Third Annual

KAREN ZIER PhD
MEDICAL STUDENT RESEARCH DAY

Program and Abstracts

THURSDAY, MARCH 19, 2020 12:15 – 4PM

STERN AUDITORIUM AND ANNENBERG WEST LOBBY

Icahn
School of
Medicine at
**Mount
Sinai**

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Third Annual Karen Zier
Medical Student Research Day
March 19, 2020

Welcome to the 25th Annual Medical Student Research Day, named in honor of Karen Zier, PhD, founding Associate Dean for the Medical Student Research Office. For 2020, we will continue the use of digital poster displays, after last year's success.

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

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

—Supinda Bunyavanich, MD
—Kevin Costa, PhD
—Darinka Gadikota-Klumpers, PhD
—Suzanne Garfinkle, MD
—James Iatridis, PhD
—Reena Karani, MD, MHPE
—Tatyana Kushner, MD, MSCE
—Ann-Gel Palermo, DrPH, MPH
—Perry Sheffield, MD

Thank you Grace Oluoch and Yakhira Encarnacion-Patterson, Program Administrators for the Medical Student Research Office, for producing the abstract book and handling the Research Day planning and logistics. And a special thank you to Michelle Sainte, Associate Dean for Academic Administration, for her help and creativity.

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

Keith Sigel, MD, PhD
Director of PORTAL

Mary Rojas, PhD
Director of the Medical Student Research Office

PROGRAM

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

Lunch (Group B)
(ANNENBERG WEST LOBBY)

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

Lunch (Group A)
(ANNENBERG WEST LOBBY)

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

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

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

Mary Rojas, PhD
Director of the Medical Student
Research Office

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

Biobele Braide, MS II
"Linguistic Markers of Psychological
Resilience in World Trade Center First
Responders: A Computer-Based Natural
Language Processing Study"
MENTOR: ADRIANA FEDER, MD

Nickolas Dreher, MS II
"Assessing the Predictive Value of Primary
Impact Testing following Head Injury"
MENTOR: ANDREI HOLODNY, MD

Erica Glaser, MS II
"Effect of Call Center Training on
Rates of Family Planning Services"
MENTOR: LINDA PRINE, MD

Dan Leisman, MS IV
Impaired Angiotensin-II Type 1 Receptor
Signaling Contributes to Sepsis Induced
Acute Kidney Injury
MENTOR: CLIFFORD DEUTSCHMAN, PMD

**Announcement of the Best Posters
and Closing Remarks**

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

BIOBELE BRAIDE, MS II

"Linguistic Markers of Psychological Resilience in World Trade Center First Responders: A Computer-Based Natural Language Processing Study"

Abstract # 12

MENTOR: ADRIANA FEDER, MD

NICKOLAS DREHER, MS II

"Assessing the Predictive Value of Primary Impact Testing following Head Injury" **Abstract # 26**

MENTOR: TANVIR CHOUDHRI, MD

ERICA GLASER, MS II

"Effect of Call Center Training on Rates of Family Planning Services"
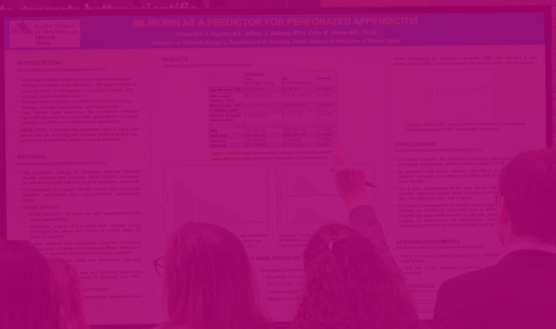
Abstract # 42

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DAN LEISMAN, MS IV

Impaired Angiotensin-II Type 1 Receptor Signaling Contributes to Sepsis Induced Acute Kidney Injury

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7. **PROBING THE ROLE OF THE DREAM COMPLEX IN HUMAN-CELL QUIESCENCE.**
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Caroline Gellman[1], Jacob Appel[2]. [1]Medical Education, [2]Psychiatry. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.
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MENTOR: WINDSOR TING, MD.

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[1]Icahn School of Medicine at Mount Sinai, New York, New York,
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Andrew Warburton[1], Shirley Xu[2], Daniel Clarke[2], Avi Ma'ayan[2]. [1]Medical Education, [2]Pharmacology and Systems Therapeutics. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

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SECTION 2:
Abstracts

ABSTRACT 1

EVALUATION OF A REMOTE EARLY WARNING SYSTEM FOR MATERNAL HYPERTENSION IN RURAL KENYA.

Unwana Abasi[1], Emily Spiera[1], Molly Guy[2], Debora Rogo[3], Mary Anne Nyamogo[4], Khama Rogo[4], Tanya Rogo[5]. [1]Medical Education, [2,3]Other, [4]Obstetrics, Gynecology, and Reproductive Science, [5]Pediatrics. [1,5]Icahn School of Medicine at Mount Sinai, New York, New York, [2]Medtronic Labs, Chanhassen, MN, US, [3,4]Sagam Community Hospital, African Institute for Health Transformation, Luanda, Kenya. [5]BronxCare Health System, Bronx, NY.

BACKGROUND: In Sub-Saharan Africa, hypertensive disorders during pregnancy (HDP) affects nearly one in ten pregnancies and is associated with 16% of maternal mortality. The "Maisha Mapya Hypertension in Pregnancy Feasibility Pilot" (MM Pilot) aims to reduce HDP-related morbidity and mortality in rural settings by utilizing an early warning system (EWS) to remotely monitor hypertension and send alerts via mobile phone.

HYPOTHESIS/RESEARCH QUESTION: Is the MM Pilot's EWS an effective identifier of high-risk patients for HDP, and is it associated with patient knowledge and perceptions of HDP?

METHODS: The study was conducted in Siaya County, Kenya. All enrolled pilot participants were eligible for this cross-sectional study and were invited to complete a 55-item survey. Non-English speakers were excluded. Associations between an EWS alert and risk factors for HDP were tested using chi-squared test and t-tests.

RESULTS: Forty-one of the 95 eligible MM Pilot participants were surveyed. Four were excluded from analysis due to missing data. 10.8% (4/37) of the surveyed women received EWS alerts, compared to 14% (20/143) of all MM Pilot participants. Having an alert was not associated with overall HDP risk (p=0.19), hypertensive diagnosis (p=1), nulliparity (p=0.42), ANC attendance (p=0.17), or lower education level (p=0.13). However, women with alerts were able to name fewer medications recommended for pregnancy compared to women without alerts (p=0.03), and they correctly identified fewer signs and symptoms of HDP (p<0.001).

CONCLUSIONS: Women alerted as high risk for HDP had less knowledge of HDP signs and symptoms and of medications recommended for pregnancy. There was no association between a high-risk alert and having HDP risk factors. Limitations include not surveying all enrolled participants due to time constraints and a lack of high-risk participants who were enrolled in the MM Pilot.

ABSTRACT 2

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

Saloni Agrawal[1], Sahityasri Thapi[2], Ashesh Trivedi[2], Joseph Masci[2].
[1]Medical Education, [2]Medicine. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND: In 2018, The American Heart Association concluded that South Asians are more likely to die from heart disease than any other ethnic group. Despite this, it has been observed that a cohort of patients that present with unstable angina or myocardial infarction to the Emergency Department at Elmhurst Hospital do not return for follow up care. Others instead follow up at private clinics where the quality of care is unstandardized.

HYPOTHESIS/RESEARCH QUESTION: What are the barriers that prevent the South Asian immigrant patients from returning to care?

METHODS: We included South Asian immigrant patients, ages 40-90, treated with emergent cardiac catheterization at Elmhurst Hospital from 2017-2019 who missed their initial two-week follow up, or have not returned for over 6 months. These patients were contacted, consented, and interviewed in their primary language (Hindi, Punjabi, Urdu, Bengali, Nepali) over the phone.

RESULTS: Of the 74 eligible patients, 7 returned to their original country and 20 patients were interviewed. The mean age was 59.9 +/- 8.3 and the majority originated from Bangladesh. 40% of patients were unaware of scheduled appointments, while 30% reported dissatisfaction with the care provided. For the patients that wanted to return to care, follow-up with the cardiology clinic was set up as part of the study.

CONCLUSIONS: We identified that although patients are lost to follow-up at Elmhurst Hospital, the majority follow up with private physicians rather than returning to Elmhurst Hospital cardiology clinic. Inadequate translation during discharge was found to be a major barrier to follow up. These findings provide actionable insight to increase follow up in the South Asian immigrant population at Elmhurst Hospital. Future steps include assessing the quality of care received in private clinics through physician interviews. The study's conclusion requires 30 patient and 10 physician interviews. We hope to conduct most of the patient interviews by March.

ABSTRACT 3

PERCEPTIONS OF SPIRITUAL WELLBEING, RESILIENCE, AND QUALITY OF LIFE IN PATIENTS WITH CLEFT LIP WITH OR WITHOUT CLEFT PALATE AND THEIR CAREGIVERS.

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BACKGROUND: Cleft Lip and Palate (CL/P) deformities impart myriad psychological and emotional challenges for the patient and their caregivers. Religious and spiritual beliefs (RSBs) have been demonstrated to influence patients' coping strategies.

HYPOTHESIS/RESEARCH QUESTION: The psychosocial challenges unique to patients with CL/P and their caregivers may be influenced by RSBs in their treatment.

METHODS: The researchers recruited CL/P patients and their caregivers at an academic cleft/craniofacial center between July 2013 and February 2019 to participate in this study. The following two research instruments were administered: (1) the Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being-Expanded (FACIT-Sp-Ex), a 23-item scale that measures aspects of spiritual wellbeing related to meaning/peace, faith/assurance, and other relational factors such as connectedness, compassion, and forgiveness; and (2) the 10-item Connor-Davidson Resilience Scale (CD-RISC10), a rating scale that measures resilience.

RESULTS: 27 subjects, including 8 patients with a history of CL/P (mean age = 12.4) and 19 primary caregivers, were recruited for this study. The mean total FACIT-Sp-Ex score was 72.2 out of a possible 92 (SD=12.7), indicating a high level of spiritual wellbeing. The total FACIT-Sp-Ex score was lower in the patients with history of CL/P (mean=67.4, SD=11.9) compared to the primary caregivers (mean=74.2, SD=12.8; p=0.03). The mean CD-RISC10 score was 31.1 out of a possible 40.0 (SD=5.8), indicating a moderate level of resilience. The Pearson Correlation Coefficient between the CD-RISC10 and the FACIT-Sp-Ex scores was 0.58 (p=0.04), indicating moderate correlation between the two scales in these respondents.

CONCLUSIONS: The FACIT-Sp-Ex scores indicate that the patients and caregivers have significantly different levels of spiritual wellbeing (p=0.03) and that their resilience levels are also moderate. The Pearson Correlation Coefficient of 0.58 indicated that there is moderate correlation between spiritual wellbeing and resilience.

ABSTRACT 4

ANALYSIS OF MASTECTOMY SPECIMEN DIMENSIONS AS A TEMPLATE FOR AUTOLOGOUS AND IMPLANT-BASED BREAST RECONSTRUCTION.

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BACKGROUND: Breast reconstruction after total mastectomy has increased in recent years as surgical techniques continue improving. While the weight of the breast specimen is used to guide autologous reconstruction intraoperatively, other parameters such as the cranial-caudal, medial-lateral and anterior-posterior dimensions are given less priority. Such mastectomy dimensions have never been reported in plastic surgery literature.

HYPOTHESIS/RESEARCH QUESTION: The purpose of this study is, for the first time to report mastectomy specimen dimensions and analyze potential implications for autologous breast reconstruction surgery.

METHODS: A retrospective review of all patients who underwent total mastectomy within the Mount Sinai Health System between 2008 and 2019 was identified yielding, 639 cases. Next, all cases were screened to verify the appropriate labeling of specimen dimensions in each pathology report, excluding cases that did not fit our criteria. The height, width, thickness weight of the mastectomy specimen were then recorded. Statistical tests were executed with Prism 8® for descriptive analyses. Mean values and a Pearson correlation matrix were calculated for the width, length, and thickness of the mastectomy specimens.

RESULTS: From an initial screening of 610 cases, 90 breast pathology reports fit the inclusion criteria and thus were included in data collection. The mean values were: height = 16.25 cm, width = 16.93 cm, and thickness = 4.53 cm. The Pearson correlation matrix for Height vs. Width, r = 0.775, and Width vs. Thickness, r = 0.572.

CONCLUSIONS: Results of current analyses and strong correlations indicate that mastectomy specimen dimensions have the potential to better inform intraoperative decision-making by approximating skin dimensions for autologous flap insetting. These analyses have implications for the protocol intraoperative specimen dimension recording and refinement of autologous flap insetting. As such, further data collection and analyses will be conducted and presented pending acceptance of this abstract.

ABSTRACT 5

THE EFFECT OF NECK SHAFT ANGLE ON MUSCLE AND JOINT CONTACT FORCES FOLLOWING REVERSE SHOULDER ARTHROPLASTY.

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BACKGROUND: Current reverse shoulder arthroplasty (RSA) implants use varied designs in an attempt to minimize high complication rates with severe rotator cuff deficiency. While the impact of humeral neck shaft angle (NSA) on scapular notching is well documented, the optimal implant design to minimize this without compromising stability remains unclear. Current studies using commercial implants are limited by confounding variables of the prosthetics.

HYPOTHESIS/RESEARCH QUESTION: The aim of this study is to analyze the isolated effect of NSA on stability via muscle and joint contact forces.

METHODS: Using a biomechanical model based on the Visible Human Male (VHM) anatomy, abduction (AB), scaption (SC), forward flexion (FF), and 9 ADLs were simulated. The model was adapted to describe onlay RSA geometry with 3 clinically significant NSAs: 135°, 145° and 155°. Simulations of a full rotator cuff tear (FRCT) and one with the subscapularis repaired (SRCT) were then applied. Shoulder muscle loads and compression and shear forces on the glenosphere during each motion were computed using inverse dynamics and static optimization.

RESULTS: Regardless of tear extent, increasing NSA (135°-155°) increased middle deltoid and shear force and decreased teres minor and compressive force. Compared to the FRCT model, the SRCT model decreased both compressive and deltoid loads during AB and SC, and both posterior deltoid and teres minor loads during FF. Additionally, the subscapularis repair had a greater effect on the posterior deltoid during AB and teres minor during FF with increasing NSA, and on the posterior deltoid during FF and compression during SC with decreasing NSA.

CONCLUSIONS: The results of this study show that following RSA with massive rotator cuff tears, the NSA has a significant effect on joint stability, which can change slightly with subscapularis repair. To add validity, this experiment will be applied to models using real patient CTs. Combined results can then be used to further optimize RSA prosthetic design.

ABSTRACT 6

THE ROLE OF GENDER IN BARIATRIC SURGERY CASE SELECTION, READMISSION RATES, AND POSTOPERATIVE COMPLICATIONS.

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BACKGROUND: With obesity rates continuing to rise in the United States, bariatric surgery has become increasingly common, well-established and effective treatment of morbid obesity and its comorbid conditions with laparoscopic Roux-en-Y gastric bypass (LRYGB) and laparoscopic sleeve gastrectomy (SG) being two of the more common types of bariatric procedures.

HYPOTHESIS/RESEARCH QUESTION: This study analyzes disparities and the role that gender plays in differing outcomes of LRYGB and SG.

METHODS: Using the American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) database for years 2015-2017, demographics, postoperative complications, and readmission rates were assessed. Chi-square analysis, Student t-test, and propensity analyses were performed where appropriate.

RESULTS: Significantly more men than women underwent SG (68.5% vs 63.0%, P < 0.0001) and significantly more women than men underwent LRYGB (37.0% vs 31.5%, P < 0.0001). Men experience more severe complications after LRYGB such as cardiac arrest (0.2% vs 0.1%, P = 0.02) and prolonged intubation (0.4% vs 0.2%, P = 0.02), and more symptoms after SG such as myocardial infarction (0.2% vs 0.1%, P = 0.006). Unplanned readmissions are higher in women (3.5% vs 2.8%, P = 0.0012).

CONCLUSIONS: Although fewer men undergo bariatric surgery than women, when they do present for operation, they qualify as higher risk patients due to increased comorbidities and higher BMI. Due to the lower rates of postoperative complications associated with SG and the increasing popularity of SG over other procedures, men are more likely to receive SG over LRYGB. However, they still experience more severe postoperative complications. Regardless, our results show that even after controlling for comorbidities, complications, procedure type, men are less likely to be readmitted. This discrepancy highlights that men may be lost to follow-up, suggesting the need for additional discharge interventions, including an outpatient monitoring protocol, to improve quality of care.

ABSTRACT 7

PROBING THE ROLE OF THE DREAM COMPLEX IN HUMAN-CELL QUIESCENCE.

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BACKGROUND: Both Type 1 and Type 2 diabetes are associated with decreased numbers of normally functioning pancreatic -cells. This suggests that the regeneration of residual endogenous -cells may be a potential avenue for diabetes treatment. Our lab has previously reported that the harmine family of small molecules induce human -cells to regenerate and do so by inhibiting the kinase DYRK1A, which modulates NFaT activity. Preliminary data suggest that an additional mechanism by which DYRK1A inhibition may be inducing -cell proliferation is by switching the balance between the repressive (quiescent) and proliferative forms of the DREAM complex. The proliferative form of the DREAM complex (the MMB complex) consists of MYBL1 or MYBL2 and the five member MuvB complex that collectively activate cyclins and Cdks. The repressive form of the DREAM complex includes the MuvB complex and the transcriptional repressors DP1, RBL1/RBL2. Preliminary data indicate that DYRK1A recruits the repressive form.

HYPOTHESIS/RESEARCH QUESTION: The existence of a functional DREAM complex in the human -cell has never been demonstrated. We believe that the balance between the proliferative and repressive forms of the DREAM complex is controlled in -cellsby DYRK1A and that DYRK1A inhibitors promote replication in quiescent -cells via this mechanism. Our goal is to delineate the repertoire of DREAM members in the human -cell and clearly demonstrate that DYRK1A inhibitors employ this mechanism.

METHODS: Using qPCR and RNAseq analysis of 22 sets of FACS-sorted human -cells, we have shown that -cells abundantly express most repressive DREAM members, but not the proliferative MYBL1/2 members.

RESULTS: qPCR and RNAseq analyses of 5 sets of harmine-treated and DYRK1A silenced human -cells also show significant upregulation of canonical mitogenic DREAM targets and increased expression of MYBL1/2.

CONCLUSIONS: At present, we are defining and validating antisera for DREAM/MMB constituents in order to perform ICC, IB and functional Co-IP experiments in the future.

ABSTRACT 8

A CENTRALIZED VASCULAR ACCESS SERVICE TEAM FOR TUNNELED CATHETER PLACEMENT REDUCES TIME-TO-INSERTION IN A LARGE ACADEMIC MEDICAL CENTER.

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BACKGROUND: Tunneled catheters (TCs) with and without subcutaneous ports are needed in patients who require prolonged vascular access. To increase placement of appropriate catheter type and decrease wait times, a centralized Vascular Access Service Team (VAST) was implemented at Mount Sinai Hospital in 2018. VAST is a centralized consult service that bridges multiple hospital departments (Vascular Surgery, Interventional Radiology, Critical Care, Nephrology, Interventional Cardiology, and Surgical Oncology) and conducts uniform evaluations for appropriate vascular access.

HYPOTHESIS/RESEARCH QUESTION: The objective of this review was to examine the efficacy of VAST.

METHODS: A retrospective review of prospectively collected data was performed for all patients undergoing TC placement from January 2018-December 2018 (n=415). Records from patients who underwent TC placement from January 2016-November 2016 were retrospectively analyzed to form a comparison cohort (n=147).

RESULTS: 415 TCs were placed by VAST: 57 subcutaneous ports, 142 Hickman catheters, and 216 Permcaths. In two instances, a consult for a TC for hemodialysis was reevaluated for implantation of a port. Indications for TC placement included chemotherapy, hemodialysis, parenteral nutrition, and long-term antibiotics. 375 patients (90.3%) underwent TC placement within two business days of the initial consult and 262 (63.1%) underwent TC placement within one business day. Prior to implementation of VAST, 24.5% of patients waited longer than two business days, compared to 9.6% with VAST. Mean wait time was reduced from 2.04 business days to 1.35 business days with VAST (p<0.01). Without VAST, informal consults occurred in 22% of cases, and multiple services were consulted on 13% of cases. Informal consults and consults to multiple services were eliminated with VAST.

CONCLUSIONS: The Vascular Access Service Team is effective in expediting TC placement, evaluating patients for appropriate catheter type, improving efficiency, and may serve as a model across the health system and beyond.

ABSTRACT 9

APATHY IN DEEP BRAIN STIMULATION FOR PARKINSON'S DISORDER.

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BACKGROUND: Parkinson's disease (PD) is a movement disorder related to pathology in parallel basal ganglia systems for motor and motivational control. Though subthalamic deep brain stimulation (STN DBS) is highly effective for motor symptoms, PD patients with STN DBS frequently suffer from an increase in apathy. The mechanism of DBS-related apathy is presently unknown.

HYPOTHESIS/RESEARCH QUESTION: Here, we use diffusion tractography to model white matter connections in patients to examine the relationship between stimulation location and apathy following STN DBS for PD.

