marginalized populations. This project seeks to gather solutions and recommendations from experts within relevant fields as to how to ensure that the progress and growth seen within digital health continues in a manner that is equitable to all.

METHODS: Insights were gathered through two modalities: external discovery interviews and a literature scan. Eleven discovery interviews were conducted, each an hour long. Interviewees included digital health innovators, investors, and physicians. Questions were tailored to the interviewee's area of expertise. From the discovery interviews, 3 overarching themes were identified. The literature scan focused on answering key questions related to these themes by searching key words on Google Scholar and PubMed.

RESULTS: The literature scan and external discovery interviews yielded three key themes. Theme 1: The state of health equity in digital health- there is a significant opportunity to leverage digital health as a tool for achieving health equity. Particularly impactful would be solutions that provide care management services or address the needs of the Medicaid market.

Theme 2: Designing equity focused digital health innovations- innovators must center user input within the digital health solution design process to ensure solutions are accessible and useful to the communities they seek to serve. This approach is important in order to avoid exacerbating existing disparities and to ensure that digital health innovations truly benefit vulnerable communities.

Theme 3: Investing in equity focused digital health innovations- Solutions that cater to underserved populations have the opportunity to access previously untapped markets. Investment funds that prioritize health equity-centered solutions can drive positive change in the healthcare industry, encourage innovation, and contribute to better health outcomes for all populations.

CONCLUSION: Insights gathered demonstrate that digital health innovations present a key opportunity to achieve health equity. Digital health solutions need to be designed with significant community input to avoid exacerbating the inequities present in existing methods of healthcare delivery. In order to take advantage of the opportunity digital health presents, investors must recognize the profitability of health equity focused solutions.

ABSTRACT 71

MULTIDISCIPLINARY AND TELEMEDICINE PRE-OPERATIVE EVALUATIONS FOR DEEP BRAIN STIMULATION CANDIDATES.

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OBJECTIVE: We describe the efficiency and efficacy of candidate assessment of a recently implemented multidisciplinary telemedicine approach for deep brain stimulation (DBS) pre-operative evaluations at an urban tertiary-care hospital.

BACKGROUND: Before 2019, pre-operative DBS evaluation at our center involved neurological, neuropsychological, and neurosurgical assessment. In late 2019, an expanded multidisciplinary evaluation (MDE; including psychiatry and psychology) and a systematically documented consensus meeting (CM) was phased in to assess DBS candidacy. The COVID-19 pandemic accelerated implementation of remote evaluations.

METHODS: Charts and billing records of movement disorder patients evaluated for DBS between 1/2019 – 3/2023 were retrospectively reviewed to capture demographic and disease information, insurance, distance from center, specialist and remote/in-person visit types, scheduling efficiency, and post-operative complication rates. Univariate analyses (chi-square, rank sum) were used to assess MDE completeness and varying use of telemedicine between patients.

RESULTS: 243 patients were identified, n=107 with all in-person, n=37 with all telemedicine, and n=99 with mixed evaluations. Age, gender, ethnicity, race, language, or insurance type did not differ between telemedicine groups. A complete MDE occurred in n=115 (32.2% all telemedicine) and CM in n=190 (19.5% all telemedicine). Neuropsychology, psychiatry, and psychology evaluations were most often remote. Patients' median distance from the center was 21 miles (IQR 10 – 48) and did not differ between telemedicine groups; 65% of individuals out-of-state were evaluated at least partially remotely. PD patients were most likely to have remote evaluation (OR 1.33), while dystonia patients were least likely (OR 0.45). Patients using telemedicine were less likely to have peri-operative complications (OR 0.23), while there was no effect of a CM. Median time to CM after complete MDEs was 37 days (n=112, IQR 27 – 54) compared to 49 days after incomplete MDEs (n=78, IQR 28 – 90, p=0.03) and was unaffected by telemedicine (p=0.53 and 0.86 respectively).

CONCLUSIONS: MDEs for DBS including telemedicine can be implemented without elongating pre-operative evaluations. Completely remote MDEs prior to CMs do not hinder surgical safety.

ABSTRACT 72

OPEN VS ENDOSCOPIC DISCECTOMIES FOR LUMBAR DISC HERNIATION: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS.

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INTRODUCTION: Endoscopic discectomies have emerged as a viable and safer alternative to open discectomies in the treatment of lumbar disc herniations (LDH). In this study, we conducted a systematic review and meta-analysis of randomized controlled trials (RCTs) to assess the postoperative outcomes and complications following endoscopic vs. open LDH surgery. Specifically, three subgroups of endoscopic vs. open procedures were analyzed: percutaneous endoscopy vs. open microdiscectomy (PE vs. OMD), endoscopic vs. open discectomy (ED vs. OD), and endoscopic discectomy vs. open microdiscectomy (ED vs. OMD).

METHODS: A search was conducted to identify studies from database inception to June 30, 2023, in PubMed, Medline, Embase, and Cochrane databases. Outcomes of interest included estimated blood loss, length of hospital stay, operative time, and overall complications. Meta-analyses were conducted using random effects models in R 4.0.4.

RESULTS: In total, 16 RCTs that assessed 1,954 patients were included. Endoscopic surgery was found to be significantly associated with less blood loss (MD, -90.26 mL; 95% CI: -156.73 - -23.79) and shorter hospital stays (MD, -1.97; 95% CI: -3.73 - -0.21) compared to open surgery. Furthermore, patients who underwent endoscopic surgery had lower rates of postoperative wound complications (OR, 0.24; 95% CI: 0.06 - 0.97). For patient-reported outcomes, endoscopic patients had significantly greater differences in ODI scores in the short-term (MD, 13.55; 95% CI: 1.12 - 25.99), and in the mid-term (MD, 9.32; 95% CI: 0.08 - 18.57) follow-up periods. Subgroup analysis revealed that PE was associated with a significantly lower complication rate compared to OMD (OR, 0.20; 95% CI: 0.18 - 0.21). However, ED was associated with significantly higher rates of postoperative nerve injuries (OR, 2.17; 95% CI: 1.12 - 4.19) compared to OD.

CONCLUSIONS: This meta-analysis suggests that endoscopic surgery may offer advantages in terms of reduced blood loss, decreased postoperative wound complications, and superior patient-reported outcomes in the management of LDH, but presents with a slightly higher risk of nerve injuries. However, the choice of surgical approach should be carefully considered based on individual patient characteristics and preferences, and surgeon expertise. Further research may help refine the selection criteria for these procedures.

ABSTRACT 73

MAGNETIC HYPERTHERMIA THERAPY IN COMBINATION WITH CHEMORADIATION FOR THE TREATMENT OF GLIOBLASTOMA.

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BACKGROUND/RATIONALE: Glioblastoma (GBM) is an aggressive primary brain cancer with significant resistance to the current therapeutic approach of chemotherapy and radiotherapy, jointly known as chemoradiation (CRT). Magnetic hyperthermia therapy (MHT) is a promising therapy for GBM that can be used to perform multiple sessions of non-invasive, localized hyperthermia by activating locally delivered magnetic iron oxide nanoparticles (MIONPs) with an external alternating magnetic field (AMF). In this study, MHT-mediated enhancement of CRT was evaluated in murine and human glioma cell lines both in cell culture and in rodents.

METHODS: The heating profile of MIONPs was assessed in the test tube and mouse brain in vivo. Computed tomography scan and magnetic particle imaging were used to confirm intracranial MIONP localization after convection enhanced delivery. Cell viability assays were performed following treatment with MHT and/or chemotherapy and radiation. MHT-induced alterations to the tumor microenvironment were assessed in a syngeneic murine glioma model, and a survival study was performed in a GBM patient-derived xenograft (PDX) model (n= to investigate synergism between MHT and CRT).

RESULTS: Significantly increased survival was observed in mice treated with MHT+CRT (n=9) compared to CRT alone (n=9) in a therapy-resistant GBM PDX model. In vitro studies demonstrated that MHT with radiation was more cytotoxic than radiation or MHT alone. Additionally, MHT with CRT significantly increased tumoral expression of biomarkers for DNA double-strand breaks (g-H2AX), CD8+ T cell recruitment (CD8), and inflammation (P-selectin) compared to CRT alone, suggesting MHT-mediated radio-sensitization and immune cell recruitment to the tumor. MIONP heating was confirmed in the test tube (93.3 °C) and intracranially (50.7 °C) within minutes of AMF exposure, and localization of MIONPs to the delivery site was verified with imaging.

CONCLUSIONS: Adjuvant MHT may induce tumor chemoradio-sensitization, immune cell recruitment, and survival benefit when combined with CRT. Optimization of the combination therapy treatment scheme is required.

ABSTRACT 74

ROLE OF THE ORBITAL FRONTAL CORTEX IN THE EMERGENCE OF AGGRESSIVE BEHAVIORS IN MALE MICE.

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BACKGROUND: Aggression is an evolutionarily conserved behavior. Although its function is largely adaptive, maladaptive forms of aggression exist in many psychiatric disorders, for instance when excessive or in the absence of threat. Previous studies from the laboratory have explored the neural basis of the emergence of aggression using whole-brain tissue clearing and c-Fos immunostaining. One region showing a strong increase in c-Fos positive cells was the Orbitofrontal Cortex (OFC).

OBJECTIVE: We sought to characterize the role of the OFC in modulating reactive aggression in male mice.

METHODS: We induced expression of inhibitory DREADDs (Designer Receptors Activated only by Designer Drugs)-GFP (Green Fluorescent Protein) in the bilateral OFC of the experimental group (n=10) and GFP only in the controls (n=10). These DREADDs inhibit OFC neurons when activated by CNO. Aggression was measured using the validated Resident-Intruder assay over three days. On Days 2 and 3, mice received either a saline or CNO injection prior to the trial. Attack latency, and number of bouts and duration (where applicable) of aggressive behaviors (attack, wrestling, biting, tail rattle, aggressive grooming) and prosocial behaviors (nose to nose, anogenital sniff) were manually scored. Statistical significance was calculated using a paired, one-tailed, t-test.

RESULTS: When comparing saline to CNO, the experimental group had significantly decreased mean bouts of attack (6.8 vs 4.7, $p=0.02$) and tail rattles (15.7 vs 7.3, $p=0.01$); and significantly increased mean latency to attack (133.4s vs 262.3s, $p=0.04$) and anogenital sniffs (4.3 vs 6.4, $p=0.04$). These changes were all non-significant in the control group ($p>0.05$).

The only significant finding in the control group was a decrease in mean nose-to-nose interactions (4.2 vs 2.1, $p=0.04$).

CONCLUSION: Inhibition of the OFC seemed to modulate initiation of attack behaviors (latency to attack, bouts of attack) rather than the quality of the attacks themselves (wrestling, biting, aggressive grooming, attack duration). The role of the OFC in prosocial behaviors is less clear. They were increased in CNO group (anogenital sniffing) but also unexpectedly decreased (nose-to nose) in the saline group. This may be due to human error while scoring, systemic effects of CNO, or other variables. Hopefully these results will guide further investigation of this circuitry and ultimately aid in the development of targeted pharmacological and psychological treatment.

ABSTRACT 75

PREVALENCE AND FACTORS ASSOCIATED WITH SHOW STATUS AMONG PATIENTS BOOKED FOR PROCEDURES AT AN AMBULATORY SURGERY CENTER IN UGANDA.