METHODS: Patients with PD who received STN DBS at ISMMS and had consented to follow-up were recruited and re-consented over the phone. Clinical evaluations of apathy following surgery were defined using the Starkstein Apathy Scale (SAS)—scored from 0-42 with increasing apathy. The volume of tissue activated (VTA) around stimulation contacts was modeled on each patient's postsurgical CT. Using preoperative MRI data, probabilistic tractography was performed to calculate patient specific structural connectivity maps from VTA seeds to whole brain. The Freesurfer toolbox was used to perform cortical parcellation to extract cortical regions of interest (motor and non-motor cortices). Finally, structural connectivity ratios (motor to non-motor connections) were compared between high (SAS>15) and low (SAS<15) apathy groups.

RESULTS: Patients with apathy (n=3) showed significantly less stimulation of prefrontal limbic and associative relative to motor tracts, compared to patients without apathy (n=3). The motor to limbic connectivity ratio was significantly higher in high-apathy ($2.971 \pm .05$) versus low apathy ($2.605 \pm .035$) individuals.

CONCLUSIONS: This finding suggests that apathy during STN DBS for PD may be a manifestation of insufficient limbic and/or associative stimulation. This characterization of apathy and its neurocircuitry in surgical PD patients may help in the development of a novel circuit-oriented DBS approach for PD.

ABSTRACT 10

COMPLICATIONS AFTER TEXTURED VS. NON-TEXTURED BREAST IMPLANTS IN DIRECT-TO-IMPLANT BREAST RECONSTRUCTION: A PROPENSITY SCORE ANALYSIS.

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BACKGROUND: Direct-to-implant (DTI) breast reconstruction has been a useful method for single stage reconstruction in select women undergoing skin-sparing or nipple-sparing mastectomies. The risks and benefits of smooth and textured implants in primary breast augmentation and in two-stage tissue expander-based alloplastic breast reconstruction have been examined in the literature. However, little data exists examining associations between textured and smooth implants on complications in DTI breast reconstruction.

HYPOTHESIS/RESEARCH QUESTION: This study uses propensity score matching to compare differences in major postoperative complications between textured implants and smooth implants in DTI breast reconstruction. Based on established literature, we hypothesized that textured implants would be associated with decreased rates of clinically-significant capsular contracture.

METHODS: Retrospective chart review was conducted to obtain demographic, comorbidity, surgical and post-operative complication information. Descriptive statistics were performed to characterize the patient cohort and association between texture type, patient characteristics and postoperative complications. A propensity score matching algorithm was used to eliminate bias stemming from clinical covariates.

RESULTS: On univariate analysis of the matched groups, implant type was significantly associated with need of revisional surgery (21.9% smooth vs. 18.5% textured, p=0.04). Implant type was not significantly associated with the other postoperative complications: implant exchange, explant, capsule revisions, necrosis, hematoma, and seroma.

CONCLUSIONS: Textured implants were associated with significantly lower rates of overall revisions for both matched and unmatched cohorts in this study. There were otherwise no statistically significant differences between textured and smooth implants for debridement of full-thickness skin necrosis, hematoma evacuation, seroma aspiration or evacuation, and scar revision.

ABSTRACT 11

CREATION OF AN INTEGRATED MAPPING SYSTEM THAT PROVIDES INSIGHTS INTO MEDICATIONS IN RELATION TO NDC, RXNORM AND ATC DRUG LIBRARIES.

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BACKGROUND:
The therapeutic class of a medication can provide important clinical insights. RxNorm, a free resource from the National Library of Medicine, maps commercially available drug nomenclatures to a common nomenclature using current National Drug Codes (NDC). NDCs can be assigned to Anatomical Therapeutic Chemical (ATC) classes based on active ingredients. Epic, a commonly used Electronic Health Record (EHR), has developed mapping that provides ATC codes for many, but not all medications. Software that can map NDC to ATC1-5 classes outside of the EHR could have better performance. It could also be used for EHR-independent machine learning platforms such one that predicts prognosis for oncology patients.

HYPOTHESIS/RESEARCH QUESTION: Will the creation of a mapping system provide more coverage of medications prescribed via EHR and their relation to ATC drug libraries?

METHODS: Software was developed to map EHR user medication data to ATC1-5 using current NDC data. The design was based upon open source work by Kury et. al. (AMIA Annu Symp Proc 2017:2070). The sample set for testing consisted of inpatient medications ordered at the Mount Sinai Hospital from July 2011 to 2018. Jenkins, an automation server, was used to download RxNorm data and deploy the software into a real time machine learning platform.

RESULTS: 13,656 unique Epic medication IDs were extracted. The software mapped 51.63% of the Epic IDs provided to 1495 unique ATC1-5 classes, versus the in-Epic match rate of 71.38% ($p < 0.00001$). Mapping took 358 seconds on a MacBook Pro laptop.

CONCLUSIONS: Automated mapping of NDC to ATC1-5 class is possible however the match rate was inferior to in-EHR mapping primarily due to the exclusion of historical NDC data. The software was easily incorporated into a real time machine learning model to provide ATC1-5 classes as a feature to predict prognosis for oncology patients.

ABSTRACT 12

LINGUISTIC MARKERS OF PSYCHOLOGICAL RESILIENCE IN WORLD TRADE CENTER FIRST RESPONDERS: A COMPUTER-BASED NATURAL LANGUAGE PROCESSING STUDY.

Biobele Braide[1], Leah Cahn[2], Elisa Monti[2], Sahil Garg[2], Agnes Norbury[2], Danielle Torres[2], Cindy Aaronson[2], Robert Pietrzak[3], M Mercedes Perez-Rodriguez[2], Adriana Feder[2]. [1]Medical Education, [2,3]Psychiatry. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York, [3]Yale School of Medicine, New Haven, Connecticut.

BACKGROUND: An emerging literature demonstrates the value of automated natural speech analysis in characterizing PTSD; however, few studies have explored its utility in identifying factors associated with resilience. We applied automated language processing methods to open-ended interview responses to determine semantic variables associated with resilience to trauma among World Trade Center (WTC) rescue and recovery workers.

HYPOTHESIS/RESEARCH QUESTION: We hypothesize that narratives from highly resilient WTC responders: 1. will be characterized by lower avoidance, sensory dominance, self-referencing, and anxious arousal; 2. will be characterized by higher positive emotional content, and evidence of higher social connectedness.

METHODS: WTC responders recruited from the WTC Health Program Responder Cohort (group-matched by age, race, marital status, and education) were recorded during open-ended interviews, describing their 9/11 and WTC-recovery experiences. Participants (n=5 per group) were classified into "highly resilient" [high WTC-related exposure severity, no lifetime psychiatric disorders, mean (SD) past-month CAPS-5= 1.2(1.3)] and "chronic PTSD" [met past-month DSM-5 PTSD criteria; mean (SD) past-month CAPS-5= 37.2(2.9)]. Analyses of interview transcripts were conducted with Language Inquiry and Word Count (LIWC) software.

RESULTS: Narratives of highly resilient WTC responders were characterized by a lower proportion of first person singular pronouns (Cohen's d=1.60, p=0.04), and of words related to perceptual processes (d=1.60, p=0.04), positive emotions (d=1.52, p=0.04), negative emotions (d=1.46, p=0.07), and anxiety (d=0.97, p=0.17), compared to the PTSD group. Conversely, narratives of highly resilient responders contained a higher proportion of words relating to friends (d=1.60, p=0.058).

CONCLUSIONS: Findings suggest potential linguistic markers of psychological resilience in a population exposed to a common traumatic event. Further study might help identify new mechanisms underlying resilience to trauma.

ABSTRACT 13

PRESCRIBING PRACTICES OF POSTOPERATIVE ANTIBIOTICS IN THE SURGICAL MANAGEMENT OF GYNECOMASTIA.

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BACKGROUND: In an era of antibiotic resistance, evidence-based practices are essential to prevent excess antibiotic use and ensure early treatment in those at risk for infection. Since recommendations for antibiotic use in gynecomastia surgery are absent in the literature and ASPS guidelines, this study aimed to discover which patient demographics and procedure techniques affect the prescribing of antibiotics.

HYPOTHESIS/RESEARCH QUESTION: Does an association exist between patient demographics and use of prophylactic antibiotics at discharge?

METHODS: Subjects were identified by ICD 9/10 codes for gynecomastia surgery, and data were reviewed retrospectively (2011-2019). 54 operations were reviewed. Medical and surgical history, medications, age, BMI, intraoperative details (antibiotics, drains, liposuction, incision type, and gland excision), discharge antibiotics, postoperative complications, follow-up time, compression, smoking, alcohol, and drug use were recorded. Rates of antibiotics prescribed at discharge were calculated between discrete groups, and Fisher's exact test was used to determine significant differences between groups.

RESULTS: Rates of prophylactic antibiotics prescribed at discharge included 90% in patients > 30 years old, 58% in patients < 30 (p=0.014); 84% in patients with history of obesity (BMI>30), 52% in patients with no history of obesity (p=0.017); 87% in patients who received inframammary incisions, 52% in patients who received periareolar incisions (p=0.042).

CONCLUSIONS: Significant differences in prophylactic postoperative antibiotic prescribing are seen based on age, history of obesity, and incision type. With rare instances of infection and limited evidence for benefit of prophylactic antibiotics in gynecomastia surgery, the results of this study suggest antibiotics are being unnecessarily prescribed to certain patient populations. Large-scale antibiotic efficacy research is needed to determine which, if any factors indicate benefit that outweighs the risk of prophylactic antibiotic use in gynecomastia surgery.

ABSTRACT 14

TRENDS IN IUD AND IMPLANTABLE CONTRACEPTION PROVISION ACROSS THE INSTITUTE FOR FAMILY HEALTH, 2014-2019.

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BACKGROUND: IUDs and implantable contraception (aka long acting reversible contraception or LARC) are increasingly popular, for U.S. females using contraception, LARC has gone from 6% (2008), to 11.6% (2012), to 14.3% (2014). The Institute for Family Health (Institute) is a large FQHC network in NYC and upstate staffed largely by family physicians with 3 family medicine residency programs. The Institute is a leader within family medicine in providing reproductive health care and training. Recently Institute clinicians have perceived that the number of LARC procedures are decreasing; this would be unexpected given the rise in LARCs.

HYPOTHESIS/RESEARCH QUESTION: What is the trend in LARC insertion and removals across the Institute? Do rates differ by site or location?

METHODS: Using billing data we identified LARC insertion and removal procedures at Institute sites from 2014-2019 (N=15,488 procedures). We examined number and trends in procedures for all sites together, and compared upstate to NYC sites, and NYC residency to NYC non residency sites.

RESULTS: From 2014-2019 overall IUD and implant insertions decreased by 10.6% and 0.5%, respectively. IUD and implant removals increased by 20.5% and 25.8% respectively. All procedures appear to have a slower rate of change in the past two years. The vast majority of the procedures were done at NYC, not upstate sites. In NYC, approximately 90% of the procedures were done at one of the two residency sites.

CONCLUSIONS: Between 2014-2019, we found a decrease in the number of LARC insertions and an increase in removals. The vast majority of LARC procedures were done at residency sites, thus residents continue to have LARC training opportunities. Since the Institute was an early leader in LARC provision, we theorize that the apparent plateau in procedures may represent saturation of the patient population.

ABSTRACT 15

UTILIZATION OF A MODIFIED SENDAI VIRUS TO ATTENUATE IMMUNE CHECKPOINT INHIBITOR EXPRESSION IN A UROTHELIAL CARCINOMA CELL LINE.

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BACKGROUND: Immune checkpoint inhibitors such as atezolizumab are currently available as second-line agents in recurrent or metastatic bladder cancer in patients who have failed platinum-based chemotherapy. Yet, due to their systemic administration, they are associated with considerable toxicity. Sendai virus is a murine paramyxovirus with no innate virulence in humans but with documented oncolytic activity and tumor cell specificity.

HYPOTHESIS/RESEARCH QUESTION: Sendai virus can deliver miRNA constructs to urothelial carcinoma cells to down-regulate checkpoint molecules with lower toxicity than immune checkpoint inhibitors.

METHODS: We modified the genome of the Sendai virus to express green-fluorescent protein (GFP) as well as an artificial microRNA targeting the novel immune checkpoint ligand HLA-E. We then infected the urothelial carcinoma cell line 639V with the modified Sendai virus at serially decreasing titrations. Three days post-infection we performed a flow cytometric analysis to quantify the expression of HLA-E and markers of anti-viral response.

RESULTS: At three-days post-infection, we observed GFP fluorescence in 639V cells exposed to the modified virus at titers greater than 100 infectious units (IU), indicating successful infection. We found that at the 100IU titration, there was downregulation of HLA-E relative to uninfected control cells. Strikingly, at the highest viral titer of 1 million IU, HLA-E expression was upregulated. We observed a strong correlation with enhanced interferon-alpha response by tumors at high viral concentrations that likely explains increased HLA-E expression.

CONCLUSIONS: In this experiment, we successfully inhibited the expression of HLA-E using a modified Sendai virus carrying an artificial microRNA at an intermediate viral titer. As a next step, we plan to expand the repertoire of microRNA to target other genes of interest, including programmed-death ligand 1, and subsequently test the modified Sendai viruses with primary tumor cells in co-culture with tumor-infiltrating lymphocytes.

ABSTRACT 16

RISK-FACTORS FOR INTRAVESICAL RECURRENCE OF NON-MUSCLE INVASIVE BLADDER CANCER IN AN UNTREATED COHORT.

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BACKGROUND: Identifying risk-factors that are associated with increased risk of recurrence is important for risk-stratifying patients with non-muscle invasive bladder cancer (NMIBC). Previous studies have identified variables such as tumor diameter, grade, and multifocal disease as being associated with increased risk of recurrence, however these study populations include patients who are both treated and untreated.

HYPOTHESIS/RESEARCH QUESTION: Risk factors for recurrence in an untreated cohort will differ from a treated cohort.

METHODS: Our population consisted of patients in Stockholm County diagnosed with NMIBC between 1995-96. We excluded participants who received intravesical therapy, chemotherapy, or radiation after initial staging. We identified 254 patients who met inclusion criteria. We performed a multivariate Cox regression analysis to generate hazard ratios using four common recurrence predictors: tumor diameter (<3cm vs. >3cm), multifocality, stage (pathologic Ta vs. T1), and grade.

RESULTS: The median age of the cohort at diagnosis was 73 years. 173 (68%) were men, 222 (87%) had pathologic Ta disease, and 68 (26%) of primary tumors were high-grade. 137 (54%) of patients had an intravesical recurrence during the median follow-up period of 10.3 years. Median time to first recurrence was 10 months. Both tumor diameter >3cm (HR 2.1, 95% CI 1.3 – 3.2) and multifocal disease (HR 2.2, 95% CI 1.5 – 3.3) were associated with greater risk of intravesical recurrence. Stage T1 (HR 1.0, 95% CI .55 – 1.9) and high-grade disease (HR 1.0, 95% CI .63 – 1.6) were not significantly associated with increased risk of recurrence in our cohort.

CONCLUSIONS: We found that, of four variables commonly cited as predictors for recurrence, only tumor diameter greater than 3 centimeters and multifocal disease were associated with greater hazard for recurrence in an untreated cohort. Unlike in previous studies, higher grade and stage were not associated with increased risk of recurrence. This information lends new insight into the natural history of NMIBC.

ABSTRACT 17

HYPERGLYCEMIA AND ADVERSE PREGNANCY OUTCOMES IN TWINS: DO THE HAPO FINDINGS APPLY TO TWIN PREGNANICES?

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BACKGROUND: In 2008, the HAPO study demonstrated in singleton pregnancies that maternal hyperglycemia less severe than in diabetes was associated with adverse pregnancy outcomes.

HYPOTHESIS/RESEARCH QUESTION: To determine if hyperglycemia in twin pregnancies without gestational diabetes mellitus (GDM) is associated with an increased risk of adverse pregnancy outcomes.

METHODS: Retrospective cohort study of twin pregnancies in a single MFM practice between 2005 and 2019 who underwent two-step GDM screening at 24-28 weeks. We excluded women with pregestational diabetes or GDM. We examined the association between maternal glycemia and adverse outcomes. Glycemia was defined as the 1-hour GCT in all women and each of the four values of the 3-hour OGTT in women who failed the GCT (≥130 mg/dL). Primary outcomes were preeclampsia, cesarean delivery, and neonatal hypoglycemia in either twin. Statistical tests used included Pearson correlation, Student's t-test, chi-square for trend, and logistic regression.

RESULTS: 847 women underwent a GCT and 246 women underwent an OGTT. On Pearson correlation, none of the glucose values were associated with an increased risk of adverse outcomes, aside from a negative correlation between the fasting GTT value and neonatal hypoglycemia ($r=-0.1$, $p=0.027$). This was no longer statistically significant after controlling for gestational age and maternal BMI through logistic regression (adjusted beta coefficient -0.129, $p=0.052$). Women with the primary outcomes did not have higher mean GCT or OGTT values than women without these outcomes. There was no increased risk of adverse outcomes with increasing quartiles of the glucose values.

CONCLUSIONS: Elevated maternal glucose levels in non-diabetic twin pregnancies are not associated with adverse outcomes. The altered physiology of twin gestations may modify the effect of maternal hyperglycemia on perinatal outcomes as compared to singletons. Current approaches to screening for GDM during pregnancy might not adequately account for these unique considerations among twins.

ABSTRACT 18

ETHNIC VARIATIONS IN THE PROTEOMIC BLOOD SIGNATURE OF ATOPIC DERMATITIS AND PSORIASIS PATIENTS.

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BACKGROUND: Atopic dermatitis (AD) and psoriasis are characterized by systemic inflammation and increased cardiovascular risk, as well as ethnicity-specific differences in clinical presentation. Our previous skin studies showed differences in T-helper pathway activation among AD patients of different ethnicities.

HYPOTHESIS/RESEARCH QUESTION: To evaluate the blood proteomic signature of AD and psoriasis patients of different ethnicities compared to their respective controls

METHODS: An OLINK high-throughput proteomic assay was used to evaluate the blood of AD patients (29 European American/EA, 28 Asian, 20 African American/AA) and psoriasis patients (23 EA, 12 Asian) of different ethnicities, with healthy controls (12 EA, 13 Asian, 9 AA) included for comparison.

RESULTS: While all AD patients showed increases in general inflammation markers (MMP12), Th2 (CCL13), and T-cell activation (EZR), Asian and AA AD patients had far more cell injury and inflammatory response than EA AD patients, as suggested by increases in pro-apoptotic caspases 3/8 and endothelial activation/adhesion markers (uPAR, LGALS8, CDH3) ($P<0.05$). AA AD patients were differentiated from other ethnic groups by the lack of significant dysregulation in Th1 chemokines (CXCL9, CXCL10) ($P<0.05$, $P<0.01$). Also, AA AD had lowest Th17 chemokines (KYNU, PI3) expression levels, while Asian AD had highest levels, comparable to psoriasis. AD patients, especially of Asian and AA background, expressed significantly higher total and allergen-specific IgEs compared to both psoriasis patients ($R=0.52$, $P=0.085$) and controls ($P<0.05$).

CONCLUSIONS: Our blood phenotyping data suggest that systemic immune responses in both AD and psoriasis patients vary greatly among different ethnic populations.

ABSTRACT 19

THE MITOCHONDRIAL UPR AND MELANOMAGENESIS.

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BACKGROUND: Melanoma is a skin cancer with the highest mortality and poor prognosis. Over 60% of melanomas have a BRAF V600E mutation, which confers constitutive activation of the MAPK pathway leading to cellular transformation. Our laboratory discovered that oncogenic signaling leads to activation of the mitochondrial unfolded protein response (mtUPR), but little is known about its implication on melanomagenesis. By investigating transcription factors necessary to activate the mtUPR: CHOP, ATF4, and ATF5, new prognostic or therapeutic targets may be discovered.

HYPOTHESIS/RESEARCH QUESTION: Human cancer cell lines with oncogenic mutations of the MAPK pathway will have constitutive activation of the mtUPR, resulting in marked expression of ATF4, ATF5, and CHOP.

METHODS: SK-MEL-28 cells, a V600E mutated melanoma cell line, were stained with antibodies against ATF4, ATF5, and CHOP. IMR-90, a human lung fibroblast cell line, were used as controls. Immunofluorescent stains of each protein were conducted with HSP-60, a mitochondrial marker, in order to localize the transcription factors. Immunohistochemistry (IHC) stains on 33 paraffin-fixed human biopsies, including normal skin, benign & dysplastic nevi, and melanoma, were conducted. All samples were stained with antibodies against ATF4, ATF5, and CHOP. Thapsigargin-treated, paraffin-embedded IMR-90 cells were used as positive controls. Secondary antibody-only IHC stains were negative controls.

RESULTS: SK-MEL-28 cells showed localization of ATF4/5 to the nucleus. CHOP was present only in the cytoplasm. IHC stains show ATF5 in benign nevi, dysplastic nevi, and melanoma samples with uniform intensity. CHOP and ATF4 stains with a spectrum of intensities across samples, though not statistically significant, suggest expression differences.

CONCLUSIONS: These findings suggest that differential expression of mtUPR may be present in melanoma and allow for differentiate of subtypes. Future experiments will focus on how expression of these markers may correlate to other aspects of malignancy course.

ABSTRACT 20

EXTERNAL BEAM RADIATION THERAPY OF HEPATOCELLULAR CARCINOMA INVOLVING THE INFERIOR VENA CAVA +/- RIGHT ATRIUM.

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BACKGROUND: Patients with hepatocellular carcinoma (HCC) that compresses or invades the inferior vena cava (IVC) +/- the right atrium (RA) generally have a poor prognosis and can be very symptomatic due to vascular flow impediment.

HYPOTHESIS/RESEARCH QUESTION: While standard of care for gross vascular involvement is systemic therapy, palliative external beam radiation therapy (EBRT) might improve symptoms and outcomes in this population. We sought to evaluate this hypothesis in a population of patients at a large academic medical center.