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BACKGROUND: Late cancellations or unexpectedly missed procedures, collectively defined by a negative show status, can burden healthcare centers with wasted resources, provider dissatisfaction, and clinic inefficiencies. In environments with limited access to resources and providers, this is especially problematic. This study investigates the association between show status and booking factors in an ambulatory surgical center in Uganda.

METHODS: This retrospective, single-center chart review study at Kyabirwa Surgical Center, the first stand-alone ambulatory surgery center in rural Eastern Uganda, collectively sampled 1375 patients booked for procedures between March 2022 and April 2023. Data was collected via medical record abstraction and analyzed in SPSS 26 using descriptive and multivariable analysis.

RESULTS: From March 2022 to April 2023, 1375 unique ambulatory procedure bookings (mean age=42, SD=22) were made, of which 803 (58%) were male and 209 (15%) were pediatric. Procedure types included 417 (30%) hernia repairs, 295 (21%) endoscopies, 201 (15%), colonoscopies, 129 (9%) excisions, 92 (7%) biopsies, 31 (2%) ENT, 22 (2%) stents, 21 (2%) laparoscopic, 2 (0.1%) Gynecologic, and 158 (13%) other general procedures. Across patients, the prevalence of positive show status was 83%. The prevalence of positive show status for booked procedures was lower among those scheduled for biopsy ($p=0.004$, aPR=0.36 [95% CI=0.18-0.72]), endoscopy ($p=0.008$, aPR=0.43 [95% CI=0.24-0.80]), and colonoscopy ($p=0.006$, aPR=0.44 [95% CI=0.25-0.79]) compared to hernia repair when controlling for payment. The prevalence of positive show status was also lower among patients whose required payments were in the bottom versus top quartile when controlling for procedure and booking method ($p=0.005$, aPR=0.53 [95% CI=0.34-0.83]). Of those scheduled for hernia repair, the prevalence of positive show status was lower for those booked through a camp offering free surgery ($p=0.016$, aPR: 0.47 [95% CI=0.26-0.87]) compared to those booked otherwise ($p=0.016$, aPR: 0.47 [95% CI=0.26-0.87]). Show status was not significantly correlated with sex, age, laparoscopic versus open, appointment time, anesthesia, or distance traveled.

CONCLUSION: Patients scheduled for scopes, biopsies, and free or lower-cost procedures were associated with a lower rate of positive show status. Further analysis on the effect of scopes, biopsies, and patient cost burden is required to fully understand the etiology of show status.

ABSTRACT 76

PLASTIC SURGEON CLOSURE IN CERVICAL SPINE SURGERY: ENHANCING WOUND-RELATED OUTCOMES.

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BACKGROUND: Wound healing complications and myocutaneous defects following open cervical spine surgery have been previously documented.

OBJECTIVE: The present study investigated whether plastic surgeon involvement in closure of posterior cervical spinal incisions leads to improved outcomes compared to those performed by the index spine surgeon.

METHODS: Patients on which the senior author operated for cervical spine procedures between January 2016 and July 2022 were reviewed. Anterior approaches were excluded. Demographics were reviewed, and the following wound complications were examined within 30 postoperative days: seroma, hematoma, superficial, deep, and organ surgical site infections, and wound dehiscence. Unplanned reoperations or readmissions were noted. Descriptive statistics, univariate and multivariate analyses were performed using SPSS statistical software, and outcomes were compared to the currently available literature.

RESULTS: 588 posterior cervical surgeries were reviewed. Patients demonstrated significantly higher rates of COPD and diabetes when compared to those undergoing cervical procedures nationally. Additionally, 56.0% had hypertension, 50.8% had hyperlipidemia, and 18.9% were active smoker. Eight (1.4%) cases were complicated by seroma, seven (1.2%) by hematoma, five (0.9%) by wound dehiscence, and ten (1.7%) by wound infection. Only seven (1.2%) patients required reoperation for wound complications, which is favorable to 3.10% wound-related reoperations reported in NSQIP ($p = 0.008$). Eleven (1.9%) patients experienced wound-related readmissions compared to the 5.30% observed nationally ($p < .001$). Paraspinous muscle flap closure was utilized in 80 (13.6%) exceedingly complex cases. None of these cases resulted in dehiscence, and only one (1.3%) was complicated by local infection. This is superior to the 14% infection rate historically reported for such procedures. There were no comorbid or procedural characteristics associated with wound complications on univariate or multivariate analysis.

CONCLUSION: The present study highlights the results at a single center with closure of posterior cervical spine cases. Plastic surgeon involvement minimized wound complications, even among highly comorbid patients. Low rates of reoperations and readmissions were noted, few of which were attributed to wound-related issues. Thus, there is a considerable value to increased plastic surgeon involvement in the closure of cervical spine surgeries

ABSTRACT 77

EARLY ADVERSE CHILDHOOD EXPERIENCES AND REPEATED WHEEZING FROM 6 TO 30 MONTHS OF AGE: EXPLORING THE ROLE OF RACE/ETHNICITY.

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BACKGROUND: Identifying children at risk for chronic respiratory disorders involves understanding early risk factors. While early life adversity is associated with respiratory outcomes in children, few studies have considered specific types of adversity influencing outcomes and how effects might vary by race/ethnicity.

METHODS: Analyses included N=746 mother-infant dyads from the longitudinal Programming of Intergenerational Stress Mechanisms (PRISM) pregnancy cohort with data on early adversity and childhood wheezing. Mothers reported adverse childhood experiences (ACEs) at 6 months postpartum using the Lifetime Stressor Checklist-Revised (LSCR), Edinburgh Postnatal Depression Scale (EPDS), State-Trait Anxiety Index (STAI), Traumatic Events Screening Inventory (TESI), and Posttraumatic Stress Disorder Checklist – Civilian version (PCL-C). Wheeze frequency comprised the number of reported wheezing episodes in the child between age 6 to 30 months. Weighted quantile sum (WQS) regression was used to derive a weighted ACEs index encompassing all surveys and examine the Poisson associations between the ACEs index and wheeze frequency. Differential contributions of ACEs by race/ethnicity were examined. Models were adjusted for child sex, maternal education, and maternal asthma history.

RESULTS: Most women were Black (45.7%) or Hispanic (38.7%) and 42.5% had < high school education. In general linear models considering stress measures independently, higher STAI, EPDS, PCL-C, and TESI scores predicted increased wheeze frequency. In WQS regression models stratified by maternal race/ethnicity, there was a 2.05 increase (95% CI = 1.21, 3.49) in wheeze frequency with each quintile increase of the early adversity index in those whose mothers identified as Black/Black Hispanic; traumatic events reported on the TESI (72%) contributed most strongly to the mixture in this group. In the Hispanic group, there was a 1.33 (95% CI = 1.05, 1.67) increase in wheeze frequency with each quintile increase of the adversity index with EPDS (76%) and PCL-C symptoms (21.1%) contributing most highly to the mixture.

CONCLUSIONS: Higher risk of repeated wheeze was associated with different adverse experiences among children of historically minoritized women. Identifying the upstream factors related to differential lived experiences contributing to ACEs influencing early life respiratory health trajectories may inform root causes of health disparities.

ABSTRACT 78

RATES OF SURVIVAL TO HOSPITAL DISCHARGE WITH GOOD NEUROLOGIC OUTCOME AFTER OVERDOSE-ATTRIBUTABLE CARDIAC ARREST VERSUS NON-OVERDOSE CARDIAC ARREST.

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BACKGROUND/RATIONALE: Given recent increases in drug overdose-associated mortality, there is great interest to better understand out-of-hospital cardiac arrests (OHCA) precipitated by drug overdoses. Comparing cardiac arrest due to drug overdose and other kinds of cardiac arrest will inform public health measures.

OBJECTIVE: Using a nationally-representative database of cardiac arrest, we compared rates of survival to hospital discharge with good neurologic outcome in patients who experienced cardiac arrest due to a drug overdose (OD-OHCA) with patients who experienced a cardiac arrest due to other causes (non-OD-OHCA).

METHODS: We analyzed data from 2017 to 2021 in the Cardiac Arrest Registry to Enhance Survival (CARES), which combines data from EMS agencies and hospitals on cardiac arrest cases. Specific details about the database – including how data are gathered and indexed – have been previously published. Our predictor was OD-OHCA versus non-OD-OHCA, and our primary outcome was post-arrest survival to hospital discharge with good neurological outcome, which we defined using the validated Cerebral Performance Score (CPC). OD-OHCA was defined if the treating EMS crew suspected any kind of drug overdose precipitated the arrest. Arrests involving patients <18 years, nursing home residents, patients with cancer diagnoses, or patients with select missing data were excluded.

RESULTS: From a dataset with 537,100 entries at time of analysis, 29,500 OD-OHCA cases and 338,073 non-OD-OHCA cases met inclusion criteria. OD-OHCA involved younger patients with fewer comorbidities, were less likely to be witnessed, and less likely to present with a shockable rhythm. After adjustment for age, comorbidities, and intra-arrest factors, we found comparable survival to hospital discharge when the first monitored arrest rhythm was shockable (OD: 28.9% vs. non-OD: 23.5%, $p=0.087$) but significantly higher survival rates with CPC=1/2 for OD-OHCA when the first monitored arrest rhythm was non-shockable (OD: 9.6% vs. non-OD: 3.1%, $p<0.001$).

CONCLUSIONS: Among patients presenting with non-shockable first monitored arrest rhythms, OD-OHCA is associated with significantly better outcomes. Further research should continue exploring overdose-attributable cardiac arrest, and public health efforts should attempt to reduce the burden from drug overdoses.

ABSTRACT 79

EXPLORING AND MEASURING THE INFLUENCE OF RESILIENCE IN PATIENTS EXPERIENCING CHRONIC GASTROINTESTINAL ILLNESS.

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BACKGROUND: Inflammatory Bowel Disease (IBD), including Crohn's Disease and ulcerative colitis (UC), is a complex and common chronic condition. Psychological resilience has been associated with fewer disease flare-ups, lower rates of surgical intervention, and overall improved patient satisfaction and quality of life. Thus, psychology-based interventions alongside clinical care may yield better patient outcomes. To validate the efficacy of psychology-based interventions in GI disease, this study explores how resilience influences quality of life specific to patients with IBD, in order to further the development and evaluation of evidence-based treatment and mind-body approaches to IBD patient care.

RESEARCH QUESTION: The primary goal of this proposal is to compare quality of life metrics in IBD patients with high and low resilience.

STUDY DESIGN: A cross-sectional study was conducted using surveys administered to patients at a tertiary clinic in New York City from September - December 2023. Resilience was measured using the Connor Davidson Resilience Scale (CDRISC), a 25-item validated measure, and compared to patient responses to the Inflammatory Bowel Disease Questionnaire (IBDQ), capturing quality of life metrics across disease-specific domains.

RESULTS: The study resulted in a sample size of 91 respondents, of whom 70% were female, with a mean age of 39 years, and 88.9% identified as White. 78.9% of respondents had a Bachelor's degree or higher, with half having attained a Graduate degree. Two-thirds of respondents were employed. 55.5% of respondents were classified as low resilience, defined by first quartile CDRISC resilience scores. Patients showed differences in response to disease-specific quality of life measures on the IBDQ. Low resilience respondents were more likely to report feeling frustrated, impatient, or restless within the past two weeks ($p=0.065$, $d=0.42$), and to have felt depressed or discouraged ($p=0.005$, $d=0.61$). High-resilience patients were more satisfied with their personal lives ($p=0.002$, $d=0.683$), had more energy ($p=0.035$, $d=0.46$), and were less likely to have felt relaxed ($p=0.01$, $d=0.56$). High resilience patients had lower systemic symptom scores ($p=0.036$, $d=0.46$).

CONCLUSION: Higher resilience in IBD patients is associated with improved quality of life, particularly across emotional, social, and systemic domains. Building resilience within IBD patients may improve their experiences and outcomes.

ABSTRACT 80

CONTRACEPTIVE USE DOES NOT INFLUENCE VITRIFIED OOCYTE YIELD IN PATIENTS UNDERGOING OOCYTE CRYOPRESERVATION.

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BACKGROUND: Hormonal contraception is known to modify serum anti-Müllerian hormone (AMH) levels in healthy women and the degree of suppression varies based on the type and duration of usage. Fluctuations in AMH are attributed to the inhibitory effects of hormonal contraceptives on the hypothalamic-pituitary-ovary axis, leading to adverse impacts on follicular development and ovulation. Consequently, the use of hormonal contraceptives has been associated with poor outcomes in infertile patients undergoing controlled ovarian hyperstimulation and embryo transfers. However, there is little research regarding the influence of hormonal contraceptives on patients undergoing oocyte cryopreservation.

OBJECTIVE: The aim of this study is to assess the potential correlation between various forms of hormonal contraceptive use and oocyte yield and maturation in individuals undergoing oocyte cryopreservation cycles.

METHODS: A review of patient records from 2011-2023 at the RMA of New York was conducted and included all individuals who underwent oocyte vitrification cycles with a specific focus on those subjected to antagonist protocol stimulation. Exclusion criteria encompassed patients with polycystic ovary syndrome, Fragile X premutation, a cancer diagnosis, or AMH levels below 0.7 ng/dL. Subsequent to this screening, the cohorts were stratified based on their use of contraceptives. Comparative statistical analyses, employing Wilcoxon, Kruskal-Wallis, and Chi-squared tests, were conducted. Additionally, a multivariate analysis utilizing a generalized estimating equation (GEE) was performed to account for and adjust confounding factors, including age, body mass index (BMI), AMH levels, previous oocyte retrievals, estradiol (E2) levels at trigger, gonadotropin dosage, and the use of oral contraceptives for scheduling purposes.

RESULTS: The analysis included 3748 cycles utilizing various contraceptive methods (n=2578) and controls (n=1170). While there was no difference in the median number of oocytes retrieved (p=0.55), there was a significant difference in the median number (p=0.04) and percentage of MII oocytes vitrified (p<0.001) among cohorts. However, after adjusting for confounders, there was no association between any type of contraception and a lower percentage of oocytes vitrified compared to controls.

CONCLUSION: No correlation was observed between the type of contraception and a diminished percentage of vitrified oocytes in comparison to the control group

ABSTRACT 81

MEDICAL ACCESS AND CARE CONTINUITY: QUALITATIVE ASSESSMENTS OF BREAST CANCER PATIENTS' AND FAMILY MEMBERS' EXPERIENCES FOLLOWING THE 2011 TRIPLE DISASTER IN FUKUSHIMA, JAPAN.

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BACKGROUND: In large-scale disasters, healthcare is often disrupted due to infrastructure damage, overcrowded hospitals, and system disturbances. While there are few studies exploring the impact of such disruptions on disaster-vulnerable individuals, analyses based on patient narratives could provide important insight. This study aimed to qualitatively explore the continuity and access to care experienced by breast cancer patients affected by the triple disaster in Fukushima during the Great East Japan Earthquake in 2011.

METHODS: Minamisoma City General Hospital's medical record system was used to identify patients who had breast cancer during the triple disaster and have since passed away. Semi-structured interviews were conducted with patients' family members via phone call or Zoom, focusing on evacuation experiences and continuity and access to care. Thematic analysis was done using the Braun and Clarke approach and interview transcripts were analyzed using Taguette to identify common themes.

RESULTS: This study focused on six patients, four diagnosed pre-disaster and two post-disaster. Seven family members were interviewed. Three key themes were identified. The first theme describes family experiences. Family members often took on the burden of caregiving and were heavily involved in the patient's care. Some family members quit their jobs and helped provide medicine to the patient. At the same time, some family members built rapport with the patient and had open communication. The second theme describes medical issues. Many patients had a wide range of medical problems. Some waited a while before seeing a doctor and did not openly discuss their symptoms. Many patients were older and struggled with physical and mental deterioration. The third theme describes evacuation and earthquake experiences. Many family members described confusion about what was happening at the time of the disaster. There were a lack of resources in hospitals, and some patients chose to evacuate and stay in shelters.

CONCLUSION: Breast cancer patients and their family members experienced issues like lack of medical resources and burden of caregiving because of the Great East Japan Earthquake, but some also built rapport in a time of crisis. Future research should explore these issues through large scale quantitative studies, yielding approaches to assuring that future disasters do not compound the challenges already faced by disaster-vulnerable individuals and their families.

ABSTRACT 83

IMPACT OF PROPHYLACTIC EPHEDRINE ON FETAL HEART TRACING AND UTERINE TETANIC CONTRACTION AFTER COMBINED SPINAL EPIDURAL ON LABORING PARTURIENTS.

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BACKGROUND: Labor analgesia represents an important component of the care management of laboring individuals. Combined spinal epidurals (CSE) provide fast acting pain relief for laboring parturients compared to standard epidurals. However, common side effects of the CSE include hypotension and category II fetal heart rate tracing. The hypotension can result in nausea, vomiting and lightheadedness, while the category II heart trace can provoke anxiety. Ephedrine, a direct/indirect acting vasopressor, is commonly used to treat hypotension in laboring parturients.

OBJECTIVE: We seek to understand if giving a smaller prophylactic dose of ephedrine will prevent hypotension and decrease the incidence of category II fetal heart rate tracing after a CSE. We hypothesize that the prophylactic ephedrine will cause uterine relaxation, improve blood flow to the uterus and reduce the incidence of category II fetal heart tracing.

METHODS: In a double blind, randomized, placebo controlled trial, laboring parturients were recruited from the Mount Sinai Hospital labor floor. A CSE was placed in each consented participant with 25 mcg of intrathecal fentanyl. In the intervention group, up to two 7.5 mg doses of ephedrine were given 3 and 15 minutes after intrathecal opiate administration intravenously. In the control group, two doses of 1.5 ml of saline at 3 and 15 minutes after intrathecal opiate administration. The patient's blood pressure was recorded every 2 minutes for 30 minutes after CSE placement and fetal heart trace was monitored. Data was recorded on whether additional vasopressor support or antihypertensive treatment was needed.

RESULTS/DISCUSSION: Data from 32 participants were analyzed to assess the impact of prophylactic ephedrine on the incidence of category II fetal heart rate tracing. The intervention group demonstrated a 2/3 reduction in the incidence compared to the control group. However, this reduction did not achieve statistical significance (Chi-square test, $p = 0.6879$; Fisher's Exact Test, $p = 0.6029$). Calculating the odds ratio using Fisher's Exact test yielded a value of 0.34 (95% CI: 0.0059 to 4.9024). These findings indicate that based on the current sample size, there is insignificant evidence to support the use of prophylactic ephedrine in reducing category II fetal heart rate tracing. We hope to recruit an additional 120 patients to obtain a more definitive assessment of the effectiveness of the intervention.

ABSTRACT 84

A DEEP DIVE INTO DIGITAL TWINS TO ENHANCE CLINICAL TRIAL INNOVATION IN ALZHEIMER'S DISEASE AND BEYOND.

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BACKGROUND: The current state of clinical trials, particularly within the context of Alzheimer's Disease, is largely stagnant due to traditional design limitations. These include recruitment and enrollment bottlenecks, sample selection bias, and difficulty establishing comparative baselines. The purpose of this project was to assess current trends in clinical trial innovation with a particular eye towards leveraging artificial intelligence (AI)- and machine learning (ML)-oriented tools including digital twins.

GOALS: The goal of this project was to conduct a market analysis to (1) assess the current state of innovation in the clinical trial space and (2) understand where, if at all, digital twins within the context of healthcare could play a role. Specifically, this research aimed to map out the progression of previous clinical trial innovations that led to the development and utilization of digital twins, identify key market players in the space, and outline trends for investors and startups hoping to make an impact in the space.

METHODS: To assemble this project that culminated in a deck and presentation for a Rock Health client, an extended literature review on the current state of clinical trial innovation was conducted, a series of data cuts utilizing Rock Health's venture database was performed, and interviews with key players/company executives in the digital twins space were conducted. Through a combination of firsthand accounts and statistical analysis, one of the first comprehensive dives into the use of digital twins for clinical trial innovation was produced.

RESULTS: Through this research, specific gaps in the current state of clinical trial innovation that could be mitigated by the use of digital twins were identified, market for digital twins in clinical trials were segmented, and industry leaders across the market were identified. Given these findings, short-, medium-, and long-term implications for how digital twins will disrupt the clinical trials space, as well as guidelines for future and current investors, were determined.

ABSTRACT 85

OPHTHALMIC DRUG WASTAGE DUE TO ARTIFICIAL EXPIRATION DATES.

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PURPOSE: Eye drops used in ophthalmology clinics have artificial expiration dates that are significantly earlier than manufacturer labelled expiration dates. We hypothesized that expiration dates of 14 and 28 days cause significant wastage and creates an opportunity to implement waste reduction and cost saving practices.

METHODS: Ophthalmic drops that were being discarded were collected for three 14-day study periods at 3 ophthalmology clinics across two centers in our health system (New York Eye and Ear). Injectable drugs and single-use eye drops were excluded.

The volume of each bottle was measured by removing the cap and pouring the contents into a graduated cylinder or microcentrifuge tube that had markings every 0.5ml. A 200µl adjustable volume pipette was used to measure any volume above the nearest 0.5ml marking in the graduated cylinder. All medications had artificial expiration dates 28 days following opening, except for proparacaine which had a 14 day artificial expiration.

RESULTS: Over 6 weeks of collection, 297 non-empty bottles were thrown out. The average amount of medication left in each bottle was 75.5% and bottles had on average 494 days between the date they were thrown out and the manufacturer's labeled expiration date.

The most common bottles thrown out were proparacaine 0.5% (n=127), phenylephrine 2.5% (n=40), and tropicamide 1% (n=62). All proparacaine and tropicamide bottles were 15mL. For proparacaine, there was an average of 72.3% of the medication still left in the bottle (10.8ml) and an average of 520 days until the manufacturer's expiration. For tropicamide, there was an average of 80.9% of the medication still left in the bottle (12.1ml) and an average of 451 days until the manufacturer's expiration date. Phenylephrine bottles were divided into 2ml and 15ml bottles which had 70.1% (1.40ml) and 80.9% (12.1ml) of the medication still left in the bottle respectively and an average 580 and 451 days respectively until the manufacturer's expiration.

CONCLUSION: This is the first study to report the wastage of ophthalmic eye drops a clinic setting due to artificial expiration dates. Based on these results, we recommend establishing practices that utilize ophthalmic eye drops until the manufacturer's labeled expiration date instead of the 14- or 28-day artificial expiration dates. When handled in a safe manner, usage of ophthalmic eye drops fully can reduce healthcare's carbon footprint and clinic costs without additional risk to patients.

ABSTRACT 86

ENHANCING DETECTION OF DEPRESSION WITHIN PRIMARY HEALTH CARE IN GHANA: BARRIERS AND FACILITATORS.