METHODS: We performed a retrospective review of patients in a single institution with a diagnosis of HCC with compression or invasion of the IVC +/- atrial involvement between July 2010 and August 2018. Patients were assessed for pre-existing symptoms, acute treatment toxicity (CTCAE v4.0), response to treatment, progression free survival (PFS), and overall survival (OS). Kaplan-Meier curves were used to estimate PFS and OS.

RESULTS: 7/13 (54%) patients who reported peripheral edema prior to EBRT experienced symptomatic relief from treatment, as did 3/7 (43%) with dyspnea on exertion, 5/6 with shortness of breath (83%), and 1/3 with chest pain (33%). 17 of 21 patients (81%) with a post-EBRT CT scan experienced shrinkage of the treated lesion. 1-year progression-free survival (PFS) and overall survival (OS) was 63% and 64%, respectively, and median PFS and OS was 5.0 and 10.6 months, respectively. 9/26 patients (35%) experienced no toxicity from EBRT. 14 (54%) had grade 1 toxicity: 4 had (15%) fatigue, 3 (12%) anorexia, and 3 (12%) dyspepsia. 2 (8%) patients had grade 2 toxicity: 1 (4%) grade 2 nausea, and 1 (4%) grade 2 anorexia and grade 2 diarrhea. Zero patients experienced ≥ grade 3 toxicity.

CONCLUSIONS: Untreated, patients with HCC invading or compressing the IVC generally have a poor prognosis. Our results suggest that palliative EBRT is effective in alleviating symptoms in this cohort of patients and is generally well-tolerated, suggesting that it should be considered as another therapeutic option.

ABSTRACT 21

SEIZURE PREVALENCE IN AUTOIMMUNE ENCEPHALITIS.

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BACKGROUND: Autoimmune encephalitis (AE) refers to a group of diseases caused by autoantibodies against various neuronal receptors or cell surface proteins that result in a broad range of symptoms, including seizures, cognitive deficits, and psychiatric symptoms. Presentation can vary widely by autoantibody.

HYPOTHESIS/RESEARCH QUESTION: This study aims to elucidate the prevalence of seizures in different types of AE. The clinical spectrum of AE is not yet fully understood, and understanding the burden of seizures in AE will improve diagnosis and management of AE patients.

METHODS: This study is a systematic review of all studies reporting seizure and/or EEG data of more than 10 patients with AE. We searched the databases PubMed, Embase, and PsychINFO from inception to June 1, 2019 for articles pertaining to AE and seizure. We screened 3,863 papers and found 124 unduplicated manuscripts that met our inclusion criteria, from which we extracted data on patient demographics, antibody type, seizure incidence, and EEG findings.

RESULTS: We reviewed the data of 3,186 individual patients with AE, of whom 2,313 (72.6%) had clinical seizures during the course of their illness. 1,960 patients had anti-NMDA receptor encephalitis (anti-NMDARE), the most common AE subtype, of whom 1,428 (72.9%) had clinical seizures during the course of their illness. Of the 1,995 patients with AE who had EEG data available, 1,765 (88.5%) had some EEG abnormality. For the 1,330 patients with anti-NMDARE and EEG data available, 1,230 (92.5%) had EEG abnormalities. Seizures were more common in younger patients with any AE (p=0.017) and in those with anti-NMDARE (p=0.005); there was no difference in seizure prevalence between sexes.

CONCLUSIONS: Results of this study provide an accurate and systematic estimate of the prevalence of seizures in AE, clarifying the seizure burden in this population. Future studies may include identifying other patient factors associated with seizures in AE and further characterizing the EEG abnormalities found in different types of AE.

ABSTRACT 22

PROTEOMIC SKIN PROFILE OF MODERATE TO SEVERE ATOPIC DERMATITIS.

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BACKGROUND: Based on previous investigations on proteomic blood signatures, atopic dermatitis (AD) is being increasingly regarded as a systemic disorder. In addition, efforts are being made to identify biomarkers using minimally invasive techniques.

HYPOTHESIS/RESEARCH QUESTION: There is no literature on the proteomic skin profile of AD patients. We hope to define the skin proteome and relate it to genomic skin and proteomic blood profiles in the same individuals.

METHODS: Biopsies of lesional and non-lesional were obtained with blood samples in patients with moderate to severe AD and healthy individuals. Proteomic (skin and blood) and genomic (skin) evaluations were performed using OLINK proteomics and RNA seq respectively. Analysis was performed with R-language using the *limma* framework to model protein and gene expression. Proteins with fold changes (FCHs) > 2.0 and false discovery rate (FDR) < 0.05 were considered differentially expressed.

RESULTS: Inflammatory markers were significantly raised in both lesional and non-lesional skin compared to healthy controls including MMP12, Th2/IL1RL1/IL-33R, IL-13, CCL17; Th1/ CXCL10; Th17/Th22/PI3, CCL20, and S100A12 (FCH > 2.0, FDR < 0.05). Cardiovascular associated proteins including SELE, MMPs, PGF, MPO, FABP4, VEGFA were also upregulated compared to controls (FCH > 2.0, FDR < 0.05). Proteomic signatures in skin demonstrated more significant marker upregulation compared to their blood signature counterparts (p < 0.05). Protein and gene expression in skin were correlated when comparing upregulation of inflammatory and cardiovascular risk proteins (r =0.410, p < 0.001).

CONCLUSIONS: Significant marker upregulation in skin versus blood proteomes suggests the proteomics of skin may be a better measure for disease severity and more useful in determining management. The correlation between proteomic and genomic expression in skin suggests that translation occurs in the skin. Overall, high inflammatory expression in non-lesional skin reaffirms the systemic nature of AD.

ABSTRACT 23

EMANUEL LIBMAN: THE LIFE AND LEGACY OF NEW YORK'S LEGENDARY N OF THE CENTURY PHYSICIAN.

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BACKGROUND: Emanuel Libman (1872-1946) was a renowned Mount Sinai physician, pioneer scientist, and fervent advocate for Jewish causes at the turn of the century. In the words of George Baehr, "In many ways his life summed up the condition and development of clinical medicine in his era." This project will address the paucity of biography on Libman and discuss the context surrounding the rise of a major medical figure in twentieth-century New York, in order to understand the dynamic history of medical ideas and practices.

HYPOTHESIS/RESEARCH QUESTION: 1. Discuss the context surrounding the rise of a major medical figure in twentieth century New York. 2. Respond to changes in medical practice guided by a historically informed concept of professional responsibility and patient advocacy

METHODS: Primary and biographical sources were gathered from The Mount Sinai Archives. At the National Library of Medicine (NLM), the Libman papers, consisting of 28 boxes of exchanges, press releases, and scientific papers were reviewed. The Manuscripts and Archives Department at Yale University provided sources pertaining to Libman's philanthropy efforts. Archive Grid, PubMed, and the NLM online archives were also sources of biographical information.

RESULTS: Libman's legacy as an early physician-scientist paved the way for the intersection of medicine with social justice, philanthropy, and clinical and bench research. As one of the early clinicians to reach celebrity status, Libman used his influence to advance philanthropic causes, including funding study abroad for medical students and providing refuge to Jewish scientists. As a researcher, Libman brought knowledge and expertise of bacteriology and blood culture techniques to the United States, leading to major breakthroughs in the study and classification of bacterial and Libman-Sacks endocarditis.

CONCLUSIONS: Future plans include deeper study on the societal discrimination Libman faced, including how accusations of homosexuality and the rise of anti-Semitism affected his career and influenced his legacy.

ABSTRACT 24

MEASURING THE NEUTRAL ZONE: CHOOSING A METHOD TO QUANTIFY SPINAL INSTABILITY.

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BACKGROUND: Low back pain is a leading cause a global disability and is highly associated with motion segment (MS) instability resulting from injury or degeneration.[1] The neutral zone (NZ) is a sensitive parameter for MS instability and is a critical metric employed to test the efficacy of intervertebral disc repair strategies.

HYPOTHESIS/RESEARCH QUESTION: It is unknown if these different NZ-quantifying methods compare, or how each method fits dissimilar loading profiles. The objectives of this study were therefore to 1) assess agreement of NZ parameters between previously described methods and 2) determine each method's ability to fit distinct load-deflection curve profiles.

METHODS: Skeletally mature MSs from rat caudal (triphasic profile, n=7) and rat lumbar (viscoelastic profile, n=10) spines (Fig 1A) were dissected and stored at -20°C until testing and cyclically tested following lab protocols.

RESULTS: Caudal MSs produced triphasic load-deflection curves with a visually distinct NZ regions, while lumbar MSs produced viscoelastic load-deflection curves where the NZ region was less distinct. NZ measurements within a method tended to be more variable when determined from triphasic compared to viscoelastic profiles.

CONCLUSIONS: This study shows that differences exist between NZ measuring methods that also depend on the load-deflection curve profile. This result disfavors the idea that methods can be applied interchangeably across profiles. NZ is a commonly calculated parameter sensitive to spinal instability, and therefore it is imperative to detail the calculation method to better characterize disc mechanical behavior.

ABSTRACT 25

THE EXPERIENCES OF MINORS SEEKING ASYLUM IN THE UNITED STATES: A QUALITATIVE ANALYSIS.

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BACKGROUND: Minors constitute a significant portion of refugees seeking asylum in the US. Exposure to trauma during development, lack of agency, and failure of protective factors put refugee youth at a higher risk of developing psychological sequelae. The Mount Sinai Human Rights Program provides integrated, trauma-informed services for survivors of human rights abuses.

HYPOTHESIS/RESEARCH QUESTION: What are the experiences of minors seeking asylum in the US, and what are the physical and psychological sequelae of these experiences?

METHODS: We reviewed personal declarations and clinician affidavits from 36 minors under the age of 21 who requested forensic evaluations at the MSHRP as part of their applications for asylum. We used a modified consensual qualified research (CQR-M) approach to analyze descriptive data.

RESULTS: Within this cohort, gang violence (47%), family-based violence (44%), and gender-based violence (44%) were the most commonly cited reasons for seeking asylum. In addition, 82% of minors experienced a threat of harm or death, 75% experienced assault, 67% experienced verbal abuse, and 32% experienced neglect in their countries of origin. Evaluators documented a wide range of psychological sequelae; 80% of minors presented with symptoms of depression, anxiety, and trauma-related disorders at the time of their applications. Yet, almost three quarters of minors reported enrollment in school and two thirds reported factors related to adaptive functioning. Despite their exposure to trauma, they exhibited signs of resilience and health-promoting strengths.

CONCLUSIONS: These results elucidate the human rights violations experienced by minors seeking asylum in the US. While they encountered significant violence in their countries of origin and during their migration, they demonstrated an ability to overcome adversity. By highlighting the physical and psychological sequelae affecting minor asylum seekers, as well as their resilience, this study may inform developmentally-appropriate, trauma-informed, and strengths-based resources.

ABSTRACT 26

ASSESSING THE PREDICTIVE VALUE OF PRIMARY IMPACT TESTING FOLLOWING HEAD INJURY.

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BACKGROUND: Concussions are a major public health concern. However, there are few prognostic metrics that can accurately quantify concussion severity in order to anticipate recovery time and symptom regression. The Immediate Post-Concussion Assessment and Cognitive Test (ImPACT) is a widely-used neurocognitive assessment that can diagnose and track recovery from concussions.

HYPOTHESIS/RESEARCH QUESTION: This study assesses whether initial ImPACT scores, collected within 48 hours of the injury, can predict persistence of concussion at follow-up.

METHODS: Results from 6912 ImPACT tests were compiled from 2,161 unique student athletes, ages 12-22. We defined a novel metric, Severity Index (SI), which is a summation of the number of standard deviations from baseline at the 80% confidence interval for each of the five composite scores reported by ImPACT. Patients were binned into groups based on SI (0-4, 4-8, 8-12, 12+) and the relationships between composite scores, symptom profiles, and recovery time were compared between groups using one-way and two-way ANOVAs and Kaplan-Meier plots. A logistic regression assessed the value of SI for predicting concussion at follow-up.

RESULTS: Patients with higher SI at diagnosis were more likely to still be concussed at their first follow-up ($F_{(4,2299)} = 70.90$; $p < 0.0001$). Higher SI groups also displayed consistently slower recovery over a 42-day period and were more likely to report symptoms in all four symptom clusters (Migraines, Cognition, Sleep, and Neuropsychiatric). When controlling for sex, age, number of previous concussions, days between assessments, and location, SI significantly increased the odds of being concussed at follow-up (OR=1.122, 95% CI=1.088–1.142, $p < 0.001$). This model showed good discrimination with AUC=0.74.

CONCLUSIONS: SI is a useful prognostic tool for assessing head injury severity. Concussions with higher initial SI tend to last longer and have broader symptom profiles. These findings can help patients and providers estimate recovery based on similar ImPACT score profiles.

ABSTRACT 27

PLASMINOGENURIA IS ASSOCIATED WITH PODOCYTE INJURY, EDEMA AND KIDNEY DYSFUNCTION IN INCIDENT GLOMERULAR DISEASE.

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BACKGROUND: Urinary plasminogen/plasmin, or plasmin(ogen)uria, has been demonstrated in proteinuric patients and exposure of cultured podocytes to plasminogen results in injury via oxidative stress pathways.

HYPOTHESIS/RESEARCH QUESTION: A causative role for plasmin(ogen) as a "second hit" in kidney disease progression has yet to be demonstrated *in vivo*, and the association between plasmin(ogen)uria and kidney function in glomerular diseases remains unclear.

METHODS: We performed comparative studies in a puromycin aminonucleoside (PAN) nephropathy rat model treated with amiloride, an inhibitor of plasminogen activation, and measured changes in plasmin(ogen) uria and urinary endothelin-1 (ET1). In a glomerular disease biorepository cohort (n=128), we measured time-of-biopsy albuminuria, proteinuria, and plasmin(ogen)uria for correlations with kidney outcomes.

RESULTS: Increased glomerular plasmin(ogen) was found in PAN rats and FSGS patients. PAN nephropathy was associated with increases in plasmin(ogen)uria, proteinuria, and urinary ET1. Amiloride was protective against PAN-induced glomerular injury, reducing urinary ET1 and oxidative stress. In patients, we found associations between plasmin(ogen)uria and edema status as well as eGFR.

CONCLUSIONS: Our study demonstrates a role for plasmin(ogen)-induced podocyte injury in the PAN nephropathy model, with amiloride having podocyte-protective properties. In one of largest glomerular disease cohorts to study plasminogen, we validated previous findings while suggesting a potentially novel relationship between plasmin(ogen)uria and eGFR. Together, these findings suggest a role for plasmin(ogen) in mediating glomerular injury and as a viable targetable biomarker for podocyte-sparing treatments.

ABSTRACT 28

DENDRIN IS A CANDIDATE TUMOR SUPPRESSOR FOR GLIOBLASTOMA.

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BACKGROUND: Although therapeutic options have nominally improved overall survival rates in glioblastoma multiforme (GBM), further research is still needed to identify key targets involved in the molecular mechanisms underlying its pathogenesis.

HYPOTHESIS/RESEARCH QUESTION: While the protein dendrin has previously been associated with pro-apoptotic effects in the kidney, its role in the brain and in the setting of GBM remains unknown.

METHODS: Using publicly available databases, we determined whether relative expression levels of dendrin were altered in glioma compared to normal tissue samples. Quantile-normalized data for dendrin were evaluated by the SurvExpress tool to assess clinical correlations with overall survival outcomes by meta-analysis. Western blotting and immunohistochemistry were conducted to investigate changes in dendrin in GBM tumor samples and cell lines. We used lentiviral vectors to stably overexpress or knockdown dendrin in the GBM lines U87 and GB1 in order to assess the effects of altered dendrin levels on spheroid formation, migration/invasion, and cell growth.

RESULTS: Dendrin is expressed in adult astrocytes and shows reduced expression in glioblastoma. Lower dendrin expression is independently associated with worse overall survival in low- and high-grade gliomas. Dendrin protein is low in both glioblastoma cell lines and human tumors by western blotting, as compared to healthy brain tissue. However, dendrin present in glioblastoma shows a cytoplasmic sequestration compared to nuclear localization at baseline. *In vitro*, depletion of dendrin results in reduced spheroid formation whereas overexpression promotes migration and anchorage-independent growth.

CONCLUSIONS: Here, we present strong supportive evidence for a novel function of dendrin as a candidate tumor suppressor for GBM, though the specific mechanism-of-action remains unclear. Given this putative function, dendrin represents an attractive target for the development of targeted therapeutic interventions in GBM.

ABSTRACT 29

IDENTIFYING SOCIAL DETERMINANTS OF HEALTH AMONG MOUNT SINAI ADULT EMERGENCY DEPARTMENT PATIENTS.

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BACKGROUND: Although social determinants of health (SDoH), socioeconomic factors that impact health, are widely recognized in the medical community, little is known about the SDoH needs among vulnerable populations in the emergency department (ED) setting.

HYPOTHESIS/RESEARCH QUESTION: What are the SDoH needs of ED patients at the Mount Sinai Hospital?

METHODS: This is a prospective observational study of randomly selected adults 18 years and older in the Mount Sinai ED. Participants were interviewed using 27 previously validated SDoH questions on education level, income, financial strain and demographics such as age, race/ethnicity. To define poverty, we used NY State poverty levels to categorize participants living with a size-related household income ≤ 138% of the poverty line. Statistics were run using SAS 9.4.

RESULTS: 250 participants were interviewed from July to November 2019 and self-reported as: 65% female, 35% male, 49% Black/African American, 14% Non-Hispanic White and 41% Hispanic/Latino. 48% reported financial strain, 49% reported having Medicaid, 38% reported living below the poverty line and 44% reported an education level of a high school (HS) diploma or less. Non-whites were more likely to a HS diploma or less (p=0.02, OR=1.91) and to live below the poverty line (p=0.049, OR=2.01). Hispanic/Latino ethnicity was associated with having Medicaid (p=0.03, OR=1.74) and living below the poverty line (p=0.003, OR=2.73). Participants who reported having a HS diploma or less were associated with living below the poverty line (p=0.003, OR=2.76). Those who reported living below the poverty line tended to face financial strain (p=0.046, OR=1.97).

CONCLUSIONS: In our study, ED patients reported significant SDoH risks- Medicaid insurance, living below the poverty line, and low education level which appear conducive to greater financial strain. Our data suggests that poverty and lower education level disproportionately impact non-white populations in the Mount Sinai ED. Continued SDoH assessment in the ED may inform future interventions.

ABSTRACT 30

REAL WORLD PREVALENCE AND TREATMENT OF LARGE VESSEL OCCLUSION STROKE.

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BACKGROUND: In 2015, multiple randomized clinical trials established endovascular thrombectomy (ET) as standard of care for large vessel occlusion (LVO) stroke. Despite the overwhelming benefit of ET, recent data suggests utilization rates may be as low as 3% for all acute ischemic stroke (AIS) patients nationwide. Real-world data on the prevalence of LVO are necessary to properly identify the population of potentially ET-eligible patients.

HYPOTHESIS/RESEARCH QUESTION: We sought to determine the prevalence and treatment rates of consecutive AIS patients presenting to an urban, comprehensive stroke center (CSC) with LVO.

METHODS: We conducted a retrospective review of directly-presenting, consecutive AIS patients at our CSC from 2017-2018. We calculated the percentage of LVO rate of treatment with ET, stratified by site of occlusion.

RESULTS: Of 520 consecutive patients who received vessel imaging, 21.5% (n=112) had LVO. 27.6% (n=29) of 105 patients with 1 site of occlusion were treated with ET. Percentage of LVO and its treatment, stratified by site of occlusion, were: 12.3% (n=13) and 10.3% (n=3) left internal carotid artery (ICA), 15.2% (n=16) and 6.9% (n=2) right ICA, 5.7% (n=6) and 20.7% (n=6) left M1, 11.4% (n=12) and 20.7% (n=6) right M1, 10.5% (n=11) and 20.7% (n=6) left M2, 13.3% (n=14) and 10.3% (n=3) right M2, 1.9% (n=2) and 6.9 (n=2) basilar. 42.9% (n=3) of 7 patients with multiple sites of occlusion received ET, 66.7% (n=2) of whom had vertebral-basilar dual occlusions.

CONCLUSIONS: In our cohort, 1 in 5 AIS patients had LVO, and of those, almost 1 in 3 had lesions amenable to ET. Prevalence and treatment rates of LVO vary by site of occlusion. Systems of care must prioritize rapid detection and treatment of LVO. Further research may elucidate reasons for variable rates of treatment by site of occlusion.

ABSTRACT 31

LONG TERM FOLLOW UP OF OCCLUSIVE COMPLICATIONS AFTER EVAR.

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BACKGROUND: A significant complication of EVAR is iliac limb or associated graft occlusion. This study analyzed graft occlusion requiring reintervention after EVAR.

HYPOTHESIS/RESEARCH QUESTION: How predictable and durable are reinterventions after EVAR?

METHODS: A retrospective review of a prospectively maintained database was conducted. From 1992 to 2019, 1638 patients underwent EVAR (145 procedures included the use of femorofemoral bypass grafts). 56 patients required reintervention for occlusion of an iliac limb or of a femorofemoral bypass performed as a component of the index EVAR procedure. Survival rates and freedom from reintervention rates were estimated using Kaplan-Meier analysis.