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BACKGROUND: Depression is a major cause of morbidity and mortality in low- and middle-income countries. In Ghana, mental health services are disproportionately concentrated in urban southern regions, leaving the rural north at a disadvantage. In rural settings, Community-based Health Planning and Services (CHPS) compounds play a crucial role rendering home-based primary care, but do not reliably screen for depression. This exploratory study aimed to identify facilitators and addressable barriers to depression screening at the primary health care level.

METHODS: In January and February 2021, we conducted 34 semi-structured interviews with providers (e.g., Community Health Officers [CHOs]) and eight focus groups with community members. The interviews were conducted by graduate-level staff fluent in one of the local languages and with at least one year's experience conducting qualitative interviews. The interviews were then transcribed and systematically coded on Dedoose. We generated themes related to the study aim using the grounded theory approach.

RESULTS: We identified three barriers to early depression detection at the primary health care level. Firstly, the stigmatized perception of depression. Misconceptions derived from cultural beliefs often result in individuals refraining from seeking assistance. Secondly, mistrust in healthcare system capability. Concerns regarding confidentiality, cost of care, and public awareness of staff and medication shortages serve as deterrents. Thirdly, underutilization of existing infrastructure. A significant number of CHOs express a sense of being ill-equipped to address cases of depression. Two facilitators were identified. Firstly, accessibility of CHPS compounds and services. Community Health Volunteers play a vital role in door-to-door screenings, with CHPS compounds conveniently located near most communities. Community durbars are further used as public health education tools. Secondly, CHOs' willingness to broaden their responsibilities. CHOs express a desire for formal training in recognizing depression signs and symptoms.

CONCLUSIONS: CHPS providers are willing to screen for depression, and community members leverage this service despite some skepticism. CHOs express a willingness to enhance detection and linkage to care. The use of standardized screening tools (eg, PHQ-9) can simplify the process. A separate pilot study will assess the feasibility and acceptability of CHPS depression screening.

ABSTRACT 87

REANIMATING THE HEPATECTOMIZED LIVER: NORMOTHERMIC MACHINE PERFUSION AS A NOVEL TRANSLATIONAL RESEARCH PLATFORM.

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Normothermic machine perfusion (NMP) is an emerging preservation technique currently used in the field of transplantation to assess organ function, reduce post-transplant complications, and safely increase the pool of donor organs. Here, we introduce a novel use of the platform as a translational research model of end-stage liver disease using hepatectomized livers from transplantation. To our knowledge, we provide the first description of how to perform this complex procedure of ex vivo perfusion of a hepatectomized liver.

After explantation of the native liver during transplantation, seven grafts were flushed with 3 L of heparinized saline and 1-2 L Histidine-Tryptophan-Ketoglutarate (HTK) solution. Reconstruction of the venous outflow, arterial anatomy, and portal vein was undertaken to allow for cannulation. After cannulation, the livers were perfused using the OrganOx metra[®]. Flow parameters were monitored and perfusate samples were assessed via arterial blood gas analysis.

Of the seven livers in our cohort, five achieved technical success, defined as perfusion for at least 1h. The average time from hepatectomy to initiation of NMP was 3.56 hours, and average perfusion duration was 5.85 hours (4.5 – 8.53, n=5). Graft 5 bled substantially from a parenchymal injury during explant, and hemostasis was unachievable with surgical sutures alone. Four of the five perfused livers cleared lactate, and all utilized glucose. pH stability and sodium bicarbonate requirements varied, though all maintained pH levels above 7.3 after 2h of NMP without bicarbonate resuscitation. Similar portal vein flows were achieved for each graft, though hepatic artery flows varied.

These findings illustrate the merit of perfusing diseased, explanted livers as a stable perfusion for 4-8 hours can be obtained, presenting an unprecedented avenue to study its underlying biology. The study demonstrates the variability in perfusion characteristics of these grafts, however, a consideration for creating future experimental designs. Ultimately, our model describes a groundbreaking opportunity to investigate advanced liver disease in a functioning, ex vivo organ—a milestone previously beyond reach.

ABSTRACT 88

ASSOCIATION BETWEEN INTRAOPERATIVE ANESTHESIOLOGY HANDOFF AND POSTOPERATIVE PATIENT OUTCOMES FOLLOWING CARDIAC SURGERY.

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BACKGROUND: Cardiac surgeries involve complex procedures that demand seamless coordination and collaboration among healthcare professionals throughout the perioperative period. Handovers of anesthesia care from one anesthesiologist to another are a common intraoperative event that can reduce physician fatigue, but can pose many risks during the procedure. While studies have shown an association between handover of anesthesia care and adverse post-operative outcomes, the effects in cardiac surgery remain unclear.

OBJECTIVE: To determine the effect of intraoperative anesthesiology handover on postoperative outcomes following cardiac surgery.

METHODS: In this single-center retrospective analysis, we sampled 21,076 patients who underwent cardiac surgery at Mount Sinai Hospital between 7/5/11 and 12/8/23. Patients were separated into two groups: those who underwent surgery involving intraoperative anesthesiology handover, and those who underwent surgery without handover. Post-operative outcomes were assessed via ICU length of stay, total length of stay, 30-day mortality, reoperation, and readmission rates. Means were calculated for each group and compared using unpaired 2 sample mean T-test and Z test.

RESULTS: Out of 21,076 patients sampled, 18,917 (89.7%) underwent cardiac surgery without anesthesiology handover (NH), while 2,159 (10.3%) underwent cardiac surgery with handover (H). 7,080 (33.6%) patients sampled were female, while 13,996 (66.4%) were male. Patient ages ranged from 10 to 95. Compared to patients who underwent cardiac surgery without anesthesiology handover, those who had handover on average had significantly longer ICU length of stay (NH: 94.247, H: 121.877, $p < 0.0001$), longer total length of stay (NH: 12.05, H: 15.25, $p < 0.0001$), higher 30 day-mortality rate (NH: 4.34%, H: 5.93%, $p = 0.0008$), higher rate of reoperation (NH: 4.36%, H: 6.99%, $p < 0.0001$) and higher rate of readmission (NH: 8.71%, H: 10.8%, $p = 0.001$).

CONCLUSION: Among the five post-operative outcome variables analyzed, all five showed a significant association with intraoperative anesthesiology handover. Our findings suggest more malignant patient outcomes when there is a lack of continuity in anesthesiology care in cardiac surgery, and providers can use these findings to improve care overall.

ABSTRACT 89

PATIENT PERSPECTIVE AMONG US KIDNEYS DONORS FOLLOWING MINIMALLY INVASIVE DONOR NEPHRECTOMY.

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Living-donor kidney transplantation is a primary treatment for end-stage renal disease in the US. However, demand for living donors exceeds current supply. Understanding experiences of past donors is crucial for educating future donors and providing more effective follow-up care. This study identified important pre- and post-donation factors that patients considered following minimally invasive donor nephrectomy (MIDN)

We surveyed patients via email who underwent MIDN at Mount Sinai Hospital (New York, NY) from 2013 to 2023. Subjects rated pre-donation factors (post-operative pain, complications, recovery time, surgical scars, renal function, and life satisfaction) on a scale of 0 (no importance) to 5 (extreme importance) based on importance in their decision to donate. Next, they answered questions regarding their post-donation experience and rated happiness after donation on a scale of 0 (no happiness) to 5 (extreme happiness). Responses to post-donation questions were separated by surgical approach (laparoscopic vs. robotic) and time since donation (≤ 5 years vs. ≥ 5 years). Categorical and continuous variables were compared using Chi-square and T-tests, respectively.

Out of 161 surveyed patients, 39 responded (24% response rate). 54% of respondents were male, 46% were female. 51% donated within 5 years, while 49% donated over 5 years ago. Surgical procedures included 62% laparoscopic and 38% robotic. Renal function was the most important pre-donation factor (average rating: $3.44/5 \pm 1.65$), while surgical scars were least important ($0.79/5 \pm 1.16$). 94.7% of donors reported increased happiness after donation ($4.51/5 \pm 0.69$), 89.8% experienced no adverse impact on quality-of-life, and 87.2% reported no emotional difficulties. However, 38.5% did become more cautious when performing daily activities. These percentages showed no statistical difference between laparoscopic and robotic groups or with respect to time since donation (≤ 5 years vs. ≥ 5 years). Notably, 100% of donors reported that they would make the same decision to donate again.

Among MIDN patients, renal function was the most critical pre-donation factor, while surgical scars were least important. Donors generally report increased happiness after donation, minimal impact on quality of life and high satisfaction with their choice to donate. Patients' perspectives and post-donation experiences appear to remain relatively unchanged with time and are not impacted by surgical approach

ABSTRACT 90

ASSESSMENT OF ANESTHESIOLOGISTS' ATTITUDES AND KNOWLEDGE DURING EVALUATION OF PERI-PROCEDURAL DNR STATUS.

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BACKGROUND: Patients with multiple comorbidities may present for procedures requiring anesthesia, and it is common for these patients to have a Do Not Resuscitate (DNR) order. Major perioperative organizations, such as the American Society of Anesthesiologists (ASA), have published guidelines that prioritize patient autonomy. Management of DNR orders in the perioperative period often involves assessing patients' goals and values. This task requires communication skills that may not have been addressed in providers' training. There are different providers involved in the care of patients who have operations. As a result, it is not always clear who should assume primary responsibility for having these discussions. This study at Memorial Sloan Kettering Cancer Center (MSKCC) surveys anesthesiologists' attitudes and knowledge about discussion of DNR status with their patients. The purpose of this study is to identify perceptions and knowledge gaps amongst anesthesiologists regarding discussion of DNR status.

OBJECTIVES: A single-center survey was sent to physicians in the Department of Anesthesiology at MSKCC. The anonymous survey asked participants to rate their level of agreement or disagreement with several statements about periprocedural DNR status. A validated thanatophobia scale was also included to assess feelings about treating dying patients.

RESULTS: Based on a review of the results, 47% of the respondents thought that anesthesiologists should be primarily responsible for discussing periprocedural DNR status, while 33% and 11% thought that hospitalists and proceduralists, respectively, should assume this role. In regards to policies for the management of DNR status, more respondents who are familiar with MSKCC guidelines (90%) than those who are familiar with ASA guidelines (34%).

CONCLUSION: The results of this study reveal varying perceptions among respondents, with a significant proportion advocating for anesthesiologists as key communicators in perioperative discussions regarding DNR orders. Furthermore, this survey reveals variations in familiarity with guidelines. These findings emphasize the need for investigation into the factors influencing the comfort levels, knowledge gaps, and overall engagement in discussions surrounding perioperative DNR status. The information from this study can inform strategies for enhancing communication skills, refining protocols, and ultimately improving patient care in the perioperative setting.

ABSTRACT 91

NATURAL LANGUAGE PROCESSING AS A TOOL TO ASSIST CLINICIANS IN MAKING PERSONALITY DISORDER DIAGNOSES.

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INTRODUCTION: Roughly 9% of adults suffer from personality disorders, which are clinically diagnosed from subjective observations of their emotions and behaviors. Natural language processing (NLP), a branch of artificial intelligence (AI), has recently gained traction since it can uncover complex associations to assist in human precision. Large language models, like RoBERTa, have shown a capability to score the likelihood of emotions expressed in human language. As such, we offer a novel approach with NLP and AI to explore if there is correlation between emotions tagged by RoBERTa and personality disorder diagnosis.

OBJECTIVE: This study looks at the relationship between emotions and personality disorder diagnosis. It also explores the utility of AI in learning from emotion expression patterns to predict the diagnosis.

METHODS: In this study, we recorded twenty-eight single sessions from ongoing psychotherapy treatment to prepare text datasets. Demographic data and consent are detailed in a previous manuscript. The study cohort was divided into two groups: personality disorder (54%, n=15) or not (46%, n=13). DistilRoBERTa-base was utilized to tag the emotions of text blocks spoken by therapists and patients to create probabilities for 7 emotions: anger, disgust, fear, joy, neutral, sadness, and surprise, with an evaluation accuracy of 66% (vs. the random-chance baseline of $1/7 = 14\%$). A text block in this study is defined as the text spoken by the therapist or patient before the other starts their next text block. The sequence of these scores were used to train a Long-Short Term Memory (LSTM) machine learning model to predict the diagnostic group. Chi-square testing was used to test for statistical significance between diagnostic groups.

RESULTS: Statistical analysis shows significance when comparing the number of times any emotion had the highest probability for a text block (Chi-squared statistic: 52.50, $p = 1.48e-09$) and when comparing the number of times any 3 emotions had the 3 highest probabilities (Chi-squared statistic: 49.52, $p = 5.86e-09$) between diagnostic groups. Therefore, we reject the null that there is no association between the emotion label and the diagnosis. LSTM results are promising, showing loss of 0.48 and accuracy of 0.77 when diagnosing from individual blocks of text. However, hyperparameter tuning and model alteration to train from an entire session versus individual text blocks may improve the task performance.

CONCLUSION: Our study highlights the potential of NLP and AI to reveal significant links between emotions and personality disorder diagnoses. These findings suggest a promising avenue for enhancing diagnostic precision in psychotherapy.

ABSTRACT 92

ASYLUM-STATUS AS A SOCIAL DETERMINANT OF HEALTH: PREVALENCE AND CONTROL OF CHRONIC DISEASES AMONG CLIENTS AT A NEW YORK CITY ASYLUM CLINIC.

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BACKGROUND: Nearly 1.6 million asylum-seekers are awaiting immigration hearings in the United States. Limited aggregate data exists about the health status of asylum-seekers, including the prevalence of chronic diseases within this group. The Libertas Center for Human Rights at Elmhurst Hospital in Queens provides comprehensive care to survivors of torture, 90% of whom are asylum-seekers at intake. This study sought to establish prevalence rates of common chronic diseases among Libertas clients and perform a preliminary analysis of asylum status and longitudinal management of these chronic diseases.

METHODS: We conducted a retrospective chart review to determine the prevalence of diabetes (DM), hypertension (HTN) and hyperlipidemia (HLD) among adult Libertas clients who received primary care in the New York City Health + Hospitals system. The calculated prevalence rates were age-adjusted for comparison with the general US population prevalences as established by the 2022 National Health Interview Survey (NHIS). Additionally, a subgroup case-series analysis was conducted of clients' asylum status, hemoglobin A1C, blood pressure, and LDL cholesterol to assess disease progression.

RESULTS: The study cohort was comprised of 56% men and 44% women, with an average age of 37 years. Among the study group (n = 180), the age-adjusted prevalence rate with standard error reported in parentheses per 1,000 people was 319.62 (\pm 34.81) for DM, 418.14 (\pm 36.88) for HTN and 420.67 (\pm 36.60) for HLD. The prevalences of these three diseases were greater in the Libertas cohort than the general population, with statistical significance in DM (p<0.0001) and HLD (p<0.01) prevalences. Limitations in our data precluded an adequate regression analysis of asylum-status as a risk factor for chronic disease. However, the case-series of longitudinal health metrics suggests that being granted asylum correlates with better DM and HLD management.

CONCLUSION: Libertas Center clients (asylum-seekers and recent asylees) have a higher prevalence of DM, HTN and HLD than the general US population when adjusted for age. Having been granted asylum may be associated with improved control of chronic diseases, although this study lacks sufficient data to draw this conclusion with any statistical rigor. Additional studies into asylum status as a social determinant of health are needed.

ABSTRACT 93

THE ASSOCIATION BETWEEN PRIMARY SPOKEN LANGUAGE AND PERIOPERATIVE OUTCOMES AMONG HIP FRACTURE PATIENTS.

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BACKGROUND: Language barriers can impact physician-patient communication, care processes, and patient outcomes. Hip fractures frequently presenting to emergency departments (EDs) and orthopedic teams, yet no study has assessed the association between a patient's primary spoken language (PSL) and perioperative outcomes.

OBJECTIVE: We aimed to identify the association between PSL and hospital length of stay (LOS), 90-day readmission, discharge disposition, 30-day return to ED, 90-day complications (VTE, infection, or bleeding), and death following operative management of a hip fracture.

METHODS: An IRB-approved retrospective cohort study was performed using institutional data including patients 18+ who underwent a non-elective surgery for an intracapsular (ICD-10 diagnosis code S720**A) or extracapsular (ICD-10 diagnosis code S721**A, S722**A) upper femur fracture with an inpatient admission between January 1, 2016-March 31, 2023 across 6 hospitals in a multi-hospital academic health system. PSL was categorized into English, Spanish, and other non-English. Mixed-effects generalized linear models measured associations between PSL and outcomes, adjusting for covariates; adjusted odds ratios (ORs) are reported for binary outcomes and adjusted mean differences are reported for continuous outcomes.

RESULTS: The cohort included 3,718 patients (86.0% English, 7.5% Spanish, 6.5% other non-English). In multivariable analyses, other non-English PSL patients had a significantly longer length of stay (vs. English) by an average of 0.78 days (95% CI: 0.17-1.33, P=0.012), with no significant difference for Spanish versus English (-0.21 days, 95% CI -0.69-0.28, P=0.402). Patients with Spanish PSL (vs. English) had higher odds of sustaining a 90-day complication (OR=2.15, 95% CI 1.02-4.54, P=0.045), but there was no difference for other non-English vs. English (OR=0.55, 95% CI 0.13-2.29, P=0.410). No significant associations were identified between PSL and 30-day ED visits, 90-day readmissions, discharge disposition, and in-hospital death.

CONCLUSION: Other non-English and Spanish PSL may be associated with length of stay and 90-day combined complications, respectively, among patients who underwent surgery for a hip fracture. These findings affirm the impact of language barriers on perioperative outcomes, but further research is needed to evaluate the clinical significance of these findings on long-term outcomes and ways to address these barriers.

ABSTRACT 94

THE CURRENT LANDSCAPE OF NEUROSURGICAL ONCOLOGY IN LOW-MIDDLE-INCOME COUNTRIES (LMIC): STRATEGIES FOR THE PATH FORWARD.

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OBJECTIVE: To promote global equity in research, innovation, and care, sharing knowledge and grasping current benchmarks is crucial. Despite LIC/LMIC constituting around 80% of the global population, their contribution to neurosurgery research is less than 5%. This study aims to assess the status of neurosurgical oncology in LIC/LMIC using published data, offering strategic insights for progress.

METHODS: Conducting a retrospective bibliometric analysis via PubMed and Scopus databases, we documented reports published (2015-2021) by neurosurgical department-affiliated investigators in LICs/LMICs. World Bank classifications identified LIC and LMIC. Reviewed papers underwent further scrutiny based on independent and associated keyword lists.

RESULTS: Our systematic approach revealed 189 studies from LMIC in ten neurosurgery journals. Of these, 53% were case reports, with 88% focusing on brain pathologies and 12% on the spine. Intra-axial brain tumors (45.8%), extra-axial/skull base (38.4%), and metastasis (3.68%) were prominent. Among non-case report publications, surgical technique and outcome were common themes. India, Egypt, and Tunisia led in publications, with 94% appearing in journals with an impact factor below five. No papers originated from LIC.

CONCLUSION: This study reinforces existing findings that data from LMIC inadequately represent their populations, impeding a comprehensive understanding of their neurosurgical oncology landscape. Language barriers and data collection difficulties contribute to this gap. Addressing these challenges could significantly enhance progress in shaping the future of neurosurgical oncology in these regions.

ABSTRACT 95

SCALP AND NECK MELANOMA IS ASSOCIATED WITH WORSE DISEASE-SPECIFIC SURVIVAL AND INCREASED METASTASIS AT DIAGNOSIS.

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Cutaneous head and neck melanoma (CHNM) has been associated with worse outcomes, but the prognostic factors remain understudied. We sought to describe the melanoma-specific survival (MSS) of patients with scalp and neck (SN) melanoma versus other CHNM and to explore a possible independent relationship between tumor location and distant metastases at diagnosis. A retrospective cohort of 13,825 CHNM cases from 2011 to 2020 was prepared using the SEER (Surveillance, Epidemiology, and End Results) database. Cox proportional regression and multinomial logistic regression models were used to calculate adjusted hazard ratios (aHRs) and adjusted odds ratios (aORs), respectively, adjusting for age, sex, ethnicity, marital status, ulceration, mitoses, histology, and tumor location. On multivariable analysis, patients with SN melanoma had worse MSS than that of other CHNM [aHR 1.28, 95% confidence interval (CI) 1.16-1.41]. SN melanoma was independently associated with a higher odds of presenting with lung metastases (aOR 2.39, 95% CI 1.35-4.25) and metastases in more than one location at diagnosis (aOR 2.23, 95% CI 1.28-3.88). The poorer disease-specific survival of SN melanoma may be explained by the distinct pattern and extent of distant metastases at initial diagnosis. Considering the primary site of CHNM may inform prognostic staging and clinical management of this subset of melanoma patients.

ABSTRACT 96

AN ECOLOGICAL STUDY OF SUPERFUND CONTAMINANTS AND THYROID CANCER INCIDENCE IN NEW JERSEY COUNTIES.

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INTRODUCTION: Environmental contaminants associated with thyroid cancer are in Superfund sites, areas the U.S. Environmental Protection Agency (EPA) has listed for cleanup. New Jersey (NJ) has the most Superfund sites and second highest thyroid cancer incidence of any U.S. state. This study investigated the association between thyroid cancer incidence and number of Superfund sites containing certain thyroid cancer-associated contaminants—polychlorinated biphenyls (PCBs); bis(2-ethylhexyl) phthalate (DEHP); malathion; and eight heavy metals—in NJ counties.

METHODS: Public data on thyroid cancer incidence (2015–2019; U.S. Centers for Disease Control and Prevention) and Superfund sites (1980–2014; EPA) were used. Spearman rank correlation tests were performed to compare aggregate and disaggregated incidence by sex with number of sites containing thyroid cancer-associated contaminants. The test results were summarized in a table and visualized in scatterplots. A table was made to summarize the estimated median household income data by county in New Jersey (2015–2019; U.S. Census Bureau) for descriptive comparison with thyroid cancer incidence and the number of Superfund sites. ArcGIS was used to map sites overlying aggregate thyroid cancer incidence and disaggregated incidence by sex, race, and ethnicity.

RESULTS: We found a significant, positive correlation between male thyroid cancer incidence and total Superfund sites ($p = 0.038$; $\rho = 0.467$), sites with PCBs ($p = 0.022$; $\rho = 0.509$), sites with DEHP ($p = 0.042$; $\rho = 0.458$), and sites with heavy metals ($p = 0.030$; $\rho = 0.484$). No significant correlations were found with aggregate or female thyroid cancer incidence.

CONCLUSION: Although female thyroid cancer incidence was approximately three times higher in NJ between 2015–2019, only male thyroid cancer incidence showed significant, positive correlations with Superfund sites. Studies suggest men could be disproportionately exposed to environmental contaminants by working at industrial sites even before they were listed as Superfund sites or through male-dominated hobbies like fishing. Thus, men with increased exposure risk might benefit from thyroid cancer screening and regulations that reduce exposure risk.