RESULTS: 33 patients were treated for iliac limb occlusion of the EVAR graft, 11 for iliac limb stenosis or kinking, 10 for occlusion of femorofemoral bypass grafts that were performed as a component of the index EVAR procedure, and 2 for acute aortic occlusion of AUI device (Table 1). Average follow-up was 51.95 +/- 51.17 months. Decreased survival in patients who received reinterventions for graft occlusion compared to patients without reinterventions was not significant (P=0.059). 2-year 1° and 2° patency rates for iliac limb occlusion treated with femorofemoral bypass were 75.2% and 80% respectively. One patient in this group experienced limb amputation. All cases of iliac limb stenosis treated with angioplasty and stenting or femorofemoral bypass remained patent throughout follow-up. For treatment of femorofemoral bypass performed as a component of the index EVAR procedure, 2-year 1° and 2° patency rates of the reinterventions were 50% and 75% respectively.

CONCLUSIONS: Femorofememoral bypass grafts and iliac stenting used to treat limb occlusion and stenosis each attain acceptable patency. Treatments of femorofemoral bypass performed during EVAR appear to have decreased patency.

ABSTRACT 32

CYTOMEGALOVIRUS IMMUNOPOSITIVITY DOES NOT CORRELATE WITH ABNORMAL SPERM PARAMETERS WITHIN A LARGE SPERM DONOR POPULATION.

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BACKGROUND: Multiple studies have shown that cytomegalovirus (CMV) can be detected in semen and sperm. However, there is conflicting evidence in the literature about the association between CMV infection and sperm quality and/or reproductive potential.

HYPOTHESIS/RESEARCH QUESTION: The objective of this study was to investigate the association of CMV immunopositivity within a robust cohort of sperm donors with sperm quality.

METHODS: Males who donated a sperm sample between November 2007 and December 2017 were included in this retrospective, cohort study. Sperm donors were segregated into two groups. Group A included donors who tested CMV IgG+ within a month of their first donation. Group B included donors who tested IgG- for the whole duration of their donation period. Donors with IgM+ results or IgG seroconversion during the donation period were excluded. The following sperm parameters were collected upon every donation: total motile sperm, total sperm count, average motility, and average concentration. Data on BMI and age at first visit was also collected. The association between IgG status and sperm quality was evaluated using a general estimate equation (GEE) model to account for each donor's repeated donations.

RESULTS: A total of 1310 sperm donors participated in the study. CMV IgG+ donors (n=394) were compared to CMV IgG- donors (n=916). CMV IgG status did not affect sperm parameters when accounting for all of a donor's donations: total motile sperm (=-5.79, p=0.25), total sperm count (=-8.89, p=0.16), average motility (=0.47, p=0.36), and average concentration (=2.68, p=0.18). Controlling for age and BMI, the effect sizes trended upwards but did not reach statistical significance: total motile sperm (=-6.44, p=0.21), total sperm count (=-10.02, p=0.12), average motility (=0.55, p=0.28), and average concentration (=2.92, p=0.15).

CONCLUSIONS: This large-scale study of healthy male sperm donors demonstrated that immunological evidence of prior CMV infection does not significantly correlate with sub-optimal sperm parameters.

ABSTRACT 33

UTILITY OF ABC/2 FOR PREOPERATIVE VOLUME ASSESSMENT IN MINIMALLY INVASIVE EVACUATION OF INTERCEREBRAL HEMORRHAGE.

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BACKGROUND: Intracerebral hemorrhage is an acutely dangerous result of strokes. To determine preoperative ICH hematoma volumes, the ABC/2 method (calculating volume by assuming the bleed is an ellipsoid) has been a mainstay in both clinical practice and in trial design due to its rapid employment. Conversely, digital rendering, while considered the "gold standard" of volume analysis, is rarely used preoperatively due to time constraints.

HYPOTHESIS/RESEARCH QUESTION: Given its widespread use, we sought to evaluate the accuracy of the ABC/2 method compared to semi-automated threshold guided segmentation (SATGS).

METHODS: We performed a retrospective analysis of pre and postoperative head CTs for 80 patients undergoing minimally invasive endoscopic ICH evacuation. Scans were evaluated with the ABC/2 method and SATGS using AnalyzePro. Pre/postoperative hematoma volumes were calculated with both methods and compared between groups. ABC/2 volumes within 10% of AnalyzePro™ volumes were deemed accurate. Student's t-test and Youden's index assessment were used for statistical analysis.

RESULTS: ABC/2 evaluation of pre-evacuation hematoma volumes was found to overestimate the volume calculated by SATGS by an average of 9.5cc (p<0.00001). Volumes in the ABC/2 group were dichotomized into two cohorts, where the ABC/2 volume ≤10% and >10% of the AnalyzePro volume. The volumes at which the ABC/2 model accurately determined hematoma volume was determined to be ≤ 57.0cc (AUC= 0.969) with a sensitivity and specificity 90.0% and 96.8% respectively (95% CI: 0.68 – 0.98, 0.83 – 0.99). Preop hematoma volumes that were measured to be ≤ 57.0cc using ABC/2 were not significantly different from paired AnalyzePro volumes (p=0.19), however, hematoma volumes >57cc were significantly different (p<0.00001).

CONCLUSIONS: Because the ABC/2 model was found to be significantly inaccurate at hematoma volumes greater than 57cc, large bleeds should be evaluated by SATGS before making definitive decisions for inclusion in trials or size-dependent treatment courses.

ABSTRACT 34

GENETIC RISK OF PANCREATIC CANCER IN AN UNSELECTED POPULATION-BASED BIOBANK.

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BACKGROUND: Although inherited risk factors may contribute to ~10% of pancreatic cancers (PCs), the prevalence of PC-associated genetic variants in unselected populations has not been reported. Mount Sinai's electronic health record (EHR)-linked Bio*Me* Biobank in NYC has enrolled over 50,000 patients non-selectively, resulting in unprecedented diversity among its participants.

HYPOTHESIS/RESEARCH QUESTION: We sought to evaluate the prevalence and clinical impact of pathogenic or likely pathogenic (P/LP) variants in 11 genes known to increase PC risk in Bio*Me*.

METHODS: In 30,223 Bio*Me* participants with exome sequence data available, we identified individuals with a personal or family history of PC using ICD-9 and ICD-10 diagnosis codes. We compared rates of personal PC and family history of PC in individuals harboring P/LP variants, uncertain/conflicting variants, and noncarriers with complementary chart review.

RESULTS: Among 115 ethnically diverse patients with a personal history of PC, 3 (2.6%) harbored a P/LP variant in a PC-associated gene, 23 (20.0%) an uncertain/conflicting variant, and 89 (77.4%) were noncarriers. We compared personal and family history of PC among all BioMe participants harboring P/LP variants (N=365) or uncertain/conflicting variants (N=11,703) in any of the 11 PC-associated genes. Three (0.82%) of 365 participants with a P/LP variant had PC, compared to 23 (0.20%) of 11,703 carriers of an uncertain/conflicting variant (X^2 3.9, $p < 0.05$). Ten (2.74%) of 365 participants with a P/LP variant had a family or personal history of PC, compared to 43 (0.20%) of 11,703 carriers of an uncertain/conflicting variant (X^2 40.3, $p < 0.05$).

CONCLUSIONS: This study is the first to our knowledge to characterize the rate of pathogenic variants associated with increased PC risk in an unselected and diverse patient population. Our results provide additional support for elevated risk of PC in patients harboring a P/LP germline variant in a PC-associated gene compared to noncarriers, and to those harboring uncertain/conflicting variants.

ABSTRACT 35

SUCCESSFUL IMPLEMENTATION OF SIMULATION PROGRAM AND SKILLS CENTER IN THE DOMINICAN REPUBLIC IMPROVES SURGICAL RESIDENTS' LAPAROSCOPIC SKILLS.

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BACKGROUND: In developed countries, minimally invasive surgeries such as laparoscopy are a preferred method of treatment compared to open surgery due to decreased infection rates and faster recovery times. However, laparoscopy is still underutilized in low and medium income countries (LMICs) due to financial and training burdens. Mount Sinai Hospital in NY introduced a laparoscopic surgery simulation center to a public hospital in Santiago, Dominican Republic (DR).

HYPOTHESIS/RESEARCH QUESTION: This study examines the outcomes of establishing a laparoscopic simulation center in the DR for training general surgery residents.

METHODS: In August 2018, recruitment, introduction to the simulation training program, and preliminary data were collected at the Hospital Jose Maria Cabral y Báez in Santiago, DR. Residents were required to practice 1 hour/week under the guidance of a general surgery Mount Sinai resident. Follow-up data was collected in June 2019. The study endpoints include times on 3 simulated laparoscopic tasks: peg-transfer, precision cutting, and intracorporeal knot tying. Two-tailed paired t-tests were used to determine whether simulation times improved significantly over the 10-month period.

RESULTS: Eleven of the 13 residents participated in the study (5 PGY1, 2 PGY2, and 4 PGY3). Over the 10-month period resident simulation times significantly improved for precision cutting (4:13 min versus 2:13 min, p = 0.0005) and for intracorporeal knot tying (5:28 min versus 3:26 min, p = 0.016). There was no significant difference in peg transfer times (2:01 min versus 1:45 min, p > 0.05).

CONCLUSIONS: The study demonstrates the successful integration of a laparoscopic simulation program into a LMIC surgical resident training program as resident simulation skills significantly improved. With commitment from the local institution and external resources, establishing laparoscopic simulation centers are feasible and expandable, thereby allowing general surgery residents in other LMICs the opportunity to improve their laparoscopic skills.

ABSTRACT 36

ASSESSMENT OF TUNNELED CENTRAL VENOUS CATHETER COMPLICATIONS IN PEDIATRIC PATIENTS.

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BACKGROUND: Central venous catheters (CVCs) are common in hospitalized patients. Pediatric patients have high device use rates in the ICU, accounting for 1 of 15 million catheter-days per year. 10% develop a catheter-associated bloodstream infection (CLABSI) and require early CVC removal. The average cost of removal is $70,696, and CLABSIs are associated with a 12-25% mortality rate. Prior research has shown how various factors can impact the risk of developing a CLABSI, and it is beneficial to study this at MSH to reduce postoperative complications.

HYPOTHESIS/RESEARCH QUESTION: How does a pediatric patient's diagnosis affect outcomes associated with CVCs at MSH?

METHODS: Applicable CPT codes were found corresponding to CVC placement from 2010-2019. Patients up to age 25 were selected, totaling 425 records. The following were acquired: underlying diagnoses, CBC counts, catheter placement and removal information, short and long-term complications, and need for unplanned removal.

RESULTS: 425 patients were included, with 614 CVC placements. Cancer accounted for most placements (69.9%). 187 placements (30.5%) were associated with CLABSI, and 107 of these were removed (68.6%), with a CLABSI rate per 1,000 central line days of 2.12%. Broviacs/hickmans had earlier infections (p=2.78e-8), more infections in under 30 days (p=.003), and necessitated more removals (p=.005) than ports. Diagnosis was not associated with earlier infection, however chemotherapy prior to placement was (p=.02). Leukopenia, neutropenia, lack of prophylaxis, and pre-operative fever were not correlated to earlier infection or removals.

CONCLUSIONS: Although the percentage of patients with CLABSIs is higher than the national average, the CLABSI rate is on par with what is reported for pediatric hematology-oncology. A diagnosis of cancer was not associated with CLABSI, but chemotherapy prior to placement was linked with earlier infections. Use of broviacs/hickmans resulted in worse outcomes compared with ports, and this may be due to less sterile techniques used upon accessing.

ABSTRACT 37

EXPLORING ARRHYTHMOGENIC RIGHT VENTRICULAR CARDIOMYOPATHY (ARVC) USING A GENOTYPE-FIRST APPROACH.

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BACKGROUND: Genetic associations in ARVC, a predominantly autosomal dominant condition with incomplete penetrance and variable expressivity, have traditionally been studied by ascertaining individuals phenotypically and then investigating causal genetic variation. The prevalence of carriers of relevant ARVC mutations as well as the spectrum of cardiac manifestations remains unknown.

HYPOTHESIS/RESEARCH QUESTION: We hypothesize that a genotype-first approach can be used to identify individuals at genetic risk for ARVC.

METHODS: Using Mount Sinai's Bio*Me* Biobank, a database linking >33,000 patients' whole exome sequencing with their electronic health records (EHR), we identified carriers of pathogenic variants in the top five ARVC-associated genes: *PKP2, JUP, DSG2, DSP* and *DSC2*. EHRs of the Bio*Me* ARVC cohort were manually reviewed for diagnoses and typical features of ARVC, including electrocardiogram and echocardiogram parameters.

RESULTS: Among the 106 patients in Bio*Me* harboring ARVC variants, no patient was diagnosed with ARVC. One patient had a family history of ARVC. ECGs were available for 76 patients (72%), of which 18 (24%) were diagnosed with a supraventricular arrhythmia and 9 (12%) with a ventricular arrhythmia. Echocardiograms were available for 39 (37%) patients. Mean ejection fraction and the mean indexed LVEDV were in the normal ranges. Six (15%) patients had moderate RV dysfunction. Echocardiographic images were manually reviewed for 37 (35%) patients. A dilated RVOT was found in 22 patients. The dilation of the RVOT absent other symptoms is not sufficient for a clinical diagnosis of ARVC.

CONCLUSIONS: A genotype-first approach did not identify any presumably genetically at-risk patients who had been diagnosed with ARVC. However, a subset of those individuals harboring relevant mutations exhibited electrocardiographic and/or echocardiographic features that may indicate manifestations of ARVC. Prospective study of these individuals to evaluate for ARVC features comprehensively may further inform on the penetrance of ARVC.

ABSTRACT 38

CLINICAL IMPACT OF VARIANTS IN GENES WITH MODERATE-PENETRANCE PREDISPOSITION TO BREAST CANCER.

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BACKGROUND: Whole Exome Sequencing (WES) aggregated from patient populations can be leveraged to drive clinically impactful findings about disease-associated genetic variants. Germline variants in numerous genes increase the risk of developing breast cancer, yet the clinical impact of genes with moderate-penetrance risk remains poorly understood. Mount Sinai's EHR-linked Bio*Me* BioBank includes 30,223 ancestrally diverse adult participants with WES data, offering a unique opportunity to better understand the clinical impact of variants in genes – *PALB2*, *ATM*, *NBN*, *CHEK2*, and *NF1* – believed to confer a moderate-penetrance predisposition to breast cancer.

HYPOTHESIS/RESEARCH QUESTION: What is the clinical impact of moderate-penetrance breast cancer genes in an unselected, diverse patient population?

METHODS: WES data from 30,223 Bio*Me* participants were analyzed to identify carriers of pathogenic/likely pathogenic (P/LP) variants in the five genes of interest. Prevalence of carriers was estimated in an unrelated subset of participants (N=27,816). For *PALB2*, clinical characteristics of carriers were studied by EHR chart review and analysis of Bio*Me* participant questionnaire data, specifically focusing on cancer history and type, age of diagnosis, family history, and outcomes.

RESULTS: There were 111 P/LP variants in the five genes. Estimated prevalence of carriers of P/LP variants in these genes were 1:1070 (*PALB2*), 1:392 (*ATM*), 1:843 (*NBN*), 1:1739 (*CHEK2*), and 1:2140 (*NF1*). Chart review was completed for 24 carriers of 16 P/LP variants in *PALB2*. Of these carriers, 4 (16.7%) had a personal history of cancer, including breast (3), ovarian (1), and uterine (1) cancers.

CONCLUSIONS: This research has helped us understand the prevalence of P/LP variants in 5 moderate-penetrance breast cancer genes, and the clinical impact of *PALB2* in an unselected patient population. Further analysis will explore prevalence across ancestrally diverse populations and clinical impact of *ATM, NBN, CHEK2,* and *NF1*.

ABSTRACT 39

AMBIGUOUS ETHICS: A QUALITATIVE EVALUATION OF CONSCIENCE CLAUSES IN TOP OB/GYN RESIDENCY PROGRAMS.

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BACKGROUND: Following Roe v. Wade, legislation regarding conscience clauses in reproductive health continued to expand protection for providers who refused to render certain services. This legislation subsequently impacted trainee education in Ob/Gyn residency programs, facilitating a decline in the number of Ob/Gyns providing abortions. As a result, professional organizations simultaneously recommended implementing requirements to mitigate this problem. Yet, some programs still allow residents to "opt-out" of certain parts of training.

HYPOTHESIS/RESEARCH QUESTION: What are the discrepancies between conscience clauses at top Ob/Gyn residency programs in the U.S.?

METHODS: We surveyed the Ob/Gyn residency directors at the 40 top Ob/Gyn residency programs (according to Doximity's 2017 rankings by reputation) via phone and email to qualitatively assess similarities and differences between conscientious refusal policies.

RESULTS: The survey yielded responses from 17 programs located in the northeast, midwest, southern, and western regions of the U.S. Nine programs had formal conscientious refusal policies and eight programs had informal policies. The policy stipulations varied in four major categories: the definition of partial participation, the definition of "opt out" policies for abortion, the decision-making process by which programs allowed participants to "opt out," and guidelines for course of action in specific situations.

CONCLUSIONS: This analysis highlighted the convoluted interaction between law, professional associations, and program policies, and it shed light on the ensuing ethical dilemmas. Further surveys are needed to assess how conscience clauses and training have evolved within a changing political climate.

ABSTRACT 40

THE EFFECTS OF HEMODILUTION ON COAGULATION IN TERM PARTURIENTS: AN IN VITRO STUDY UTILIZING ROTATIONAL THROMBOELASTOMETRY.

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BACKGROUND: Little is known about the effect of hemodilution on coagulation in parturients. Our study aim was to examine the impact of hemodilution on components of blood clotting using rotational thromboelastometry (ROTEM) in term parturients

HYPOTHESIS/RESEARCH QUESTION: Increasing degrees of hemodilution will impair clot formation and strength in ROTEM assays with (FIBTEM) and without (EXTEM) the inhibition of platelet function.

METHODS: A prospective, observational study including 35 healthy, pregnant patients at term (≥37 weeks) without bleeding or clotting disorder history or on anticoagulation. Venous blood samples were collected from all patients and divided into specimen tubes to generate varying degrees of hemodilution with Plasma-Lyte (0, 20, 25, 30, 35, 40, 45, 55, 60, 65, 70, 75, and 80%). Thromboelastometry was performed on samples to assess for coagulation changes.

RESULTS: EXTEM (assay without platelet inhibitor) clotting time (CT) increased at 65% dilution and above, and the median CT became coagulopathic (>80 seconds) at 80% hemodilution. FIBTEM (assay with platelet inhibitor) amplitude at 5 minutes (A5) decreased at 35% hemodilution, with the median A5 coagulopathic (<12 mm) at 55% hemodilution. The area under the curve (AUC) for EXTEM and FIBTEM consistently declined as dilution increased. Greater decreases in FIBTEM AUC were seen compared to EXTEM AUC, with the ratio of FIBTEM:EXTEM AUC at each dilution demonstrating a statistically significant difference from baseline.

CONCLUSIONS: The samples analyzed by FIBTEM trended toward coagulopathy at a lower degree of hemodilution compared to the EXTEM assay. While FIBTEM analyzes the role of fibrinogen in hemostasis and EXTEM the role of platelets, our data suggest that platelets may be able to withstand higher degrees of hemodilution before impairing hemostasis compared to fibrinogen. These findings support the growing body of literature that in early stages of severe obstetric hemorrhage, prioritizing fibrinogen replacement may be critical in preventing further coagulopathy.

ABSTRACT 41

THE USE OF ROTATIONAL THROMBOELASTOMETRY FOR MONITORING THE EFFECT OF HEPARIN ON COAGULATION OF PREGNANT PATIENTS IN VITRO.

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BACKGROUND: Prior studies showed that standard heparin doses result in a lower peak blood concentration among parturients compared to non-parturients with no changes in partial thromboplastin time (PTT). No study has examined the use of viscoelastic tests such as rotational thromboelastometry (ROTEM) for detecting heparin activity in parturients with normal PTTs

HYPOTHESIS/RESEARCH QUESTION: We hypothesized that ROTEM could detect heparin activity at a concentration of 0.1 U/mL (peak concentration in parturients receiving 10,000 U unfractionated heparin) as measured by a prolonged intrinsically activated clotting time (INTEM CT) compared to baseline

METHODS: A prospective in vitro study of 23 patients at 28+ weeks gestation, without bleeding or clotting disorder or on anticoagulation. Blood samples were collected and heparin added in vitro to achieve concentrations of 0, 0.05 and 0.1 U/mL. ROTEM was performed on all samples

RESULTS: Mean INTEM CT was prolonged and significantly different from baseline at 0.05 and 0.1 U/mL (156.21 vs 181.21 vs 199.74 s, at 0, 0.05 and 0.1 U/mL respectively, $p \leq 0.001$). There was no significant difference in the proportion of samples with an INTEM CT >10% of baseline between samples with heparin concentrations of 0.05 and 0.1 U/mL (7/19 vs 12/19, p=0.105). 100% of samples at each concentration had a normal INTEM CT, despite the prolongation from baseline.

CONCLUSIONS: ROTEM can detect heparin activity at blood concentrations at which the PTT remains normal, suggesting INTEM CT is a more sensitive measure of monitoring heparin activity in parturients. Further studies are needed to evaluate the use of ROTEM in algorithms for managing parturients on anticoagulation. Moreover, given the normal INTEM CTs at concentrations as high as 0.1 U/mL, further studies should be undertaken to evaluate whether doses of 10000 U heparin are adequate in preventing VTE in this high risk population

ABSTRACT 42

EFFECT OF CALL CENTER TRAINING ON RATES OF FAMILY PLANNING SERVICES.

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BACKGROUND: Women in the United States face many barriers in access to family planning services. Underage women seeking these services are especially vulnerable, and their initial interactions with patient service representatives (PSRs) at family health centers may influence their decisions to seek care.