ABSTRACT 97

DEEP LEARNING FOR AUTOMATED MEASUREMENT OF PATELLOFEMORAL ANATOMIC LANDMARKS.

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PURPOSE: Characterizing patellofemoral anatomic parameters is key for understanding joint stability and improving knee arthroplasty outcomes. This project aims to train a deep learning model to identify patellofemoral anatomic landmarks and enable automated measurement of anatomic parameters.

METHODS: This is an IRB-approved retrospective study with CT knee imaging from 483 patients acquired from April 2017-May 2022. Patients were selected from two cohorts: a pathological cohort of patients scheduled for knee arthroplasty (KA), and one with healthy knee anatomy. 14,652 CT images were annotated with the location of 7 patellofemoral landmarks by trainees and approved by a senior MSK radiologist. A two-stage deep learning model was trained to predict landmark coordinates. A modified ResNet50 architecture was used, with an additional supervision mechanism. Models were initialized with self-supervised pre-trained weights on the RadImageNet radiological imaging database.

RESULTS: Spatial accuracy is critical, as all measurements are calculated based on the predicted landmark coordinates. The MAE between predicted and ground truth landmarks was 3.70 pixels/2.0 mm in the healthy cohort and 5.33 pixels/2.6 mm in the KA cohort at a 512x512 resolution. Various patellofemoral parameters were calculated, including transepicondylar axis (TEA) length, TEA-posterior femur axis angle, sulcus medial asymmetry ratio, and sulcus angle. There was no statistically significant difference ($p>0.05$) between the predicted and ground truth measurements for all four parameters in both cohorts, except for the sulcus angle in the healthy cohort.

CONCLUSIONS: We have developed a deep learning model that accurately annotates key anatomic landmarks of the patellofemoral compartment with 3-5 pixel accuracy on a 512x512 image and produces many measurements with no statistically significant difference from human-derived annotations on healthy and pathological knees. This work represents the first deep learning regression model for automated patellofemoral annotation trained on both physiologic and pathologic CT imaging at this scale. This novel model can enable precise, reproducible, and fast measurement. However, sulcus angle measurements, which are highly sensitive to slight landmark shifts, did demonstrate a statistical difference. Additional follow-up work to assess inter- and intra-rater variability compared with the model is needed to fully establish this model's utility.

ABSTRACT 98

IDENTIFYING REGULATORS OF HUMAN ADVENTITIAL FIBROBLAST ACTIVATION THROUGH A GENOME-WIDE CRISPR SCREEN.

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Vascular diseases, including atherosclerosis, are the leading causes of death in the US and world-wide. Previous studies have shown that a quiescent population of fibroblasts that reside in the adventitia (AdvFib) activates and expands upon vascular insults and contribute to the progression of vascular diseases. However, what regulates AdvFib's activation remain unknown. To identify these regulators, we performed a genome-wide CRISPR screen. First, we generated an immortalized human coronary AdvFib line that stably expresses dCas9-KRAB, which can effectively silence any genes of interest. These cells were transfected with a pooled library of guide RNAs covering the entire genome and allowed to expand freely. Guide RNA frequency was assessed at different cell passages to identify those that influences AdvFib activation/proliferation and was followed by subsequent experimental validation. Lastly, bioinformatic analysis was performed to determine regulatory pathways and gene networks involved in AdvFib activation. Sequencing of cells from the first and fifth passages revealed enrichment of several cell cycle inhibitor genes such as CDKN1A and CDKN2A in the fifth passage compared to the first. Furthermore, several genes that are known to be involved in atherosclerosis such as TCF21, ZEB2, and IBSP were also identified by the screen, providing additional layers of support of AdvFib's importance in atherosclerosis. These hits were subsequently validated individually in vitro. Ongoing work include additional repetitions of this screen in different coronary AdvFib cell lines, alongside functional studies of target genes in vivo. In conclusion, a genome wide CRISPRi screen of modulator of AdvFib activation identified numerous potential regulator genes, many of which have known genetic and observational association with human vascular diseases. This study affirms the potentially important role AdvFib plays in human vascular disease and may pave the way to future therapeutics targeting this often neglected cell population.

ABSTRACT 99

THE READABILITY OF ONLINE ENGLISH AND SPANISH PATIENT EDUCATION MATERIALS ON ORTHOPEDIC ANESTHESIA.

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BACKGROUND: Millions undergo orthopedic surgeries annually, emphasizing the need for online patient education materials (PEMs) be easily retrievable, comprehensive, and readable by the general population. PEMs written at a higher than recommended reading level limit patients' access to crucial health information. Federal agencies currently recommend PEMs be written at a 6th-8th grade reading level to be adequately understood by patients.

METHODS: Six pairs of English and Spanish search terms were entered into Google and used to identify relevant online PEMs. English search term results were analyzed for readability using the Flesch Reading Ease (FRE), Fry Graph (FG), and Simple Measures of Gobbledygook (SMOG) Index scores. Spanish search terms were analyzed using the Fernandez-Huerta Reading Ease (FHRE), Gilliam-Peña-Mountain Grade Level (GPMGL), and Spanish SMOG (SOL) as adaptations of the FRE, FG, and SMOG Index. A Bonferroni-adjusted two-tailed P-value of <0.002 was used to indicate statistical significance.

RESULTS: 180 and 146 relevant English and Spanish websites were retrieved. Within each search term, English search results presented more difficult readability scores compared to Spanish results when using the grade level equivalents of the FRE and FHRE scores (general/regional anesthesia, $p < 0.001$; general/neuraxial anesthesia, $p = 0.002$; shoulder replacements, $p < 0.001$; hip replacements, $p = 0.001$). When using the FG and GPMGL, difficulty was significantly higher in English versus Spanish across all search results (general/regional anesthesia, nerve blocks, knee replacements, shoulder replacements, and hip replacements: $p < 0.001$; general/neuraxial anesthesia: $p = 0.001$). English and Spanish search results were comparable when using the SMOG and SOL indices (10th-11th grade reading levels). Overall, English and Spanish search results were written at 10th grade-college and 10th-12th grade levels, respectively.

CONCLUSIONS: These findings reinforce the results of the past literature and suggest that English and Spanish-language PEMs describing anesthesia for orthopedic surgery are written at far higher reading levels than recommended. Additionally, while English PEMs are less readable than their Spanish counterparts, they are more available than related Spanish PEMs overall. Major medical institutions and professional associations need to ensure that the health information they are presenting online is equally readable and comprehensive across multiple language



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SECTION 4:

Mentor Index

MENTOR LAST NAME	MENTOR FIRST NAME	DEGREE	AFFILIATION	POSTER
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Cowan	Ethan	MD	Emergency Medicine	9

MENTOR LAST NAME	MENTOR FIRST NAME	DEGREE	AFFILIATION	POSTER
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Divino	Celia	MD	Surgery	36, 53
Durand-de Cuttoli	Romain	PhD	Neuroscience	74
Fernando	Dinali	MD, MPH	Emergency Medicine	92
Ferrara	James	MD	Oncological Sciences	67
Forsh	David	MD	Orthopaedics	45, 93
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Germano	Isabelle	MD, MBA	Neurosurgery	94
Glazer	Kimberly	PhD	Obstetrics, Gynecology, & Reproductive Science	58
Green	Robert	MD	Pediatrics	59
Gu	Xiaosi	PhD	Psychiatry	91
Gulati	Nicholas	MD, PhD	Dermatology	11
Guttman	Emma	MD, PhD	Dermatology	11, 12, 56
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MENTOR LAST NAME	MENTOR FIRST NAME	DEGREE	AFFILIATION	POSTER
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Hughes	Brandon	DrPH	Neuroscience	14
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Jimenez-Shahed	Joohi	MD	Neurology	71
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Katz	Daniel	MD	Anesthesiology	28, 83
Katz	Craig	MD	Psychiatry	81
Kaushik	Shubhi	MBBS	Pediatrics	59
Keefer	Laurie	PhD	GI / IBD Center	79
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MENTOR LAST NAME	MENTOR FIRST NAME	DEGREE	AFFILIATION	POSTER
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MCGarry	Kaitlyn	DNP	RubiconMD	32, 42
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Meah	Yasmin	MD	Medicine, Geriatrics & Palliative Medicine	69
Mei	Xueyan	DrPH	Radiology	97
Mogilner	Leora	MD	Pediatrics	23
Nadkarni	Girish	MD, MPH	Medicine	19, 33
Nestler	Eric	MD, PhD	Neuroscience	14
Ngai	Ka Ming	MD	Population Health Science & Policy	21, 60
Nomura	Yoko	PhD, MPH	Psychiatry	7
Nonterah	Engelbert	MD, PhD	Social Science, Navrongo Health Research Center, Navrongo, Ghana	66
O'Reilly	Paul	PhD	Genetics and Genomic Sciences	52

MENTOR LAST NAME	MENTOR FIRST NAME	DEGREE	AFFILIATION	POSTER
Oermann	Eric	MD	Neurosurgery, NYU Langone, New York, NY	51
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Oleru	Olachi	MD	Plastic and Reconstructive Surgery	29
Palese	Michael	MD	Urology	17,89
Poeran	Jashvant	MD, PhD	Population Health Science & Policy	16,99
Ranade	Sheena	MD	Orthopaedics	6
Rao	Ajit	MD	Surgery	61
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Soriano	Rainier	MD	Geriatrics and Palliative Medicine	16
Stein	Laura	MD, MPH	Neurology	64
Hu	James	BS	Illuminant Surgical Los Angeles, CA	43
Tadros	Audree	MD, MPH	Surgery, Breast Service, Department of Surgery, Memorial Sloan Kettering Cancer Center, New York, NY	55

MENTOR LAST NAME	MENTOR FIRST NAME	DEGREE	AFFILIATION	POSTER
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Tang	Gilbert	MD	Cardiovascular Surgery	50
Taub	Peter	MD	Plastic & Reconstructive Surgery	29, 76
Tsubokura	Masaharu	MD	Fukushima Medical University School of Medicine, Fukushima, Japan	81
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Wyler	Benjamin	MD, MPH	Emergency Medicine	63
Yanagisawa	Robert	MD	Medicine	81
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Zhang	Linda	MD	Surgery	40, 75
van Gerwen	Maike	MD, PhD	Otolaryngology	5, 95, 96





SECTION 3:

Student Index

STUDENT NAME	MENTOR NAME	AFFILIATION	POSTER NUMBER
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Blum, Melissa	Yoko Nomura, PhD, MPH	Psychiatry	7
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STUDENT NAME	MENTOR NAME	AFFILIATION	POSTER NUMBER
Chiu, Wayland	Jaime Hook, MD	Medicine	15
Colon Iban, Yhan	Jashvant Poeran, MD, PhD Rainier Soriano, MD	Population Health Science and Policy Geriatrics and Palliative Medicine	16
Connors, Christopher	Michael Palese, MD	Urology	17
de Pins, Agathe	Rosalind Wright, MD, MPH	Pediatrics	18
Desman, Jacob	Girish Nadkarni, MD, MPH	Medicine	19
Dhinsa, Jaskiran	Ka Ming Ngai, MD	Population Health Science and Policy	21
Engel, Alexis	Emily Gallagher, MD, PhD	Medicine	22
Fuzailof, Jessica	Leora Mogilner, MD	Pediatrics	23
Gamboa, Sophia	Natalie Smith, MD	Anesthesiology	24
Geffner, Adam	Noah Cohen, MD	Surgery	25
Genet, Simeret	Annemarie Shepherd, MD	Radiation Oncology, Memorial Sloan Kettering Cancer Center, New York, NY	26
Gomez, Ethan	Devika Jutagir, PhD	Psychiatry and Behavioral Sciences, Memorial Sloan Kettering Cancer Center, New York, NY	27
Gottiparthi, Shouri	Daniel Katz, MD	Anesthesiology	28
Guerra, Daniel	Olachi Oleru, MD Peter Taub, MD	Division of Plastic and Reconstructive Surgery	29