HYPOTHESIS/RESEARCH QUESTION: We hypothesize that discrepancies will be found between PSR dispensed information and the realities of what we can offer patients desiring LARC and abortion care, and that with additional PSR training, we can increase the number of under aged patients presenting for these services.

METHODS: We obtained rates of underage female patients presenting for abortions and long acting reversible contraception (LARC) from 11/12/2018 through 02/04/2019 at three Institute for Family Health clinic sites that provide these services. The research team called each of the four clinic sites, posing as underage female patient. Each caller asked a standardized set of questions related to access of either LARC or abortion care. We then scored the accuracy of pooled survey answers. We developed a training guide focused on identified deficiencies for PSR staff to review and use for future telephone encounters. We will conduct a post-intervention analysis of rates of underage female patients presenting for abortions and LARC over the subsequent three month period after training is implemented.

RESULTS: 19 LARC and 21 abortion surveys were completed for a total of 40. Some of the most notable deficits across both survey types were found in response to inquiries about required testing, insurance coverage, and cost, based on a cutoff of <80% correct PSR responses.

CONCLUSIONS: Based on our results, patients are often given inaccurate information when seeking family planning services. We created a training intervention to address weak areas of the survey responses, and will conduct a post-intervention analysis of rates of underage patients presenting for abortions and LARC over the 3 month period after training implementation.

ABSTRACT 43

MOLECULAR MECHANISM(S) OF RESISTANCE TO VANDETANIB IN MEDULLARY THYROID CARCINOMA.

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BACKGROUND: Medullary thyroid carcinoma (MTC) is a neuroendocrine tumor arising from parafollicular C cells of the thyroid. Pediatric cases are associated with multiple endocrine neoplasia, caused by a mutation in the rearranged during transfection (*RET*) gene. Vandetanib, an oral receptor tyrosine kinase inhibitor, is approved for the treatment of patients with progressive MTC. While there is a response rate of 46.4%, the majority of patients eventually develop resistant disease.

HYPOTHESIS/RESEARCH QUESTION: The goal of this work is to understand genetic and epigenetic alterations in MTC that allow proliferation of cancer and mediate resistance to growth inhibition by Vandetanib or other tyrosine kinase inhibitors.

METHODS: The TT cell line (RET mutation p.C634W) was cultured in increasing concentrations of Vandetanib in order to generate a Vandetanib resistant cell line. Both Vandetanib-sensitive and Vandetanib-resistant lines underwent exome sequencing, RNA sequencing, and methylation array analysis. A genome-wide CRISPR knock-out was performed by transfecting TT cells (treated with increasing concentrations of Vandetanib) with a lentiviral vector engineered with a CRISPR-inactivation TKO Version 3 Library, consisting of 71,090 gRNAs targeting 18,000 genes; and a genome-wide CRISPR knock-in analysis was performed by transfecting with a lentiviral vector engineered with a CRISPR Calabrese P65-HSF activation Library.

RESULTS: DNA methylation and RNA sequencing demonstrated differential expression between the Vandetanib-sensitive and Vandetanib-resistant cell lines. Genome-wide CRISPR inactivation of cells treated with increasing concentrations of Vandetanib revealed enrichment of genes necessary for growth suppression and depletion of genes conferring synthetic lethality.

CONCLUSIONS: DNA mutations and epigenetic modification confer resistance of medullary thyroid carcinoma to tyrosine kinase inhibition. Adding further therapeutic agents to target these genetic alterations is a potential strategy for overcoming resistance.

ABSTRACT 44

INEFFICIENCY OF THE PRE-INCISION PERIOD OF MICROVASCULAR FREE FLAP RECONSTRUCTIVE SURGERY.

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BACKGROUND: Microvascular free flap reconstructions comprise some of the most complex and time/resource-intensive surgeries within Otolaryngology. Operative times range from 6-24 hours, with workflow and systemic inefficiencies as major contributing factors. Bahethi et al. found that 18.5% of OR time is spent during the pre-incision period. The goal of this observational study is to evaluate the flow efficiency of the pre-incision period and formulate quality improvement (QI) interventions.

HYPOTHESIS/RESEARCH QUESTION: What components of the pre-incision period for microvascular free flap procedures contribute to inefficiencies?

METHODS: Trained medical student observed 10 microvascular free flap surgeries during the pre-incision period within the Department of Otolaryngology at Mount Sinai Hospital. The sequence of flow was recorded, and each event was time stamped. Events included transfer of patient to bed, placement of IV lines, anesthesia induction, airway management, arterial line placement, Foley catheter placement, sterile prepping/draping of surgical area, and equipment setup. Percent time of each event within the pre-incision period was calculated and then average of all events was obtained.

RESULTS: In 10 observed cases, 1.5 hours/case was spent in the pre-incision period, accounting for 16.0% total case time. The highest event percentage (18.1%) was spent by Anesthesia, placing monitors, inserting IV lines, inducing anesthesia and securing the airway. Average total anesthesiology activities, including arterial line placement, amounts to 0.46 hours, or 30.3% of the pre-incision period. The subsequent two most time intensive activities are sterile prep and draping (20.2%) and Foley insertion (6.7%).

CONCLUSIONS: A significant portion of the pre-incision period is devoted to the preparatory phase. Increased collaboration and planning between anesthesiologists, surgeons and nursing staff should occur to discuss the procedural plan. Furthermore, QI interventions should be pursued, such as placing IV lines in pre-op holding area.

ABSTRACT 45

A COMPREHENSIVE ANALYSIS OF IMMUNE BIOMARKERS IN BLOOD OF ATOPIC DERMATITIS PATIENTS FROM INFANCY TO ADULTHOOD.

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BACKGROUND: Atopic Dermatitis (AD) is an inflammatory skin disease with clinical features including skin dryness, erythema, oozing and crusting, and pruritus. The pathogenesis of AD may be due to a variety of factors, to include dysregulations in the innate immune response, skin barrier abnormalities, and an altered skin microbial flora. To date, research comparing biomarkers in the blood of pediatric and adult AD patients is limited, while no study has directly compared blood biomarkers in consecutive age groups of AD with age-matched controls.

HYPOTHESIS/RESEARCH QUESTION: To compare the immune activation and cytokine polarization in blood of patients with AD and age-matched controls using flow cytometry.

METHODS: Blood was obtained from AD patients ranging from infants 0-5y/o (n=39), children 6-11y/o (n=26), adolescents 12-17y/o (n=21) and adults >18y/o (n=43), with healthy age-matched controls. Flow cytometry was performed to analyze various cytokines and cell surface markers. Statistical analyses were run to differentiate patients based on their blood biomarker frequencies.

RESULTS: CLA+ Th1 frequencies were significantly lower in infants with AD in comparison to all older patients (P<0.01), while CLA+ Th2 T-cells were similarly increased across all AD age groups compared with controls (P<0.05). After infancy, CLA- Th2 frequencies were increased in AD in all age groups, suggesting systemic immune activation with disease chronicity. IL-22 frequencies increased from normal in infants to highly significant levels in adolescents and adults compared to respective controls (P<0.01). Unsupervised clustering aligned the AD profiles along an age-related spectrum from infancy to adulthood.

CONCLUSIONS: Each age group among the AD patients demonstrated unique cytokine signatures. With cytokine signatures specific to individual group endotypes, the development of age-specific therapies may be beneficial. Future longitudinal studies comparing the profiles of cleared and persistent AD may define age-specific characteristics that predict AD clearance.

ABSTRACT 46

EFFECT OF GAME IMPORTANCE ON CONCUSSION INCIDENCE IN THE NATIONAL FOOTBALL LEAGUE.

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BACKGROUND: Concussion incidence in the NFL generally increases as the season progresses. Yet, there is evidence this incidence decreases in the final quarter of the season. This anomaly cannot be explained by any known modulator of concussion incidence. However, teams start getting eliminated from playoff contention in the fourth quarter of the season which may explain this pattern in concussion incidence.

HYPOTHESIS/RESEARCH QUESTION: This study tests whether there is a difference in concussion incidence in games between teams who are still in the playoff hunt (IH games) versus games where both teams have had their playoff fate previously determined (NonIH games).

METHODS: 166 documented concussions from 960 games during weeks 13-16 of four NFL seasons (2012-2015) were obtained from PBS Frontline Concussion Watch and matched to the game in which they occurred. Each game was categorized based on the playoff status of the teams playing in the game. Concussion incidence of the game types were compared to each other using one-way ANOVA and t-tests. Additionally, concussion incidence at six different player positions in IH games were compared to the corresponding incidences in NonIH games. A multivariate regression was used to examine the effects of game importance on concussion incidence, controlling for plays per game, temperature, and altitude.

RESULTS: Concussion incidence in IH games (mean=0.65±0.05) did not differ significantly (t-test; p=0.890) from the incidence in NonIH games (mean=0.62±0.14). Instead, plays per game was the primary driver of concussion in the regression analysis (β=0.02; p=0.02). Running backs were the only position to demonstrate a significant increase in concussion incidence (t-test; p=0.004) in IH games (mean=0.05±0.02, n_{games}=139) compared to NonIH games (mean=0.00±0.00, n_{games}=27).

CONCLUSIONS: The results suggest that, in general, players are not more likely to suffer concussions in IH games than in NonIH games. However, running backs may have increased risk of concussion in games with playoff implications.

ABSTRACT 47

EFFECTS OF INHIBITING EARLY INFLAMMATION IN KIDNEY TRANSPLANT PATIENTS.

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BACKGROUND: Kidney transplantation is the ideal therapy for end stage kidney failure but outcomes are suboptimal with transplant halflives of only 12 years. Ischemia reperfusion (IR) injury occurs after deceased donor kidney transplantation, causes delayed graft function (DGF) and negatively impacts long term graft survival. IR injury causes production and release of inflammatory cytokines like TNFa and danger associated molecular patterns like HMGB1. Murine studies have shown that the anti-TNFa monoclonal antibody infliximab can prevent the adverse effects of IR injury on transplant rejection.

HYPOTHESIS/RESEARCH QUESTION: The goal of this experiment is to characterize levels of inflammatory cytokines and initial clinical outcomes in an ongoing clinical trial population of human kidney transplant recipients. The hypothesis is that higher levels of TNFa and HMGB1 will correlate with worse outcomes. The clinical trial is assessing the mechanistic impact of infliximab on posttransplant TNFa production.

METHODS: Samples were obtained from an ongoing randomized, multicenter, placebo controlled clinical trial of 225 deceased donor kidney transplant recipients. All eligible and available samples were used. Multiplex ELISA was performed on 151 samples to measure serum levels of cytokines on days 1 and 7 posttransplant. ELISA was used to detect urine HMGB1 on day 1 (61 samples) and day 7 (123 samples) posttransplant. Clinical outcomes such as DGF were reported by the respective centers.

RESULTS: Preliminary analyses indicate higher levels of TNFa on day 7 posttransplant in the DGF group (t=1.9, p=0.061). Patients with higher levels of day 7 serum TNFa had elevated levels of day 7 urine HMGB1 (t=1.9, p = 0.052). Patients in the highest quartile of day 1 urine HMGB1 were more likely to have DGF (p = 0.035).

CONCLUSIONS: Early findings suggest a relationship between TNFa and DGF as well as TNFa and HMGB1. When the trial is finished, the causal effect of infliximab on posttransplant levels of inflammatory cytokines and clinical outcomes can be measured.

ABSTRACT 48

AN ANALYSIS OF SOMATIC GENE MUTATIONS IN BREAST CANCER PATIENTS ACROSS MULTIPLE ETHNICITIES.

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BACKGROUND: Most large-scale genomic studies of breast cancer have been focused on patients of European descent and little is known regarding somatic mutations and patients of African and Hispanic ancestry. This lack of knowledge may explain disparities in treatment response between these populations. The ethnically diverse patient population and universal availability of genetic counseling services at Mount Sinai make it an ideal setting in which to evaluate these disparities.

HYPOTHESIS/RESEARCH QUESTION: Is there a relationship between ethnicity, somatic gene mutations, and tumor molecular phenotype in breast cancer patients?

METHODS: A retrospective analysis of breast surgery patients who received genetic testing between 2010 and April 2018 was performed. Patients were divided into groups based on self-reported ancestry and then analyzed for mutation frequency and tumor molecular phenotype.

RESULTS: Of the 1261 participants, 8.25% (N=104) Black or African American, 10.9% (N=137) Hispanic, 80.9% (N=1020) Caucasian, 13.5% (N=181) tested positive for a pathogenic mutation and 8.45% (n=113) had variants of uncertain significance. C patients had a higher relative risk of pathogenic mutation than H patients (RR=1.77) and AA patients (RR=1.28) but were half as likely as AA and H to have VUS (RR=0.54). BRCA1 mutation distribution did not reflect the ethnic makeup on the study population, with Caucasians representing 90% of affected patients (p=0.15). Pathogenic mutations were found in a larger variety of genes in C patients than in AA and H patients, despite their higher rate of panel testing (38.5% H vs. 30.6% AA vs. 24% C). Although AA patients were 3.6 times more likely than other patients to have TNBC (p=.000115), there was no statistically significant difference in mutation frequency between AA, C, and H patients with TNBC.

CONCLUSIONS: While there are differences in the genetic landscape across multiple ethnicities, more work remains to evaluate whether there is a genetic basis for disparities in tumor molecular phenotype.

ABSTRACT 49

USING 24-HR DIETARY RECALL TO OPTIMIZE DAILY SODIUM INTAKE ESTIMATES MADE BY DASHQ.

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BACKGROUND: Hypertension is a leading risk factor for cardiovascular injury and mortality. Salt intake reduction has been shown to lower blood pressure. However, patient's dietary habits are challenging to evaluate. The current standard 24-hour dietary recall is an arduous process that requires trained personnel and multiple administrations. The DASHQ, a subscale of the Hypertensive Self-Care Activity Level Effect (HSCALE), is a self-reported dietary assessment. Although studies have demonstrated a relationship between DASHQ scores and systolic blood pressure, limited data exist evaluating the DASHQ 's ability to identify diets that exceed the 1500mg/day of salt recommended by the American Heart Association.

HYPOTHESIS/RESEARCH QUESTION: To optimize the DASHQ score to identify dietary salt intake greater than 1500mg/day by comparing it to the 24-hr dietary recall.

METHODS: 24-hr dietary recall data from prostate cancer survivors with hypertension was inputted into a software program (Nutritionist Pro) to estimate daily salt intake. Each participant also completed the DASHQ. Using guidelines recommended by HSCALE committee, DASHQ scores ≤57 were labeled "unhealthy" and the rest "healthy". Sensitivity and specificity of "unhealthy" DASHQ scores to identify daily salt intake >1500mg were calculated. We then assessed the performance of the DASHQ at each possible cutoff score using the receiver-operating characteristic (ROC) analysis. The optimal threshold value was determined by Youden's J Index (sensitivity + specificity - 1).

RESULTS: 87 dietary recalls and DASHQ were analyzed. Using the HSCALE recommended cutoff of 57, sensitivity and specificity of the DASHQ score to identify patients with sodium intake greater than 1500mg/day were 24% and 97.3% respectively. A DASHQ cutoff of 71 was associated with 76% sensitivity and 65% specificity.

CONCLUSIONS: For this specific population, current DASHQ guidelines do a poor job of identifying patients with a high-salt diet. A higher threshold value of ≤71 more accurately identifies these patients.

ABSTRACT 50

HISTORY OF UV-RELATED KERATINOCYTIC CARCINOMAS IS INCREASED IN PATIENTS WITH EXFOLIATION SYNDROME.

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BACKGROUND: Exfoliation syndrome (XFS) is a systemic disease in which abnormal extracellular matrix deposits are found in the anterior segment of the eye, which can lead to glaucoma (XFG). Increasing evidence has shown that sun exposure in young adulthood is a risk factor for developing XFS.

HYPOTHESIS/RESEARCH QUESTION: We performed a cross-sectional clinical survey to evaluate whether a history of UV-related carcinomas – basal cell (BCC), and squamous cell (SCC) – was more prevalent in XFS/XFG patients compared to primary open angle glaucoma (POAG) patients and those without glaucoma.

METHODS: Eligible patients in ophthalmology clinics between the ages of 50-90 were interviewed. POAG/control patients were matched to XFS/XFG patients on the basis of ancestry. We inquired about ancestry, natural eye color, glaucoma diagnosis (type, laterality, date of earliest diagnosis, and family history of glaucoma), likelihood of tanning or burning in the sun, natural hair color at age 18, and diagnosis of SCC/BCC. Univariate analysis was performed with ANOVA. Multivariate logistical regression controlling for confounders was performed comparing SCC/BCC history in XFS vs POAG and controls.

RESULTS: 136 patients with mean age of 73.6 ± 9.1 years (51% female; 100% Caucasian) were enrolled. One-way ANOVA showed significant difference in history of BCC/SCC among the 3 groups [$F_{(2,133)}$, = 4.85, p = 0.009]. Post hoc analysis showed a nearly two-fold increase in odds of BCC/SCC in XFS/G patients versus controls (44% vs 23% in controls, p=0.03) and versus POAG (19% in POAG patients, p=0.04). In multivariable analysis, XFS/G patients had a significantly increased odds of having either BCC or SCC compared to the combined OAG/control reference group (OR=2.70; 95% CI=1.10-6.6).

CONCLUSIONS: Our results show that a history of UV-related keratinocytic carcinomas is increased in XFS/XFG patients versus patients with POAG or patients without glaucoma. This is consistent with the hypothesis that UV exposure in young adulthood is a risk factor for developing XFS/XFG.

ABSTRACT 51

IMPROVEMENT IN PRACTICE OPERATIONS AT AN AMBULATORY SITE IN ACCRA GHANA.

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BACKGROUND: Korle-Bu Teaching Hospital's Central Outpatient Department in Accra, Ghana sees almost 30,000 patients a month. With Ghana's increased prevalence of non-communicable diseases, there is a growing need to alter clinic practices to optimize patient workflows.

HYPOTHESIS/RESEARCH QUESTION: How can patient flow through the Korle-Bu Outpatient Clinic be optimized to improve patients' experience and deliver optimal care?

METHODS: A time motion study was conducted. Patients were enrolled by stratified random sampling from two populations: those who self-pay and those with insurance. A time sheet was placed in their folder for staff at major checkpoints (records office, insurance or cash lines, clinical visit, etc.). Time results were analyzed using descriptive statistical analysis.

RESULTS: Of 122 completed time logs, 27 were of patients who self-paid, and 95 were of insured patients. Average total time spent in clinic for all patients was 3h 44m. For self-pay patients, average time was shorter (2h 55m) compared to those with insurance (3h 59m). Patients spent approximately 43 minutes on the insurance queue, compared to 33 minutes on the cash queue. The longer wait times for insured patients was due to patients with insurance also needing to wait on the cash queue after processing their insurance. Average time spent in the clinic before seeing a doctor was 3 hours 4 minutes.

CONCLUSIONS: Examining how patients' time at the clinic was allocated led to many recommendations: creating appointment time blocks could reduce total time spent in the clinic, restructuring clinician pre-clinic schedules could increase the number of clinicians present to start seeing patients early in the day, and providing directional signs could decrease the time staff spend away from their work explaining to patients how to navigate the clinic. To decrease the discrepancy in wait times between patients who self-pay and those insured, patients could be allowed to pay at the insurance desk, or an additional cash queue only for patients with insurance could be created.

ABSTRACT 52

DEEP LEARNING OUTPERFORMS OTHER APPROACHES FOR PREDICTION OF RENAL REPLACEMENT FREE SURVIVAL IN PATIENTS WITH ACUTE KIDNEY INJURY.

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BACKGROUND: Acute kidney injury (AKI) in critically ill patients is common, and continuous renal replacement therapy (CRRT) is a preferential mode of renal replacement therapy (RRT) in hemodynamically unstable patients. Prior studies have yielded conflicting results for predictors of CRRT discontinuation and survival after discontinuation in patients with AKI.

HYPOTHESIS/RESEARCH QUESTION: To better bridge this knowledge gap, we utilized several approaches to predict renal replacement therapy-free survival (RRTFS) in patients with AKI requiring CRRT.

METHODS: We used the Medical Information Mart for Intensive Care III (MIMIC-III) database to identify patients ≥18 years old with AKI requiring CRRT for ≥24 hours. We defined RRTFS as patients who were discharged alive and did not require RRT 7 days prior to hospital discharge. We used 5 machine learning algorithms: a multi-input deep learning model referred to as ENSEMBLE, random forest (RF), support-vector machine (SVM), logistic least absolute shrinkage and selection operator (LASSO), and logistic regression (LR). We evaluated the model's performances by using area under the receiver operating characteristic (AUROC). We utilized all available biomedical data including demographics, comorbidities, medications, laboratory values, and urine output up to CRRT initiation.

RESULTS: Out of 566 patients with AKI on CRRT, 179 (31.6%) patients had RRTFS. Patients who had RRTFS were younger (60 years vs. 65 years, p=0.006), and more likely to be white (73% vs. 67%, p=0.001). ENSEMBLE had the highest AUROC, 0.73 (95% CI 0.62-0.83), followed by RF 0.60 (95% CI 0.52-0.72), LASSO 0.60 (95% CI 0.51-0.68), LR 0.59 (95% CI 0.49-0.68), and SVM 0.58 (95% CI 0.49-0.68).

CONCLUSIONS: We show that a deep learning approach outperformed other approaches for predicting RRTFS in critically ill patients. With external validation, this could serve as an example for utilizing deep learning approaches in kidney disease, especially in critical care settings where appropriate resource allocation is of prime importance.

ABSTRACT 53

INVESTIGATION OF THE ORAL METABOLOME AND CYTOKINE MILIEU IN PEDIATRIC FOOD ALLERGY.

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BACKGROUND: Metabolites produced by commensal bacteria modulate oral tolerance/food allergy development in mice. Short-chain fatty acids (SFCAs) produced by these bacteria protect against food allergies in mice by suppressing Th2 polarization. Human studies on this topic have been limited.

HYPOTHESIS/RESEARCH QUESTION: Oral metabolite profiles are associated w/ the absence of oral tolerance in food allergy; these profiles are associated w/ a skewed mucosal cytokine milieu.

METHODS: We collected saliva from peanut-allergic subjects, atopic controls w/o food allergy & nonatopic controls, n=30/group. SCFA measurements were performed by mass spectrometry. Cytokine levels were quantified by a cytometric bead array system. Cytokine/SCFA levels were compared via ANOVA.

RESULTS: Average age for healthy, atopic & peanut-allergic groups was 11±5, 9±4 & 11±4 yrs; 50%, 30% & 36% female respectively. Acetate, butyrate & propionate levels were lowest in the peanut-allergics (Acetate: 227000±142000, 284000±144000, 190000±151000ng/mL, p=0.0042; Butyrate: 6610±6510, 5880±8330, 4180±4200ng/mL, p=0.025; Propionate: 50100±29900, 52900±31100, 38000±27100ng/mL, p=0.033 for healthy, atopic & peanut-allergic respectively). IL-4 and TSLP adjusted for flow rate were higher in peanut-allergics than healthy controls (IL-4: 23.3±14.1 and 11.2±3.73 µg/min, p=0.034, TSLP: 6.55±3.26 and 4.95±1.78 µg/min, p=0.049). Potential confounders incl. age, sex, vaginal/c-section birth & subject probiotic intake were considered and found not to be associated w/ food allergy.

While race, sex & MVI use were associated w/ food allergy (p=0.02, 0.0002 & 0.025), only race & subject MVI use were also associated w/ butyrate level (p=0.036, 0.042). Regression models adjusted for race/MVI use showed non-significant p-value for butyrate (p=0.37).

CONCLUSIONS: This study explored associations between oral metabolites, cytokines and food allergy. Findings suggest a potentially protective mechanism of SCFAs in food allergy and a link between the inflammatory cytokines IL-4/TSLP and food allergy.

ABSTRACT 54

PROPHYLACTIC VERSUS REACTIVE FEEDING TUBE PLACEMENT FOR SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK.

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BACKGROUND: The use of percutaneous endoscopic gastronomy (PEG) tubes to administer enteral nutrition for patients being treated for head and neck cancers has been shown to increase quality of life, reduce treatment interruptions, and decrease nutrition-related ED visits and hospitalizations. However, the benefits of placing either a prophylactic feeding tube (PFT; prior to radiotherapy) or a reactive feeding tube (RFT; after radiotherapy initiation) are unclear and inconsistent.

HYPOTHESIS/RESEARCH QUESTION: We sought to compare survival and body mass trends for PFT versus RFT placements in veterans with advanced head and neck cancer.

METHODS: We conducted a retrospective cohort study of 5,060 patients in the Veterans Health Affairs system with stages III–IVB head and neck squamous cell carcinoma treated with chemoradiotherapy for curative intent. Patients with a PEG tube placed within 30 days prior to treatment initiation were included in the PFT group while patients with a PEG tube placed within 3 months after treatment initiation were included in the RFT group. To minimize ascertainment bias we propensity score-matched the two treatment arms and compared outcomes using Cox proportional hazards methods.

RESULTS: A total of 5,060 patients were included in this study with 3,210 receiving PFT and 1,888 receiving RFT. Within each group, 60% of primary sites were oropharynx, 33% hypopharynx/larynx, and 7% oral cavity. There were no significant differences in overall survival (HR 0.96, 95% CI 0.89 – 1.04, p = 0.36), head and neck cancer-specific survival (HR 1.01, 95% CI 0.93 – 1.11, p = 0.75), and change in BMI after 6 months (p = 0.28). Mean survival time was 54.4 months (SD 45.9 months) for overall survival and 57.1 months (SD 46.5 months) for head and neck cancer-specific survival.

CONCLUSIONS: These results suggest that the timing of PEG placement for advanced head and neck cancer does not provide any significant survival or body mass advantage. Other factors, such as quality of life, should be considered when deciding between PFT vs RFT.

ABSTRACT 55

MULTI-INSTITUTIONAL PREDICTORS OF ANTIBIOTIC RESISTANCE IN PATIENTS PRESENTING TO THE EMERGENCY DEPARTMENT WITH UROSEPSIS SECONDARY TO URETERAL OBSTRUCTION.

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BACKGROUND: Patients presenting with a urinary tract infection with kidney or ureteral stones often achieve early clinical stability but remain hospitalized while awaiting results from urine antibiotic sensitivity analyses.

HYPOTHESIS/RESEARCH QUESTION: We aimed to identify predictors of antibiotic resistance in patients who underwent urgent urinary tract decompression for sepsis and obstructive urolithiasis in order to facilitate early discharge on empiric oral antibiotics.

METHODS: Patients that underwent emergent urinary tract decompression for sepsis and an obstructing ureteral stone from 2014-2018 at two academic medical institutions were identified. Emergent stenting was performed and patients were treated with broad spectrum IV antibiotics. We assessed association between clinical parameters at time of presentation and resistance to at least one antibiotic from urine culture using the Wilcoxon test and Fisher exact test for continuous and categorical variables, respectively. Multivariate logistic regression was then performed using all significant variables from univariate analysis.

RESULTS: Of 134 patients, 84 patients (62.7%) had urine cultures resistant to at least 1 antibiotic. On univariate analysis, patients with resistant cultures were significantly more likely to have had previous ureteroscopy, require postoperative ICU-level care, have bacteremia and a longer length of stay (Table 1). In multivariate analysis using significant variables from univariate analysis, only previous ureteroscopy was significantly associated with antibiotic resistance with an increased odds of 6.95 (p = 0.011).

CONCLUSIONS: In this study, we show that a history of ureteroscopy is significantly associated with antibiotic resistance in both univariate and multivariate analyses. Our findings suggest patients with history of ureteroscopy should await urine culture results, while those without history of ureteroscopy may be discharged early on empiric oral antibiotics. However, future studies are necessary to determine the effectiveness of this predictor.

ABSTRACT 56

A RESPONSE BIOMARKER FOR THE TREATMENT OF ACUTE GVHD.

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BACKGROUND: Acute graft versus host disease (GVHD) occurs in 40-60% of patients following allogeneic hematopoietic stem cell transplantation. The clinical response to four weeks of treatment of GVHD is a weak predictor of non-relapse mortality (NRM). Two serum biomarkers of GVHD, ST2 and REG3a, can be combined into a single value (the MAGIC algorithm probability or MAP) that is a validated prognostic biomarker at the onset of GVHD.

HYPOTHESIS/RESEARCH QUESTION: The change in MAP, when measured before and after four weeks of treatment, can serve as a response biomarker i.e., showing that a biological response has occurred after a medical intervention.

METHODS: 125 patients with clinical data and paired serum samples at onset and after four weeks of corticosteroid therapy were analyzed from the Mount Sinai Acute GVHD Consortium (MAGIC) database. MAPs were calculated by measuring ST2 and REG3a concentrations via ELISA assay and correlating the change in MAPs with NRM. All patients were at intermediate risk at onset as determined by MAP. Data were analyzed using R to generate overall survival, NRM, reverse waterfall, and whisker plots.

RESULTS: Median MAPs in patients that survived decreased (n=103) whereas median MAPs of patients that died within six months (n=22) increased (p=0.0004). Patients (n=31) whose MAPs rose above a validated 0.290 threshold at week 4 experienced 30% greater one-year NRM and 25% greater one-year overall survival than patients (n=94) who remained below the threshold (p=0.0061). In patients whose MAPs increased at week 4, none of the pre-transplant risk factors (age, conditioning regimen, indication, and HLA-matching) were associated with NRM.

CONCLUSIONS: I have validated the MAP as a response biomarker for patients at intermediate risk for NRM from GVHD. Future studies will determine whether the MAP can also serve as a response biomarker for all patients with GVHD.

ABSTRACT 57

THE ROLE OF THE HUMAN RIGHTS CLINIC: IMPACT ON MEDICAL EDUCATION AND PROFESSIONAL IDENTITY DEVELOPMENT.

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BACKGROUND: According to Physicians for Human Rights (PHR), medical student groups focusing on health and human rights currently exist at more than 60 different medical schools around the country. However, little data exists about the opinions and perspectives of medical students active in these programs, and how these programs impact the medical education and career trajectories of those involved.

HYPOTHESIS/RESEARCH QUESTION: What clinically applicable skills do students acquire through longitudinal involvement with the Mount Sinai Human Rights Program (MSHRP) and how are career paths affected?

METHODS: This study utilized a Consensual Qualitative Research (CQR) methodology by which 14 semi-structured interviews of medical students who were active in the MSHRP throughout their educations were analyzed to determine core themes.

RESULTS: Nearly all the students interviewed indicated they had developed important, clinically applicable skills through their involvement with the MSHRP that enhanced their traditional medical education. The interviewees also reported that their participation in the MSHRP expanded their professional identities to include leadership roles. Specifically, they stated that engagement with the program prepared them to: 1) effectively manage large teams; 2) conduct thorough clinical evaluations utilizing trauma-informed care strategies; and 3) navigate the medical-legal process of affidavit writing. Many students also indicated that they intend to incorporate human rights work into their future careers.

CONCLUSIONS: The results of this study indicate that longitudinal involvement in the MSHRP contributed to the acquisition of important clinical skills that were not otherwise attained in students' early medical education. Findings suggest that there is significant opportunity for student clinical and leadership development outside the traditional preclinical classroom setting, and that exposure to human rights education helps shape professional identity.

ABSTRACT 58

PROVIDER PERSPECTIVES ON A TRAINING PROTOCOL IN KENYA FOR NOVEL ANESTHESIA ADMISTRATION WHEN NO ANESTHETIST IS AVAILABLE.

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BACKGROUND: With only 0.44 anesthetists per 100,000 population in Kenya, mothers in need of cesarean delivery may be unable to access this essential surgery due to lack of available anesthesia services. This gap in critical services contributes towards a maternal mortality ratio considered one of the worst in the world.

HYPOTHESIS/RESEARCH QUESTION: The objective of this programmatic assessment was to better understand facilitators and barriers to uptake of ESM-Ketamine.

METHODS: Staff working at hospitals in Kenya with operating theaters that lacked full-time anesthetist coverage were identified by county health leaders. They participated in a 5-day training at Sagam Community Hospital (SCH) with classroom and practical sessions covering pharmacology, patient monitoring, respiratory management, suctioning, and bag-mask ventilation. Semi-structured interviews were performed with ESM-Ketamine-trained staff from 14 hospitals to gather information about provider perspectives on the program, and barriers and facilitators to use.

RESULTS: In total, 142 providers across 26 sites have been trained. Of the 103 providers trained before April 2018, 24 are still active. Twenty interviews were performed with a medical officer (n=1), clinical officers (n=6), and nurses (n=13). Interviews revealed three factors that influenced the perceived success of the trainings: shortages in ketamine providers at trained sites due to high staff turnover, resistance from untrained medical officers and anesthetists, and a need for additional days of training.

CONCLUSIONS: Provider interviews demonstrated that the trainings are felt to be useful, but overall effectiveness is hampered by staff turnover. This information will allow the ESM-Ketamine researchers to consider revising training strategies. Suggested modifications may include training "ESM-Ketamine trainers" at each facility, improving engagement of medical officers through directed trainings, and providing refresher and additional training for previously trained ESM-Ketamine providers.

ABSTRACT 59

IS THE DORSAL FIBER-SPLITTING APPROACH TO THE WRIST SAFE? A KINEMATIC ANALYSIS AND INTRODUCTION OF THE WINDOW APPROACH.

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BACKGROUND: The fiber-splitting capsulotomy is the most commonly used surgical approach to the dorsal wrist and was developed to preserve the "secondary stabilizers" of the scapholunate joint. The purpose of our study was to compare the kinematic effects of the fiber-splitting approach (FSC) to a novel "window" approach that spares all ligaments.

HYPOTHESIS/RESEARCH QUESTION: FSC for a complete scapholunate interosseous ligament (SLIL) disruption will result in a significant alteration of proximal carpal bone alignment when compared with the window approach.

METHODS: 12 matched cadaveric wrist pairs were mounted in a custom loading jig and randomized to either the dorsal FSC or the window approach following complete SLIL division. Fluoroscopic radiographs were obtained at baseline and after each study condition following cyclic loading: Intact SLIL, SLIL division, Approach, and Closure. Radiographic measurements included scapholunate gap, radiolunate angle, scapholunate angle, and dorsal scaphoid translation.

RESULTS: There were no significant differences between the four radiographic parameters during the intact and following complete SLIL division between surgical approaches or between each loaded phase for the window group ($p < 0,005$). Following the FSC, significant increases in SLG (5.0±0.6 mm), RLA (20.3°±2.9°), SLA (35.6°±4.0°), and DST (5.1±1.0mm) occurred. Following standard closure, there were no significant improvements in SLG, RLA, SLA or DST. However, after closure with suture anchors, there were improvements in SLG (4.4±0.4mm), RLA (11.1°±2.5°), SLA (24.2°±4.2°), and DST (3.2±0.9mm).

CONCLUSIONS: The FSC approach consistently produced significant changes in carpal posture in SLIL-deficient wrists while the window approach, which preserved the critical dorsal ligament stabilizers of the wrist, resulted in no postural abnormalities when compared to baseline. This shows the importance of the dorsal wrist ligaments as critical stabilizers of the proximal carpal row and how the window approach may improve radiographic outcomes.

ABSTRACT 60

SINGLE CELL CHARACTERIZATION OF MONOCYTE-DERIVED CELLS IN HEPATOCELLULAR CARCINOMA IMMUNE MICROENVIORNMENT.

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BACKGROUND: Although myeloid derived cells have been implicated in hepatocellular carcinoma progression, understanding the individual contributions of dendritic cell and macrophage subtypes in the context of immune checkpoint therapy in humans have been challenging due to their overlapping yet heterogeneous phenotypic profiles and their highly tissue specific priming and function.

HYPOTHESIS/RESEARCH QUESTION: In this study, we aimed to 1) conduct deep characterization of the Mononuclear Phagocyte System (MPS) in the hepatocellular carcinoma tumor microenvironment (HCC TME), and 2) Identify cell distribution patterns and transcriptional signatures associated with the HCC TME and response to anti-PD1 therapy

METHODS: We employed single-cell RNA sequencing to perform high-dimensional transcriptional profiling of freshly resected tumor and adjacent tissue from a cohort of 26 untreated or treated HCC patients with neoadjuvant aPD-1. Data was modeled using a batch aware clustering algorithm, and differential gene expression, gene module, and cell-type correlation analyses were subsequently performed.

RESULTS: We identified tumor associated macrophage (TAM) subpopulations expressing higher levels pro-angiogenic growth factors (VEGFA, PDGFB) and matrix metalloproteinases (MMP9, MMP19), which can mediate T cell exclusion via regulation of extracellular matrix. Accordingly, we observed an association between TAMs and patient samples with low T cell infiltration. In addition, we observed a macrophage signature associated with poor clinical outcome (TREM2, GPNMB, SLC40A1, SEPP1). Finally, we identified a Mo-DC cluster with upregulated expression of pro-tumoral immunoregulatory cytokines (IL10, TNF) and monocyte recruitment genes (CCL3, CCL4, CXCL12).

CONCLUSIONS: We report novel cellular states of monocyte derived cells in the human liver with candidate therapeutic targets and demonstrate infiltration patterns relevant to clinical outcome. Ongoing work will elucidate correlations with anti-PD1 treatment, and validate proposed cellular interactions.

ABSTRACT 61

THE EFFICACY OF PERIOPERATIVE ANTIBIOTICS IN THE SURGICAL MANAGEMENT OF GYNECOMASTIA.

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BACKGROUND: The surgical management of gynecomastia involves a variety of operative procedures and a range of perioperative practices. However, the use of antibiotics in gynecomastia surgery has not been well described in the literature or in the American Society of Plastic Surgeon's Evidence-Based Clinical Practice Guidelines.

HYPOTHESIS/RESEARCH QUESTION: In order to investigate the necessity of antibiotics in the surgical management of gynecomastia, the present study sought to examine the relationship between perioperative antibiotic use and postoperative complication rate through a single center retrospective review.

METHODS: A retrospective review of patients who underwent gynecomastia surgery from 2011 to 2019 at a single institution was performed. Preoperative clinical parameters, procedural details, and postoperative outcomes were recorded. Primary outcomes included the use of antibiotics and postoperative complications.

RESULTS: Fifty-four patients undergoing 57 operations on 105 breasts were included. Surgical approach included periareolar incision (51%), inframammary fold (26%), and liposuction-only (16%). Fifty-two patients (91%) received intraoperative antibiotics (100% cefazolin), and thirty-nine patients (68%) were prescribed prophylactic postoperative antibiotics at discharge (90% oral cephalosporins +/- bacitracin, 5% topical bacitracin only, and 3% oral clindamycin). Three patients (5%) had wound infections with one patient requiring incision and drainage. No difference was detected in infection rate with the use of discharge antibiotics ($p > 0.05$). Median follow-up was 47 days.

CONCLUSIONS: The present study did not detect a difference in infection rate with the use of prophylactic postoperative antibiotics; however, low postoperative infection rates potentially limited the ability to evaluate an association. Multi-center studies are needed to further investigate the efficacy of antibiotic use in gynecomastia with the aim of enacting protocol changes to ensure evidence-based practice and antibiotic stewardship.

ABSTRACT 62

ARE MEDICARE'S NURSING HOME COMPARE RATINGS ACCURATE PREDICTORS OF 90-DAY COMPLICATIONS, READMISSION, AND BUNDLE COST FOR PATIENTS UNDERGOING PRIMARY TOTAL JOINT ARTHROPLASTY?

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BACKGROUND: Nursing Home Compare (NHC) ratings, created and maintained by Medicare, are used by both hospitals and consumers to aid in the skilled nursing facility (SNF) selection process. To date, no studies have linked NHC ratings to actual episode-based outcomes. The purpose of this study was to evaluate whether NHC ratings are valid predictors of 90-day complications, readmission, and bundle costs for patients discharged to an SNF after primary total joint arthroplasty (TJA).

HYPOTHESIS/RESEARCH QUESTION: Medicare's NHC rating is not an accurate predictor of 90-day post-acute utilization and post-operative complications in TJR patients.

METHODS: All SNF-discharged primary TJA cases in 2017 at a multihospital academic health system were queried. Demographic, psychosocial, and clinical variables were manually extracted from the health record. Medicare NHC ratings were then collected for each SNF. For patients in the Medicare bundle, post-acute and total bundle cost was extracted from claims. Multivariate logistical regression was performed. Patient demographics, comorbidities, and operative characteristics were controlled for in this study.

RESULTS: Four hundred eighty-eight patients were discharged to a total of 105 unique SNFs. In multivariate analysis, overall NHC rating was not predictive of 90-day readmission/major complications, >75th percentile postacute cost, or 90-day bundle cost exceeding the target price. SNF health inspection and quality measure ratings were also not predictive of 90-day readmission/major complications or bundle performance. A higher SNF staffing rating was independently associated with a decreased odds for >75th percentile 90-day postacute spend (odds ratio, 0.58; P = .01) and a 90-day bundle cost exceeding the target price (odds ratio = 0.69; P = .02) but was similarly not predictive of 90-day readmission/complications.

CONCLUSIONS: Results of our study suggest that Medicare's NHC tool is not a useful predictor of 90-day costs, complications, or readmissions for SNFs within our health system.

ABSTRACT 63

TRANSGENIC OVEREXPRESSION OF CALCIUM CYCLING PATHWAYS IN PULMONARY ARTERIAL HYPERTENSION.

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BACKGROUND: Pulmonary arterial hypertension (PAH) is a progressive disease characterized by increased pulmonary vascular resistance and remodeling, which can eventually lead to right heart failure and death. Downregulation of sarcoplasmic reticulum (SR) calcium adenosine triphosphatase (SERCA2a) has been identified to cause SR stress in PAH. Given the limited treatment options for PAH beyond symptom management, gene-based therapy may be a promising new therapeutic approach.

HYPOTHESIS/RESEARCH QUESTION: Overexpression and restoration of SERCA2a gene in the lungs, mediated by adeno-associated virus (AAV) vector, will diminish functional and pathologic severity of PAH.

METHODS: Severe PAH was modelled by surgical insult (left pneumonectomy) with a protein kinase inhibitor (Sugen) in Sprague Dawley rats. 40 rats were randomized into 4 groups receiving intratracheal injection of: (1) saline, (2) AAV/Null, (3) 1.9×10^{12} AAV/SERCA2a genome copies, (4) Sham. Heart and lung function were evaluated by MRI at baseline, 2 weeks, and before euthanasia. Pulmonary pressure, and vascular resistance and pathological remodeling were assessed. Various lung zone sections were analyzed for smooth muscle (SMC) proliferation and AAV/SERCA2a expression.

RESULTS: SERCA2a expression was downregulated in PAH lung samples (0.67 ± 0.047 fi) compared to normal rats (1.29 ± 0.028 fi) ($p < 0.001$), and AAV encoding SERCA2a restored SERCA2a levels up to 1.64 ± 0.078 fi. Furthermore, transgenic overexpression of AAV/SERCA2a significantly improved heart and lung function. Compared to control, right ventricular ejection fraction increased from 36% to 52% ($p < 0.01$), and mean pulmonary pressure decreased from 52 ± 4.28 mmHg to 23 ± 4.6 mmHg ($p < 0.01$). SERCA2a overexpression also decreased RV hypertrophy, SMC proliferation, and yielded significant regression of plexiform lesions from grade 4 to grade 2.