STUDENT NAME	MENTOR NAME	AFFILIATION	POSTER NUMBER
Gulati, Shubham	Emanuela Taioli, MD, PhD	Thoracic Surgery	30
Helm, Kaila	Sheela Maru, MD, MPH	Obstetrics, Gynecology, and Reproductive Science	31
Hwang, Soonmyung	Kaitlyn McGarry, DNP	RubiconMD	32
Jiang, Joy	Girish Nadkarni, MD, MPH	Medicine	33
Joasil, Jonathan	Emanuela Taioli, MD, PhD	Thoracic Surgery	34
Johnson, Brian	Leah Blank, MD, MPH	Neurology	35
Johnson, Spencer	Celia Divino, MD	Surgery	36
Jones, DeAnalisa	Eric Sobie, PhD	Pharmacological Sciences	37
Kasdin, Rachel	Czer Anthony Lim, MD, MS	Emergency Medicine	38
Keegan, Jillian	Neil Calman, MD	Family Medicine and Community Health, The Institute of Family Health	39
Kothari, Krsna	Joseph Okello Damoi, MBChB Linda Zhang, MD	Surgery, Kyabirwa Surgical Center Surgery, Mount Sinai	40
Kottapalli, Jagdeesh	Anthony Martinez, MD	Critical Care Medicine, Saint Agnes Hospital, Baltimore, MD	41
Kumar, Anagha	Kaitlyn McGarry, DNP	RubiconMD	42
Kwon, Daniel	James Hu, BS	Illuminant Surgical Los Angeles, California	43
Laurere, Charles	David Forsh, MD	Orthopaedics	45

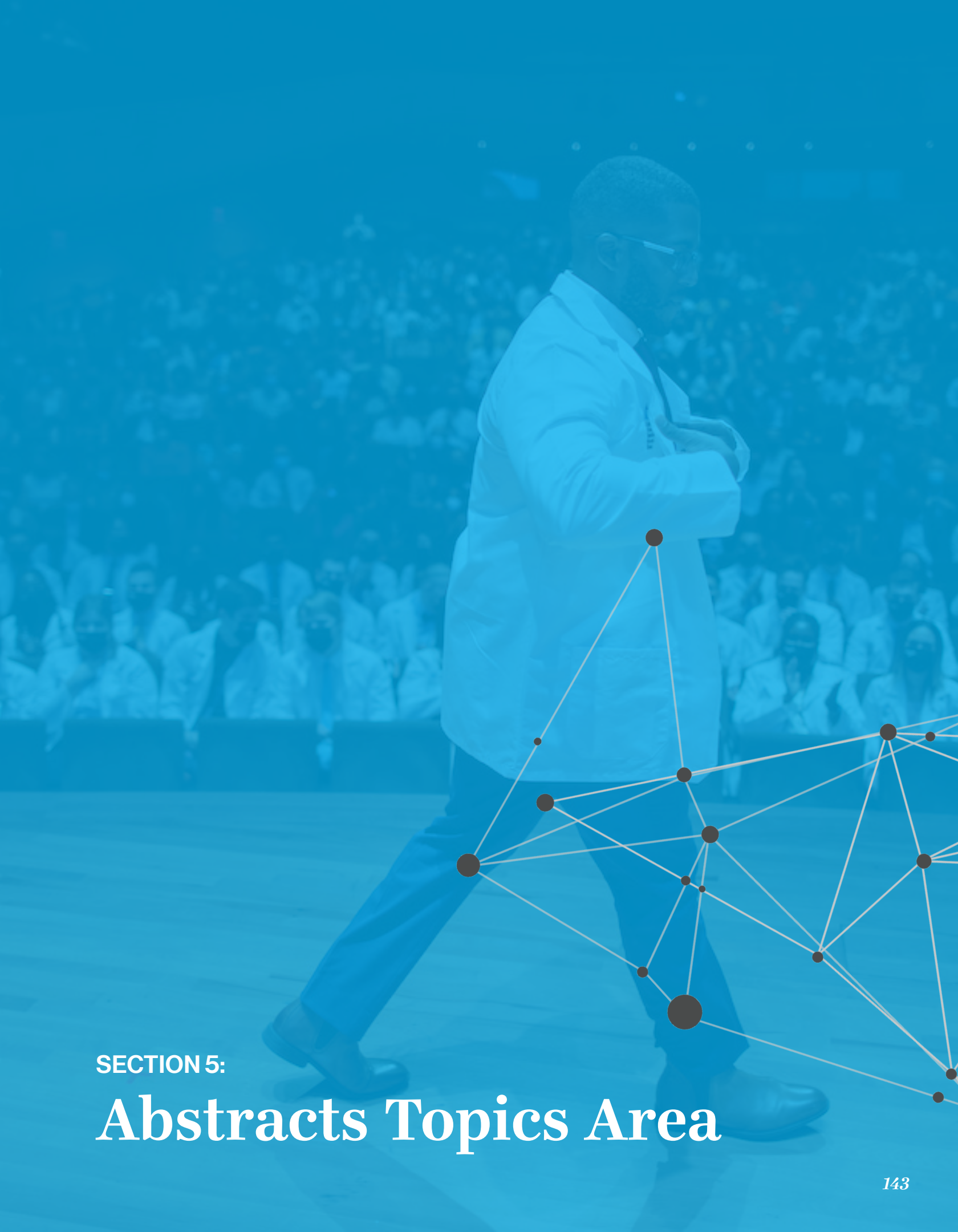
STUDENT NAME	MENTOR NAME	AFFILIATION	POSTER NUMBER
Lavin, Leore	Anthony Rossi, MD	Dermatology, Memorial Sloan Kettering Cancer Center	46
Leong, Alicia	Eunice Yuen, MD, PhD	Psychiatry, Yale Child Study Center, New Haven, CT	47
Lerman, Bonnie	Rosalind Wright, MD, MPH	Pediatrics	48
Letchuman, Sunjay	Ge Bai PhD, CPA	Accounting, Johns Hopkins University, Baltimore, MD	49
Li, Keva	Gilbert Tang, MD	Cardiovascular Surgery	50
Link, Katherine	Eric Oermann, MD	Neurosurgery, NYU Langone, New York, NY	51
Liou, Lathan	Paul O'Reilly, PhD	Genetics and Genomic Sciences	52
Lopez May, Martina	Celia Divino, MD	Surgery	53
Makam, Supriya	Mandip Dhamoon, MD	Neurology	54
Malhotra, Simran	Audree Tadros, MD, MPH	Surgery, Breast Service, Department of Surgery, Memorial Sloan Kettering Cancer Center	55
Manson, Meredith	Emma Guttman, MD, PhD	Dermatology	56
Mathew, Joshua	Rose House, MD	Emergency Medicine	57
Mbaye, Farimata	Kimberly Glazer, PhD	Obstetrics, Gynecology, and Reproductive Science	58
Meshulami, Noy	Robert Green, MD Shubhi Kaushik, MBBS	Pediatrics Pediatrics	59
Meyer, Maria	Ka Ming Ngai, MD, MPH	Emergency Medicine	60

STUDENT NAME	MENTOR NAME	AFFILIATION	POSTER NUMBER
Min, Andrew	Ajit Rao, MD	Surgery	61
Mroz, Victoria	Ryan Wang, MD	Anesthesiology	62
Mukherjee, Neha	Benjamin Wyler, MD, MPH	Emergency Medicine	63
Nandwani, Jaan	Laura Stein, MD, MPH	Neurology	64
Nietsch, Katrina	Samuel Cho, MD	Orthopaedics	65
Okoh, Uchechukwu	Engelbert Nonterah, MD, PhD	Social Science, Navrongo Health Research Center, Navrongo, Ghana	66
Ortega Rios, Carlos	James Ferrara, MD	Oncological Sciences	67
Owusu, Tony	Adimika Arthur, MPH	Population Health Science and Policy, HT4M, San Francisco, CA	68
Park, Yeji	Yasmin Meah, MD	Geriatrics and Palliative Medicine	69
Pereira Vera, Barbara	Deonta Wortham, BA	Rock Health	70
Phillips, Katharine	Joohi Jimenez-Shahed, MD	Neurology	71
Rajjoub, Moutie	Saad Chaudhary, MD	Orthopaedics	72
Restrepo, Mariana	Jashvant Poeran, MD, PhD	Orthopaedics	99
Rivera, Daniel	Constantinos Hadjipanayis, MD, PhD	Neurosurgery, University of Pittsburgh, Pittsburgh, PA	73
Sackey, Julian	Romain Durand-de Cuttoli, PhD	Neuroscience	74

STUDENT NAME	MENTOR NAME	AFFILIATION	POSTER NUMBER
Sacks, Brittany	Linda Zhang, MD	Surgery	75
Saturno, Michael	Peter Taub, MD	Plastic and Reconstructive Surgery	76
Schechter, Marina	Rosalind Wright, MD, MPH	Pediatrics, Environmental Medicine and Public Health	77
Shekhar, Aditya	Ryan Coute, MD	Emergency Medicine, University of Alabama-Birmingham	78
Siddiqui, Wamia	Laurie Keefer, PhD	GI / IBD Center	79
Siddiqui, Saher	Carlos Hernandez-Nieto, MD	Obstetrics, Gynecology, and Reproductive Science	80
Singh, Priya	Robert Yanagisawa, MD Craig Katz, MD Masaharu Tsubokura, MD	Medicine Psychiatry Fukushima Medical University School of Medicine, Fukushima, Japan	81
Sue, Rachel	Daniel Katz, MD	Anesthesiology	83
Suri, Ikaasa	Adriana Krasniansky, MTS, BS	Research, Rock Health	84
Tan, John	Gareth Lema, MD, PhD	Ophthalmology	85
Tizora, Vongai	David Heller, MD, MPH Raymond Aborigo, PhD	Medicine Social Science, Navrongo Health Research Center, Navrongo, Ghana	86
Todd, Rachel	Zeeshan Akhtar, MD, PhD	Transplant Surgery	87
Wang, Cindy	Samuel DeMaria, MD	Anesthesiology	88

STUDENT NAME	MENTOR NAME	AFFILIATION	POSTER NUMBER
Wang, Daniel	Michael Palese, MD	Urology	89
Williams, Aminah	Justin Kim, MD	Anesthesiology, Memorial Sloan Kettering Cancer Center	90
Wolansky, Ivan	Xiaosi Gu, PhD	Psychiatry	91
Yang, Alicia	Dinali Fernando, MD, MPH Ben McVane, MD	Emergency Medicine	92
Yendluri, Avanish	David Forsh, MD	Orthopaedics	93
Young, Tirone	Isabelle Germano, MD, MBA	Neurosurgery	94
Yu, Catherine	Maaike van Gerwen, MD, PhD	Otolaryngology	95
Zaat, Sara	Mathilda Alsen, MPH Maaike van Gerwen, MD, PhD	Otolaryngology	96
Zhou, Alexander	Xueyan Mei, DrPH	Radiology	97
Zhu, Ashley	Paul Cheng, MD, PhD	Cardiology, Stanford University School of Medicine, Stanford, CA	98





SECTION 5:

Abstracts Topics Area

ABSTRACT TOPICS AREA

CATEGORY	POSTER POSITION
Addiction Medicine	13
Anesthesiology, Perioperative, and Pain Medicine	24, 28, 62, 83, 88, 90
Cardiac Surgery	50
Cardiology	33, 37, 98
Cardiothoracic Surgery	30
Critical Care Medicine	41
Dermatology	11, 12, 46, 56
Diagnostic, Molecular and Interventional Radiology	97
Digital Health	70
Emergency Medicine	9, 38, 63, 78
Endocrinology, Diabetes, & Bone Disease	2, 22
Environmental Medicine & Public Health	18, 96
Family Medicine & Community Health	39, 69
Gastroenterology	79
General Internal Medicine	19
General Surgery	53
Genetics & Genomic Sciences	52

ABSTRACT TOPICS AREA

CATEGORY	POSTER POSITION
Geriatrics & Palliative Medicine	42
Medicine, Hematology and Medical Oncology	28
Global Health	32, 57, 66, 75, 81, 86, 92
Healthcare Innovation	84
Health Policy/ Population Health	16, 34, 49, 68
Health System Operations & Strategic Planning	21
Hematology & Medical Oncology	67
Neurology	35, 54, 64, 71
Neuroscience	74, 82
Neurosurgery	10, 43, 51, 73, 94
Obstetrics, Gynecology, & Reproductive Science	7, 31, 58, 80
Ophthalmology	85
Orthopaedics	1, 6, 8, 44, 45, 65, 72, 93, 99
Otolaryngology-Head & Neck Surgery	5, 95
Patient Education in the Primary Care Setting	60
Pathology, Molecular & Cell-Based Medicine	40
Pediatrics	3, 23, 48, 59

ABSTRACT TOPICS AREA

CATEGORY	POSTER POSITION
Pediatrics, Environmental Medicine & Public Health	77
Plastic & Reconstructive Surgery	76
Psychiatry, Psychology, & Mental Health	14, 27, 47, 91
Pulmonary, Critical Care & Sleep Medicine	15
Radiation Oncology	26
Surgery	29, 36, 55, 87
Surgical Oncology	25
Urology	4, 17, 89
Vascular Surgery	61





SECTION 6:

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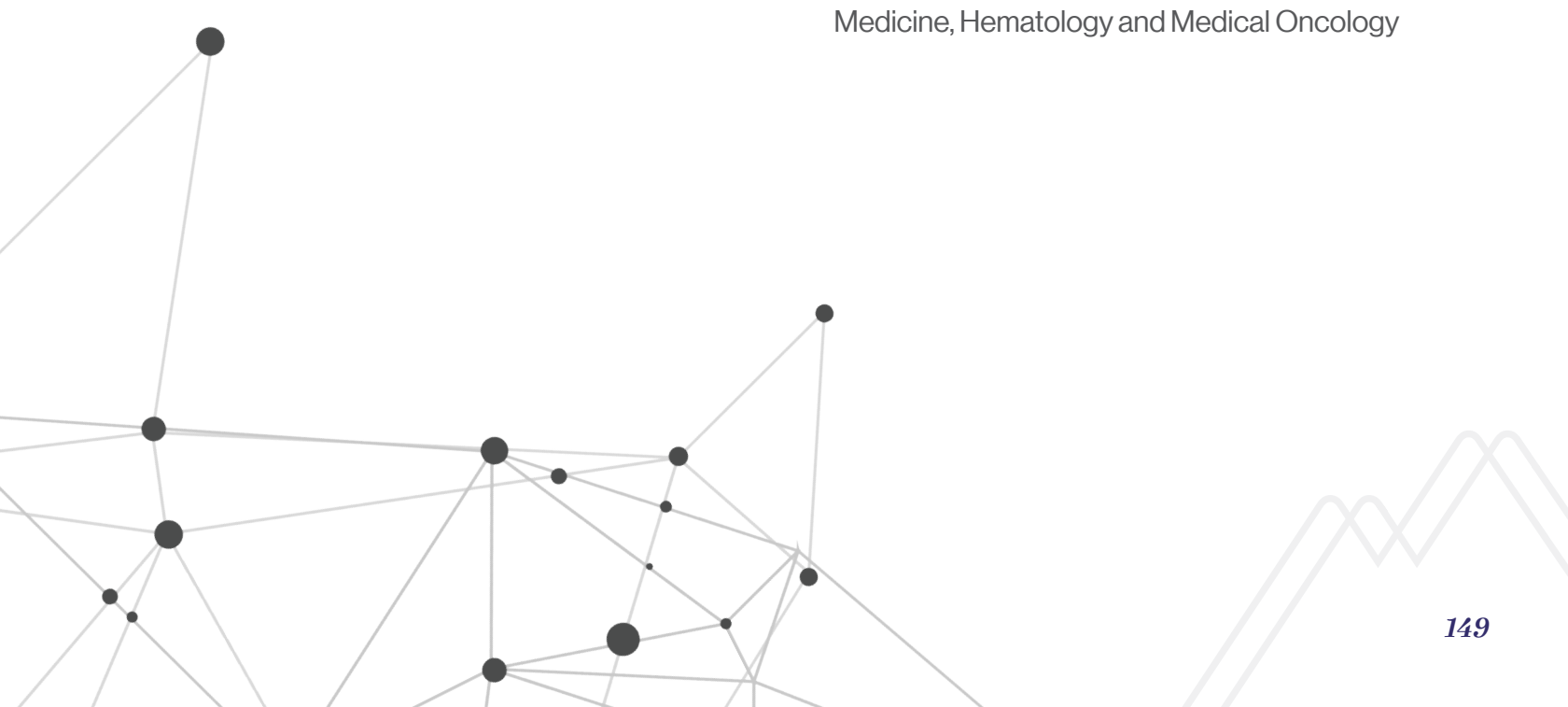
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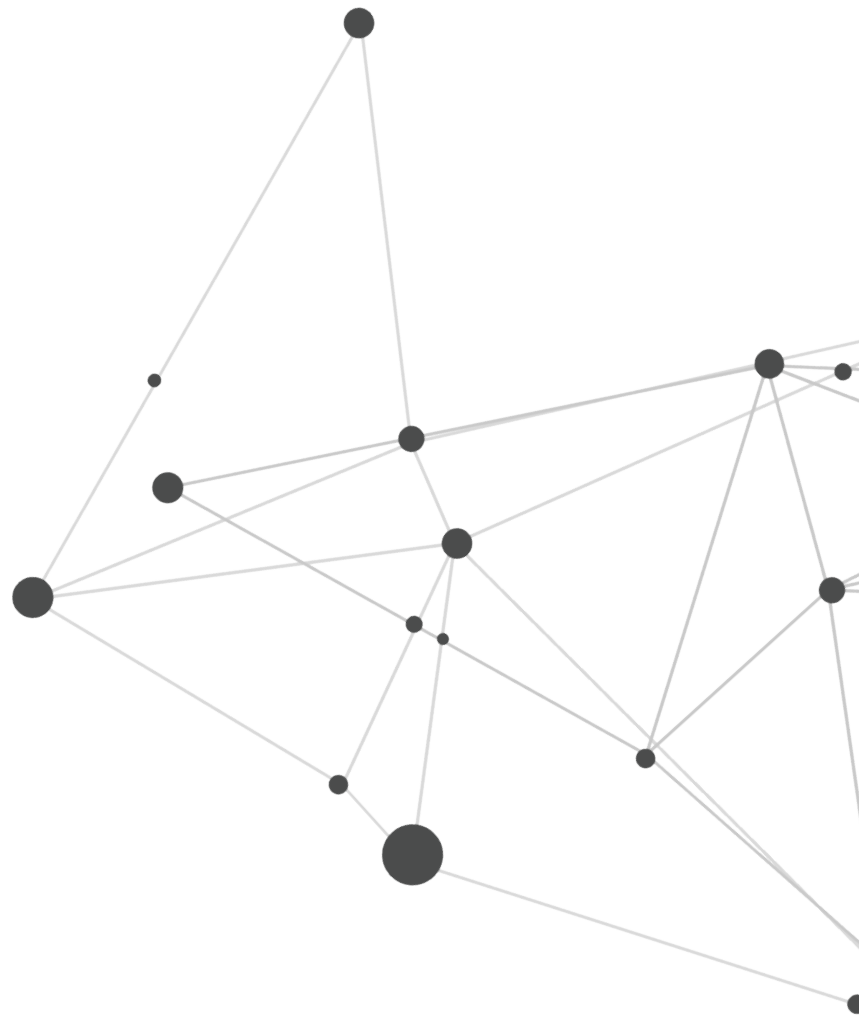
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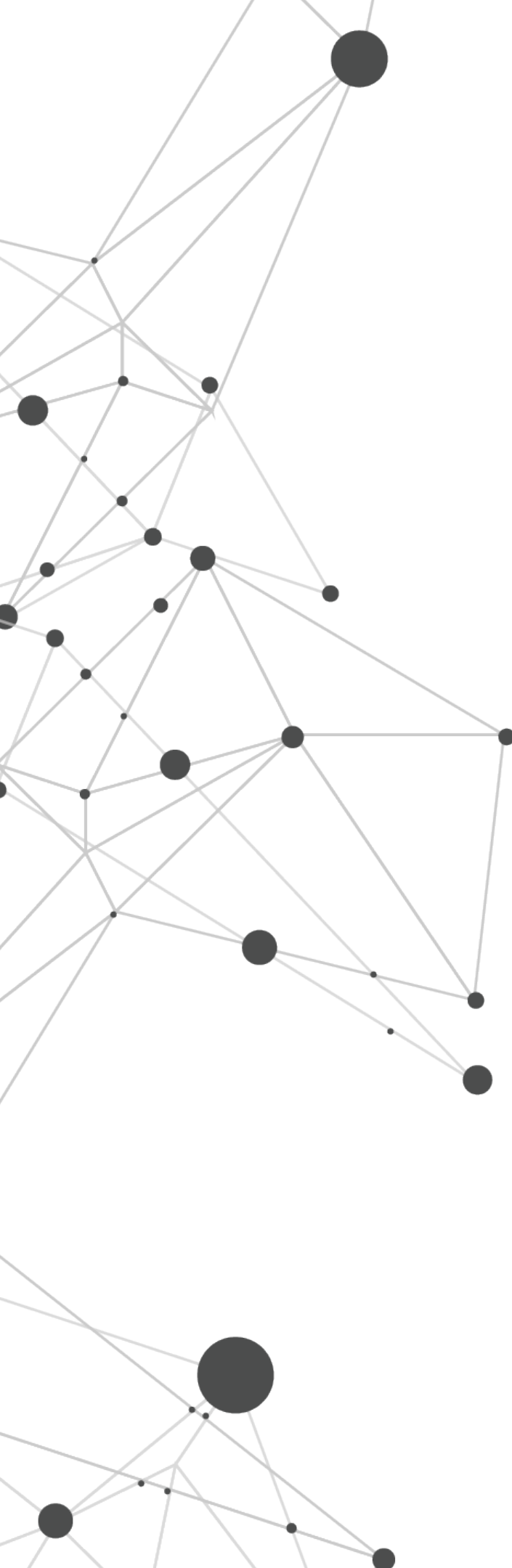
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