CONCLUSIONS: AAV/SERCA2a gene therapy attenuates functional, molecular, and histological characteristics of PAH and can serve as a novel therapeutic that limits pathological pulmonary remodeling.

ABSTRACT 64

SHORT-TERM QUALITY OF LIFE, SAFETY, AND COSMESIS OF ELECTRONIC SKIN SURFACE BRACHYTHERAPY.

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BACKGROUND: Basal cell carcinomas (BCC) and squamous cell carcinomas (SCC) are common, with rising incidence rates. Although surgery is the most common treatment option, radiation therapy is suitable for non-surgical candidates and older patients. Electronic skin surface brachytherapy (ESSB) uses kilovoltage x-rays to generate radiation and precisely applies it to skin cancers.

HYPOTHESIS/RESEARCH QUESTION: What are the short-term quality of life, safety, and cosmesis results of electronic skin surface brachytherapy for early stage basal and squamous cell carcinomas?

METHODS: Patients ≥60 years old and diagnosed with BCC or SCC with clinical staging $T_1N_0M_0$ were recruited for treatment by ESSB. Quality of life was assessed using the validated Skindex-16 and Skin Cancer Index questionnaires. Safety was monitored using the Common Toxicity Criteria for Adverse Events, version 4.0. Patient- and clinician-reported cosmesis were also evaluated. Patients were followed pre-treatment, weekly during treatment, and at 2, 6, and 12 weeks post-treatment. To characterize the patient population and summarize survey results, descriptive statistics were used.

RESULTS: Overall, 25 patients were treated with ESSB. Of these, 25 (100%) completed 2- and 6-week follow up and 24 (96%) completed 12-week follow-up. They consider cosmetic results to be good and are satisfied. Quality of life and adverse events can worsen temporarily at 2 weeks post-treatment but quality of life then improves and becomes better than pre-treatment by 12 weeks post-treatment. ESSB of BCC and SCC improves quality of life, causes few adverse events, and produces satisfactory cosmetic results.

CONCLUSIONS: By anticipating trends for quality of life, adverse events, and cosmesis to temporarily decline immediately after treatment and then improve over time, patients can be better equipped with realistic expectations of treatment outcomes prior to beginning ESSB.

ABSTRACT 65

SUPERIOR FIELD VISION SCREENING IN PTOSIS PATIENTS USING ALTERNATIVE TECHNOLOGIES.

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BACKGROUND: With a rapidly aging population, there is an increasing prevalence of ophthalmic disorders, however, ocular care in the form of early screening is limited. Vision screening barriers have been attributed to the high costs of technological equipment. In this study, we are using a Virtual Reality (VR) headset to measure the superior field of patients with ptosis in a non-inferiority study against the Humphrey Visual Field Analyzer (HVFA), a current gold standard.

HYPOTHESIS/RESEARCH QUESTION: We hypothesize that VR perimetry testing will show comparable results to the HVFA in evaluating ptosis patients.

METHODS: The study is done at the NYEE and the vision fields are collected using VR and HVFA. The primary outcome measure is non-inferiority, comparing the speed and percent difference of superior field in taped versus untapped ptosis eyes with the effect size of N=25 participants with ptosis; powered by the time it takes to complete each test. Perimetry is used in obtaining insurance coverage for ptosis repair surgeries, and at least a 30% improvement qualifies for repair surgery. Secondary measures included the speed of each test and patient responses regarding their experience.

RESULTS: Both utilities found >30% change in the superior visual fields of N = 4 participants with ptosis. The qualitative surveys given to all participants of N=8 (ptosis patients & healthy controls) show that 87.5% preferred VR over HVFA. For the perceived speed parameter, the mean from 1 to 5, where 1 is the lowest score and 5 if the highest, was 4.8 for VR versus 3.3 for Humphrey (p=0.002; Wilcoxon). Comfort was rated at 4.25 out of 5 for the VR and 4 out of 5 for HVFA (p=0.28; Wilcoxon), and 100% of users rated their general experience at 5/5 for VR compared to 50% for HVFA (p=0.04; Wilcoxon).

CONCLUSIONS: Our preliminary data suggests comparable field improvement for patients with ptosis and taped eyelids on both devices, and the patients reported significantly higher levels of satisfaction with the VR across speed and experience measures.

ABSTRACT 66

EVALUATING RESILIENCE FACTORS AMONG GREAT EAST JAPAN EARTHQUAKE AND TSUNAMI SURVIVORS IN FUKUSHIMA.

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BACKGROUND: Disasters, such as the 3/11 disaster which resulted in a nuclear power plant meltdown in Fukushima, Japan, are catastrophic events that can overwhelm a community's functioning and coping capacity, threatening both their immediate and long-term public health and environment. As a consequence of the acuity and severity of such disasters, survivors often implicitly and explicitly cultivate adaptive behaviours to persevere.

HYPOTHESIS/RESEARCH QUESTION: The goal of this study was to compare resilience behaviours and traits between Fukushima Medical University students who had experienced the 3/11 disaster and those who did not.

METHODS: With Southwick and Charney's *Resilience* as a framework, we modified a previously administered survey on resilience promoting behaviours organized under 12 resilience strategies. Respondents indicated on a 0-4 point scale the extent to which they agreed with the importance of that particular behaviour in their own coping. The CD-RISC questionnaire, a gold standard measure of resilient traits, and Davidson Trauma Scale were also administered. At the close of the survey, respondents were given the option to expand on their answers in a semi-structured interview.

RESULTS: Of the 602 respondents, 316 were classified as having experienced the 3/11 disaster (YY) and 184 as not (NN). No statistically significant differences were found between the groups in terms of demographics. The YY group scored higher than the NN group on resilience behaviours pertaining to 6 resilience strategies, such as cognitive flexibility (p=0.010) and facing fears (p=0.040). On the CD-RISC, the YY group had a significantly higher composite score than the NN group (p=0.040).

CONCLUSIONS: FMU students who experienced the 3/11 disaster self-reported more resilience promoting behaviours and traits than their counterparts. Although correlational in nature, our results indicate that weathering stressful disaster circumstances may create opportunities for positive personal growth and the development of robust resilience behaviours and traits.

ABSTRACT 67

THE EFFICACY OF SALVAGE RADIATION FOR LOCALLY RECURRENT HEPATO-BILLARY MALIGNANCIES.

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BACKGROUND: There is a few data about how to approach recurrent CCA. Expected survival with chemo is at 3yrs. It seems to suggest that local rad is effective in recurrent CCA, yet there is still limited data about how beneficial this is. Research on the effectiveness of salvage rad in recurrent CCA will be valuable to the current literature.

HYPOTHESIS/RESEARCH QUESTION: Build a database of pts treated for recurrent CCA with or without salvage rad and to identify whether aggressive therapy produced meaningful outcome in progression-free survival (PFS) and overall survival (OS) in recurrent pt. The central hypothesis is salvage local therapy can produce meaningful disease free survival in well selected pts.

METHODS: 27 patients from a single center (MSH) from 2008 - 2019 treated with salvage rad therapy analyzed for the efficacy of aggressive local radiation therapy. A single-arm study, comparison cohort of pt treated with just non-radiotherapy is being prepared.

RESULTS: Our cohort of pt treated with aggressive local rad following recurrence after resection is showing med OS of 42.2 mo (range: 17.5-119.6). Median PFS is reported to be 6.9 mo, but biased by pts lost to follow-up shortly after treatment, as many of our pt have received radiation recently, we expect PFS to improve. Med follow-up period is 47 mo.

CONCLUSIONS: We believe the results point to the effectiveness of aggressive local irradiation in managing recurrent CCA following surgical resection. Overall Survival of 42.2 mos is far greater than 11.7 mos reported in NEJM's ABC02 research trial with chemotherapy (Gem+Cis) only. While direct comparison is difficult, this imply greater local control demonstrated with aggressive local radiation compared to chemo alone following surgical resection. Further analysis, as well as possibly incorporating different cohort of pt treated with different therapies including TACE, Y90 and/or RFA will allow us to compare efficacy of different modalities of treatment for this disease.

ABSTRACT 68

IMPAIRED ANGIOTENSIN-II TYPE 1 RECEPTOR SIGNALING CONTRIBUTES TO SEPSIS INDUCED ACUTE KIDNEY INJURY.

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BACKGROUND: In sepsis-induced acute kidney injury (SIAKI), renal blood flow (RBF) may be elevated despite decreased glomerular filtration. Angiotensin-II (Ang2) reduces RBF and maintains filtration.

HYPOTHESIS/RESEARCH QUESTION: We hypothesized sepsis reduces angiotensin type-1 receptor (AT1R) expression in mice and humans, and that Ang2 protects mice from SIAKI.

METHODS: We conducted a human case-control study and experimental studies in mice. Mice (n=57) were randomized to undergo cecal ligation and puncture (a sepsis model) or sham operation. In another cohort, septic mice (n=66) were randomized to receive losartan (selective AT1R antagonist), Ang2, Ang2+losartan, or vehicle. We determined RBF by renal Doppler ultrasound. We measured blood urea nitrogen (BUN), creatinine, and cumulative urine output (UOP). We assessed renal AT1R expression by ELISA and immunofluorescence. A blinded pathologist evaluated tissue for ischemic injury. We also compared AT1R expression in tissue from human sepsis patients obtained within 1h of death (n=7) to healthy kidneys (n=10) and non-infected critically-ill patients (n=3).

RESULTS: In septic mice, RBF doubled (p<0.001), BUN rose (p=0.004), and UOP fell (p<0.001) by 6h. Concurrently, AT1R expression fell 2-fold (p<0.001) in arterioles and macula densa. Creatinine rose later at 24h (p=0.018). Sham did not alter measurements. Losartan exacerbated sepsis-induced changes in RBF, BUN, creatinine, and UOP (p≤0.001 vs. vehicle for all). However, we saw no histologic evidence of cortical ischemia, indicating hypoperfusion could not explain injury. Ang2 prevented changes in RBF, creatinine, and urine output (p≤0.05 vs. vehicle). Co-administering losartan reversed protection. Relative to both controls, sepsis patients had low AT1R expression in arterioles and macula densa.

CONCLUSIONS: Septic humans and mice have decreased renal AT1R expression. In mice, Ang2 prevents functional changes while AT1R-blockade exacerbates them independent of ischemia. Reduced AT1R expression contributes to murine SIAKI and may contribute to human SIAKI.

ABSTRACT 69

DISTAL EXTERNAL ILIAC VEIN STENOSIS AFTER PROXIMAL COMMON ILIAC VEIN STENTING.

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BACKGROUND: Iliac vein stenting for chronic venous disease is a validated and increasingly utilized treatment option for patients with chronic venous disease secondary to proximal venous outflow obstruction.

HYPOTHESIS/RESEARCH QUESTION: We have observed during vein stenting procedures the appearance of a more distal stenosis in the iliac veins after placement of a more proximal vein stent. We have also observed that a new stenosis in the iliac vein distal to a stent in the common iliac vein is a common finding during secondary re-interventions.

METHODS: This was an analysis of iliac vein stenting procedures included in a combined retrospective and prospective database previously approved by the institutional review board. We identified and selected patients in whom the iliac vein changed in area measurements and linear dimensions by venography and/or intravascular ultrasound (IVUS) during vein stent placement for chronic venous outflow obstruction in the iliac veins. The images of these intravascular ultrasounds were analyzed for area and length/width measurements in the common iliac vein (CIV) and external iliac vein (EIV), before and after placement of a proximal common iliac vein stent.

RESULTS: A total of 32 limbs that had complete and quality IVUS and venographic images that allowed for measurements pre and post proximal vein stent placement in both the CIV and EIV. Prior to ipsilateral CIV stenting, mean EIV cross-sectional area was 87.4 mm2. Post stenting, the area was 50.7 mm2 with a mean reduction of 36.7 mm2 (p<0.001). Mean EIV length pre- and post-CIV stenting was 15.2 mm and 11.1 mm, respectively (p<0.001). Mean EIV width pre- and post-CIV stenting was 7.3 mm and 5.8 mm, respectively (p<0.001).

CONCLUSIONS: This study showed that the dimensions of the external iliac vein can change before and after stent placement of a more proximal iliac vein stenosis. Proximal iliac vein stenosis may mask another more distal iliac vein stenosis. Our findings recommend the importance of completion venogram and IVUS after venous stent placement.

ABSTRACT 70

MICROENCAPSULATION OF ANNULUS FIBROSUS CELLS IN OXIDIZED ALGINATE MICROBEADS FOR INTERVERTEBRAL CELL DELIVERY.

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BACKGROUND: Discectomy is the standard of care for herniation and disabling radiculopathy, but residual annulus fibrosus (AF) defects lead to recurrent pain, indicating the need for AF repair strategies. Hydrogels cell therapies have been used to slow progressive degeneration caused by AF defects; however, the high degree of crosslinking needed to create hydrogels capable of withstanding high-magnitude spine loads is cytotoxic to cells. Oxidized alginate (OA) microbeads (MBs) have been previously used to protect cells in hazardous scaffold setting reactions; thus, this study aimed to investigate whether OA MBs can protect cells from genipin, a natural crosslinker used in intervertebral disc (IVD) repair hydrogels.

HYPOTHESIS/RESEARCH QUESTION: AF cells can undergo microencapsulation, then be released to proliferate and maintain phenotype when exposed to crosslinker.

METHODS: Bovine AF cells added to 1.5% (w/v) and 2% OA at 1M cell/mL were dripped via a syringe into a polymerization bath. Three conditions including MBs untreated, exposed to DMSO, or 0.1 mg/mL genipin for 3 hrs., were cultured for 11 days and imaged every other day to quantify cell release. Viability was quantified before and after release using flow cytometry. AF markers expression (SCX & MKX) and extracellular matrix (ECM) proteins (COL1A2 & COL2A1) were assessed by qRT-PCR.

RESULTS: Untreated OA MBs degraded and released highly viable, adherent cells with elongated processes at D6. While Genipin exposure caused unencapsulated cells to display a rounded morphology and stop proliferating, microencapsulated cells were protected from genipin toxicity. MB Released cells were viable, proliferative, displayed elongated processes and phenotypic expression of AF markers and ECM proteins.

CONCLUSIONS: OA MB protected AF cells from genipin cytotoxicity and released cells maintained expression of AF markers. This strategy may lead to the development of next-generation IVD repair strategies that provide immediate biomechanical stabilization and deliver cells to promote long-term healing.

ABSTRACT 71

EFFECT OF MEDIAN LOBE ENLARGEMENT ON EARLY PROSTATIC ARTERY EMBOLIZATION OUTCOMES.

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BACKGROUND: Prostate artery embolization (PAE) is increasingly used to treat symptoms associated with benign prostatic hyperplasia (BPH). Previous research has suggested that significant intra-vesicle prostatic protrusion (IPP) due to enlarged median lobe may decrease the efficacy of transurethral therapies. Our study examines whether PAE is viable in patients with severe IPP.

HYPOTHESIS/RESEARCH QUESTION: This study evaluates outcomes after prostatic artery embolization (PAE) in patients with severe intra-vesical prostatic protrusion (IPP).

METHODS: This was a retrospective, single health system, two-hospital study from April 2015 to December 2018 of 54 patients who underwent elective PAE procedures (age: mean 67.5 years; SD=8.5). The cohort had a mean ellipsoid prostate volume of 100.1 cm^3 (SD=56.7), a mean baseline IPSS score of 18.7 (SD=8.2), a mean baseline QOL score of 4.1 (SD=1.4), and a median follow-up of 38 days (range: 10-656 days). Outcomes including International Prostate Symptom Score (IPSS) and Quality of Life (QOL) score reduction (where a lower QOL score indicates an improvement in QOL), and clinical success were compared between severe (≥10mm) and non-severe (<10mm) IPP patients. A linear regression model was employed to examine the impact of IPP on these outcomes.

RESULTS: No significant differences in patient characteristics were found between non-severe (n=17) and severe (n=37) IPP patients. Both cohorts showed IPSS reduction (non-severe: 6.0, P=.0397 and severe: 8.2, P<.0001) and QOL score reduction (non-severe: 1.0, P=.102 and severe: 2.0, P<.0001). No significant differences in IPSS or QOL score reduction were found between the cohorts (P=.431 and P=.127). Linear regression found that baseline IPP was not a significant contributor to the outcomes (IPSS: R^2=.5, P<.0001, IPP P=.702; QOL: R^2=.5, P=.0003, IPP P=.108).

CONCLUSIONS: There were no significant differences in early outcomes in PAE between patients with severe and non-severe IPP.

ABSTRACT 72

ANALYSIS OF LANGUAGE THROUGHOUT SYMPTOM ONSET AND RECOVERY IN INDIVIDUALS WITH ANTI-NMDA RECEPTOR ENCEPHALITIS.

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BACKGROUND: Anti-NMDA receptor encephalitis (anti-NMDARE) is a form of autoimmune encephalitis characterized by psychosis, seizures, abnormal movements, and altered consciousness. NMDA receptor hypofunction has also been implicated in the etiology of psychosis seen in schizophrenia. Recent studies have demonstrated that symptom onset in individuals at clinical high risk for psychosis (CHR) can be predicted through early changes in coherence and complexity of language using natural language processing (NLP).

HYPOTHESIS/RESEARCH QUESTION: This study utilizes natural language processing analysis of writing samples from individuals with anti-NMDARE to examine the following questions: (1) Are there changes in language similar to those seen in CHR? (2) Can these language changes predict the stage of illness in anti-NMDARE?

METHODS: Participants were asked to submit six writing samples from set intervals before, during, and after illness as well as provide demographic information and complete a self-reported symptom assessment. Writing samples were de-identified, and data analysis was completed using an Information-Theoretic NLP model.

RESULTS: Data from seven individuals were included in preliminary analyses. Several language features changed significantly over time in at least four out of seven, including minimum semantic coherence and many syntactic features—the use of comparative and superlative adjectives, personal pronouns, and determiners. A prediction tool built from these factors was able to identify whether a given sample was written during acute illness or not.

CONCLUSIONS: Patients with anti-NMDARE were found to have language changes over the course of their illness. These changes overlap with those reported in patients with CHR. This proof-of-concept study suggests that NLP may be used in future research to learn more about symptom onset and recovery of both diseases.

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HIGH BODY-MASS INDEX IS A SIGNIFICANT BARRIER TO GENDER CONFIRMATION SURGERY FOR TRANSGENDER AND GENDER-NONBINARY INDIVIDUALS.

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BACKGROUND: Obesity is associated with elevated risk of perioperative complications and serious chronic conditions that reduce lifespan and the overall quality of life. For transgender and gender-nonbinary (TGNB, persons with a gender identity different from their sex recorded at birth) individuals, obesity may also represent a significant barrier to gender confirmation surgery (GCS).

HYPOTHESIS/RESEARCH QUESTION: The purpose of this study was to determine the prevalence of obesity among TGNB surgical candidates compared to cisgender (persons with a gender identity congruent with their sex recorded at birth) patients at an urban academic medical center and evaluate the efficacy of current self-monitored weight loss in preoperative weight management to meet body-mass index (BMI) eligibility requirements for GCS.

METHODS: The study was conducted at the Center for Transgender Medicine and Surgery at Mount Sinai in New York City. Data abstraction from a quality improvement database was completed for 1,457 TGNB patients with documented BMI and GCS consult from October 2015 through February 2019 and all cisgender patients followed at a co-located health center.

RESULTS: Of 1,457 TGNB surgical candidates with documented BMI and GCS consult from October 2015 through December 2018, 382 (26%) were considered obese (BMI ≥30 kg/m2), compared to 18% of cisgender patients (p-value=9.64e-12), with 189 (14%) deemed ineligible for GCS per current clinical requirements (BMI ≥33 kg/m2). At follow-up, 369 (27%) TGNB patients were obese, and 203 (15%) ineligible, with no statistically significant change with self-monitored weight loss as preoperative weight management (p-value=0.5272).

CONCLUSIONS: TGNB individuals bear a heavy burden of overweight and obesity, which poses a significant barrier to GCS. Self-monitored weight loss is not an effective preoperative BMI reduction strategy and guideline-based multidisciplinary weight management programming should be explored and evaluated as standard of care to improve access to GCS for obese TGNB individuals.

ABSTRACT 74

INSULIN RESISTANCE AND VIMENTIN EXPRESSION IN BREAST CANCER.

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BACKGROUND: Women with insulin resistance (IR) have a worse prognosis when diagnosed with early stage breast cancer (BC). Pre-clinical studies have found that insulin stimulates the expression of vimentin in breast cancer. Vimentin is an intermediate filament protein frequently expressed in cancer cells, and has been linked to the progression of breast cancer.

HYPOTHESIS/RESEARCH QUESTION: Is systemic insulin resistance associated with increased vimentin expression in newly diagnosed breast cancer?

METHODS: We obtained de-identified formalin fixed paraffin embedded (FFPE) tumor samples from a population of women over the age of 21 with newly diagnosed BC (NIH funded study R01CA171558). Women with diabetes were excluded from the study. We performed immunohistochemistry (IHC) staining on 74 samples to detect the presence and cellular localization of vimentin using a 1:200 dilution of vimentin D2H13 Rabbit mAb (Cell Signaling Technology). We imaged stained slides with an Olympus AX70 microscope and staining was classified as strong (3+), moderate (2+), or weak (1+) or negative. IR was calculated using the homeostasis model assessment of IR (HOMA-IR), body mass index (BMI), and waist circumference (WC). Results are expressed as group mean ± SD. Statistical analyses were performed using SPSS.

RESULTS: Of the 74 FFPE slides stained for vimentin, 46 (62.2%) stained 3+, 21 (28.4%) stained 2+, and 7 (9.5%) were weak or negative. Comparing those that stained 3+ with the other groups, tumors with 3+ staining were from women who were younger (55±11 vs 62±13 years, p=0.033), had lower HOMA-IR scores (1.4±1.2 vs 1.8±1.1) although this was not statistically significant (ns), and lower BMI (27.0±7.1 vs 29.6±8.1kg/m^2, ns) and had lower WC (97±14 vs 108±17cm, p=0.007).

CONCLUSIONS: In this cohort of patients with newly diagnosed breast cancer, strong vimentin staining was associated with younger age and lower waist circumference. Our ongoing studies will determine if vimentin localization in breast cancer is associated with insulin resistance or prognosis.

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DOWNSIZING A BAERVELDT GLAUCOMA IMPLANT FOR THE MANAGEMENT OF CHRONIC POSTOPERATIVE HYPOTONY.

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BACKGROUND: Trabeculectomy has been the gold standard surgery for intraocular pressure (IOP) control for several decades. Recent literature, however, suggests that glaucoma drainage implant (GDI) surgery is being performed with greater frequency and may be a suitable alternative to trabeculectomy in some patients

HYPOTHESIS/RESEARCH QUESTION: Our purpose is to describe a surgical technique for treating refractory hypotony after Baerveldt glaucoma implant (BGI) surgery.

METHODS: Eleven eyes of 11 patients (Table 1) with refractory postoperative hypotony underwent truncation of one or both wings of a previously placed BGI, combined with external ligation of the tube using a polypropylene suture.

RESULTS: All 11 eyes that underwent BGI truncation and placement of a single, external, non-dissolvable (polypropylene) tube ligature exhibited resolution of hypotony within 24 hours and resolution of choroidal effusions within the first 2 postoperative weeks. Mean postoperative follow-up time was 36.6 ± 55.0 months (range, 3 months to 15 years). The mean preoperative intraocular pressure (IOP) was 2.2 ± 1.0 mm Hg, and the mean IOP rose to 27.5 ± 14.4 mm Hg on post-operative day 1. Mean IOP at week 1, month 1, and month 3 was 20.5 ± 10.4 mm Hg, 16.9 ± 8.2 mm Hg, and 16.6 ± 7.3 mm Hg, respectively, using an average of 1.4 ± 1.4 glaucoma medications at postoperative month 3. Tube ligature release was performed by laser lysis in 10 (91%) of the 11 patients. Mean time to ligature release was 2.5 ± 2.2 months (range, 4 weeks to 6 months). There was no recurrence of hypotony or choroidal effusion in any of these patients. At most recent follow-up, the mean IOP was 12.1 ± 7.6 mm Hg on an average of 0.6 ± 0.8 glaucoma medications. Four patients demonstrated improvement of >2 lines in Snellen visual acuity.

CONCLUSIONS: Truncation of one or both wings of a BGI and complete closure of the tube with a suture ligature is an effective and safe method for reversing chronic postoperative hypotony while maintaining IOP control.

ABSTRACT 76

EXAMINING VARIATION IN STATE-SPENDING ON MEDICAID LONG-TERM SERVICES AND SUPPORTS.

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BACKGROUND: State Medicaid programs are the largest source of support for the long-term care needs of older adults. In 2017, they funded 52% of Long-Term Services and Supports (LTSS) spending in the United States. However, Medicaid LTSS spending varies significantly among states, and this variation may lead to disparities in the assistance available to older adults with caregiving needs.

HYPOTHESIS/RESEARCH QUESTION: This study aimed to examine the state- and individual-characteristics of regions with high versus low-levels of state Medicaid LTSS spending.

METHODS: We employed public data on state-level Medicaid LTSS spending in 2014 and population demographics to characterize states across quartiles of mean LTSS spending per beneficiary age ≥65. We used the Health and Retirement Study (HRS) to identify a cohort of adults age ≥65 and newly enrolled in Medicaid between 1998 and 2015. We subsequently examined the demographic, functional, and caregiving characteristics associated with residing in a state with high versus low LTSS spending.

RESULTS: Across all states, mean Medicaid LTSS spending per beneficiary age ≥65 was $25,816 in 2014. States in the lower half of LTSS spending had higher populations of Hispanics, African Americans, and individuals with low incomes. Using the HRS, we identified 1,119 older adults newly enrolled in Medicaid. Residing in a state with low LTSS spending was associated with greater family and friend caregiving hours but no differences in chronic conditions and self-rated health.

CONCLUSIONS: We identified differences in the racial, ethnic, and socioeconomic compositions of states with low versus high LTSS spending. In our individual-level analysis, we found that residing in a region with lower LTSS spending was associated with greater family and friend caregiving hours, indicating a possible substitution effect. While the drivers of state-level LTSS spending are complex, further research is necessary to determine the implications of LTSS spending variations on outcomes for older adults with caregiving needs.

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IN SITU CODE SIMULATION INITIATIVE AT NYC H+H/ELMHURST: A SYSTEM FOR NOVEL TEAMWORK ASSESSMENT, EDUCATIONAL NEEDS ASSESSMENT, AND IDENTIFICATION OF LATENT SAFETY THREATS.

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BACKGROUND: Simulation has been shown to help identify latent safety threats (LSTs), evaluate adherence to clinical guidelines, and assess leadership and teamwork with the goal of improving safety and health outcomes.

HYPOTHESIS/RESEARCH QUESTION: We hypothesize that simulation can be used to assess LSTs as a method of improving patient safety and function as a needs assessment of team performance deficits and provider workload distribution in order to inform curriculum development for code team leaders.

METHODS: 56 impromptu, in situ, code simulations were performed with actual, responding cardiac arrest teams. Outcome measures collected include objective teamwork performance scoring by trained observers on a scale of 1-5, NASA-Task Load Index (NASA-TLX) questionnaire of participants' perceived taskloads (max score of 20), and classification of opportunities for improvement and LSTs.

RESULTS: NASA-TLX: mean workload score of 87 participants was 12.39 ± 3.10. Nurses reported higher physical demand than attending physicians (12.87 ± 5.65 vs 7.92 ± 3.79; $P<0.05$) and attending physicians reported higher temporal demand than residents (15.54 ± 3.78 vs 14.14 ± 4.09, $p<0.05$). Those with less prior simulation or code experience reported higher total workload (12.93 ± 2.95 vs 11.40 ± 3.16, $p<0.05$), physical demand (12.19 ± 5.25 vs 9.13 ± 6.45, $p<0.05$, and mental demand (15.52 ± 3.57 vs 13.64 ± 4.52, $p<0.05$). LST: 46 unique threats identified. Multiple improvements made in response. Teamwork Scores: EM demonstrated highest scores. Pediatrics, L&D and medicine teams had average scores < 3 on all categories; no team scored >4.

CONCLUSIONS: Simulation can assess the state of performance, system threats, and provider taskloads. From the results of this initiative, LSTs were identified and rectified to mitigate future risk. Furthermore, from the team performance, LST and NASA TLX analysis, a curriculum is being developed for code team leaders and interventions have been made at Elmhurst focused on common themes from debriefings, targeting taskload reduction and improved teamwork.

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ESTIMATING HEALTH UTILITY SCORES AND EXPENDITURES FOR CARDIOVASCULAR DISEASE FROM THE MEDICAL EXPENDITURE PANEL SURVEY.

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BACKGROUND: Long-term health utility scores and costs used in cost-effectiveness analyses of cardiovascular disease (CVD) prevention and management are generally found to be inconsistent, outdated, or invalid for the diverse population of the United States (US).

HYPOTHESIS/RESEARCH QUESTION: Our aim was to develop a user-friendly, standardized, publicly available syntax and catalogue to derive more valid values following CVD events.

METHODS: Individual-level Short Form (SF)-12 Version 2 health-related quality of life and expenditure data were sourced from pooled 2011 – 2016 Medical Expenditure Panel Surveys (MEPS). We developed a syntax using R programming language to estimate preference-weighted SF-6D utility scores for quality-adjusted life-year (QALY) calculations and predict annual health care expenditures and utilization rates. Predictors included CVD event type (myocardial infarction, ischemic stroke, heart failure, cardiac dysrhythmias, angina pectoris, and peripheral artery disease), sociodemographic factors, and comorbidity variables.

RESULTS: The CVD types with the lowest utility scores were heart failure (0.64, 95% CI 0.62 to 0.66), angina pectoris (0.65, 95% CI 0.63 to 0.67), and ischemic stroke (0.65, 95% CI 0.65 to 0.66). The highest expenditures were for heart failure ($20,764, 95% CI $17,500 to $24,027), angina pectoris ($18,428, 95% CI $16,102 to $20,754) and ischemic stroke ($16,925, 95% CI 15,672 to $20,616).

CONCLUSIONS: The developed syntax and catalogue may improve the quality and comparability of cost-effectiveness analyses by providing standardized methods of extracting health utility scores and expenditures from MEPS data. This data may be more current and representative of the US population than previous sources.

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MENTAL HEALTH KNOWLEDGE, ATTITUDES, & STIGMA IN JARABACOA.

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BACKGROUND: Jarabacoa is a semi-urban municipality in the Dominican Republic. A recent mental health assessment conducted by the Sinai Program in Global Mental Health determined that Jarabacoa has a high need for mental healthcare: close to 66% of inhabitants reported symptoms of mental health disturbances. Despite this need, mental health resources are extremely limited, with only one psychiatrist in a population of 70,000.

HYPOTHESIS/RESEARCH QUESTION: What attitudes and knowledge regarding mental illness are present among community members in Jarabacoa?

METHODS: In summer 2019, we recruited a 497-person convenience sample in rural and semi-urban communities. We administered a multiple-choice survey, which was later analyzed for response frequencies. We conducted 4 focus groups in which local leaders invited neighborhood members to participate. Major themes were extracted from focus group transcriptions.

RESULTS: Focus groups suggest a population with little knowledge of mental healthcare. Stigma was demonstrated towards the mentally ill. However, participants expressed a community's responsibility to care for those who are mentally ill. Though few thought that mental health professionals could treat mental illness effectively, many wished to increased treatment options. Surveys also showed the limited mental health knowledge of this population and existing stigma. In accordance with the focus groups, survey results suggested a) a fear of the mentally ill, and b) a belief that they cannot work successfully. Contrary to the focus groups, surveys indicated many believed medication and psychotherapy could both be effective.

CONCLUSIONS: This study suggests an opportunity for health education in the community. Increased mental health literacy could improve mental healthcare utilization. It is possible that limited mental health literacy may contribute to the significant stigma against those with mental illness in the community, but this begets further research. With access to better psychoeducation, Jarabacoa could see a decrease in stigma.

ABSTRACT 80

THE ASSOCIATION BETWEEN CERCLAGE AND PRETERM PREMATURE RUPTURE OF MEMBRANES PRIOR TO 34 WEEKS IN SINGLETON PREGNANCIES.

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BACKGROUND: Cerclage has been shown to prolong pregnancy in certain women at increased risk for preterm birth. A commonly-cited risk of cerclage is preterm premature rupture of membranes (PROM) due to the presence of a foreign body.

HYPOTHESIS/RESEARCH QUESTION: The objective of this study was to determine if preterm PROM in women with cerclage is due to the cerclage itself or rather the underlying risk factors for preterm birth in this population.

METHODS: This was a retrospective cohort study of singleton pregnancies who underwent Shirodkar cerclage by a single maternal-fetal medicine practice between 2005 and 2019. The control group was an equal number of randomly-selected women with singleton pregnancies, a prior preterm birth, taking 17-OH-P, and no cerclage. Patients with major uterine anomalies or fetal anomalies were excluded. The primary outcome was PROM prior to 34 weeks. Chi-square and logistic regression were used.

RESULTS: 350 women with cerclage (154 (44%) history-indicated, 137 (39%) ultrasound- indicated, 59 (17%) exam-indicated) and 350 controls were included. PROM prior to 34 weeks did not differ between the groups (8.9% in cerclage vs. 6.0% in controls, p= 0.149, aOR 0.97, 95% CI 0.45, 2.10), nor between the different cerclage indications (9.1% of history-indicated, 7.3% of ultrasound-indicated, 10.2% of exam-indicated, p=0.582). This study had 80% power with an alpha error of 0.05 to detect an increase in PROM prior to 34 weeks from 6.0% in the control group to 12.0% in the cerclage group.

CONCLUSIONS: Cerclage does not increase the risk of PROM <34 weeks compared to other women at increased risk of preterm birth. The observed association between cerclage and PPROM is likely due to underlying risk factors and not the cerclage itself. The risk of PROM < 34 weeks in women with cerclage is 10% or less and does not differ based on cerclage indication.

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EXAMINING SURGEON VOLUMES AND OUTCOMES FOR RHINOLOGICAL SINUS PROCEDURES WITH RESPECT TO INDUSTRIAL FUNDING USING SPARCS DATABASE AND SUNSHINE ACT.

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BACKGROUND: This study aims to evaluate the impact of industrial funding on rhinological sinus complications and surgeon volume.

HYPOTHESIS/RESEARCH QUESTION: What is the impact of industrial funding on complication rates and volumes of rhinological sinus procedures performed (including and not including balloon procedures)?

METHODS: The Statewide Planning and Research Cooperative System database was used to identify outpatients who received rhinological sinus procedures (2013-2015). Open Payments Database was used to collect industrial funding to each operating physician. Surgeons were stratified into quartiles by payments received. Data was then examined for the effect of industrial funding on complications and volume. Data was analyzed using Kruskal-Wallis and Spearman Rho.

RESULTS: 24,601 procedures were identified. Total complication rate was 0.68%, with epistaxis 0.58%, CSF rhinorrhea 0.037%, skull base fracture 0.0081%, globe injury 0.0041%, meningitis 0%, and orbital fracture 0.0081%. For complication rates, there was a statistically significant difference between the 4 groups for epistaxis ($p<0.00001$) and skull base fracture ($p=0.022$). For total complications between the 4 funding groups, Spearman's Rho was 0.14 ± 0.03, and insignificant ($p>0.05$). When examining surgeon volume between funding groups, Spearman's Rho was 0.17 ± 0.03, and found to be significant ($p<0.001$). There was a weak correlation (0.16 ± 0.03) showing higher industrial funding is associated with more balloon procedures with statistical significance ($p=0.010$).

CONCLUSIONS: Surgeons with greater funding were found to have a nonsignificant weak correlation with complication rates, thus suggesting no significant consequences to patients. Additionally, although with statistical significance, there is a weak correlation between industry funding and total procedures performed, as well as balloon procedures performed. A key limitation was reduced outpatient procedure data (3 years).

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PHYSICIAN ATTITUDES TOWARDS LAB100 AT MOUNT SINAI, A CLINIC AND RESEARCH LAB REDESIGNING HEALTHCARE DELIVERY.

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BACKGROUND: Lab100 at Mount Sinai is a clinic and research lab leveraging data and technology to redesign the way health is measured and healthcare is delivered. As the clinic begins to scale, it is necessary to assess the attitudes of referring physicians towards Lab100's offerings for patient care. The results from this survey will inform Lab100's strategic planning, as it rolls out its services more widely throughout the Mount Sinai Health System and beyond.

HYPOTHESIS/RESEARCH QUESTION: Physicians face decreased visit times due to increased administrative burdens and increasingly data-driven patient populations. Given these demands, physicians will mostly be interested in using Lab100 to help patients better contextualize their health and offer patients a luxury healthcare product.

METHODS: Survey participants were recruited among 1,005 Mount Sinai Faculty Practice physicians across various specialties for a final survey sample size of 23 physicians. Information gathered includes demographic data such as gender, specialty, years in medical practice, practice size, practice setting, and insurance accepted, as well as motivations for referring a patient to Lab100, Lab100 offerings of most interest, and practice challenges. Survey information was obtained through the use of an electronic online tool, and all responses remained confidential.

RESULTS: The desire to help patients contextualize their health by integrating best-in-class measurement tools and data visualization was the most commonly reported reason a physician would refer a patient to Lab100 (22%). Physicians were equally most interested in Lab100's nutrition (25%) and mental health (25%) bio screen assessments. Finally, physicians found the cognition battery test most compelling (31%).

CONCLUSIONS: The survey results, in part, support the initial hypothesis that Lab100 appeals to physicians' desire to meet the increasing demands of data savvy patients. More generally, these results will be used to shape physician messaging as marketing efforts scale.

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IDENTIFYING RISK FACTORS THAT PREDISPOSE PATIENTS TO UNPLANNED READMISSION IN 30 AND 90 DAYS DUE TO NONSPECIFIC CHEST PAIN AFTER A POSTERIOR LUMBAR FUSION.

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BACKGROUND: Re-hospitalizations within 30 days after discharge account for more than $17 billion in avoidable Medicare expenditures each year. 90-day readmissions are becoming increasingly important as treatment beyond 90 days after discharge is no longer reimbursed. Identifying risk factors that predispose patients to readmission in 30 and 90 days will be instrumental in conducting perioperative patient evaluation and perioperative medical management.

HYPOTHESIS/RESEARCH QUESTION: To identify risk factors for re-admission due to non-specific chest pain (NSCP) within 30 and 90 days after discharge following posterior lumbar fusion surgeries.

METHODS: Retrospective study of the HCUP-NRD from 2012-2014. Patients were divided into two groups: NSCP and non-NSCP. Individuals >18 years old who underwent spinal fusion with posterior approach and met inclusion/exclusion criteria were included. Patient demographics and preoperative patient characteristics were used in our analysis. A bivariate analysis was performed on patient demographics and preoperative characteristics in the two group using Pearson's Chi-squared test. Characteristics that resulted in p-value of <0.05 were included in a weight-adjusted multivariate regression adjusting for comorbidities and demographics.

RESULTS: 30 day: Age (55-64 years of age, OR =5.81, 95% CI 2.66-12.7; 65-79 years of age, OR = 4.01, 95% CI 1.82-8.83; >80 years of age, OR = 6.24, 95% CI 2.54-15.32), anemia deficiency (OR = 1.98, 95% CI 1.31-2.99), and renal failure (OR = 1.71, 95% CI 1.08-2.69)

90 day: Age (55-64 years of age, OR =2.39, 95% CI 1.48-3.87; 45-54 years of age, (OR =2.04, 95% CI 1.25-3.34), Medicaid and Medicare coverage (OR = 3.36, 95% CI 2.10-5.37 and OR =3.05, 95% CI 2.16-4.31, respectively), congestive heart failure (OR = 2.36, 95% CI 1.64-3.40) and pulmonary circulatory disorders (OR = 2.11, 95% CI 1.22-3.65).

CONCLUSIONS: CHF, pulmonary circulatory disorders, & Medicare/Medicaid insurance holders are at risk of 90-day readmission. Patients with anemia are at risk of 30-day readmission.

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NEUTROPHIL-TO-LYMPHOCYTE RATIO ASSOCIATED WITH RATES OF ADVERSE EVENTS AFTER ENDOVASCULAR ANEURYSM REPAIR (EVAR).

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BACKGROUND: The blood neutrophil-to-lymphocyte ratio (NLR) is a surrogate biomarker of systemic inflammation associated with surgical outcome in multiple disease processes, including cardiovascular diseases. It is inexpensive, widely available, and may be related to the outcomes of patients after surgery.

HYPOTHESIS/RESEARCH QUESTION: We aimed to investigate the possible association of NLR with the outcomes of patients following endovascular abdominal aneurysm repair (EVAR).

METHODS: This single-center, retrospective study of a prospectively maintained database of patients who underwent EVAR and were longitudinally followed between 2001 and 2018. NLR was defined as the ratio of absolute neutrophil count to absolute lymphocyte count, and was captured at the most recent pre-op visit up to a maximum of six months prior to surgical intervention. The event-free interval (EFI) was used to evaluate outcomes using the appropriate univariate and multivariate survival models. Adverse event was defined as a composite of: endoleaks requiring reintervention, graft infections, and other vascular events requiring reintervention.

RESULTS: 738 patients were included in the study. The median NLR for all patients was 3 IQR [2.2 – 4.6]. The NLR levels were significantly associated with EFI in a univariate analysis (HR 1.05; 95%CI [1.01 – 1.08]; p = 0.039). A cut-off point of 3.9, selected based on the maximally selected log-rank statistic, was determined to provide the most separation between the EFI of the high and low NLR groups. Multivariate analysis revealed that NLR (HR 1.031; 95%CI [1.01 – 1.05]; p = 0.004) remained an important predictor of outcomes after controlling for characteristics such as comorbidities, age, and maximal aortic diameter

CONCLUSIONS: NLR was significantly associated with adverse events post-EVAR. It remains unclear whether NLR is directly linked to adverse events post-EVAR or whether it is a surrogate for an inflammatory state which predisposes patients to higher risk of adverse events.

ABSTRACT 85

SOCIAL DETERMINANTS OF HEALTH ASSOCIATED WITH OUTCOMES POST FUNCTIONAL RHINOPLASTY.

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BACKGROUND: Functional rhinoplasty aims to improve nasal breathing in patients with airway irregularities. The Nasal Obstruction Symptom Evaluation (NOSE) survey can be used to assess the quality-of-life outcomes of these patients post-surgery. A previous study explored disparities in functional rhinoplasty outcomes based on certain patient demographics and social determinants of health. The study found no significant correlation in NOSE scores based on selected demographic data nor surgical procedure used.

HYPOTHESIS/RESEARCH QUESTION: This study aims to see whether specific social determinants of health, namely the type of insurance and mean income of the patient's zip code, correlated with changes in pre and post-operative NOSE scores.

METHODS: This is a retrospective review of over 190 patients between the ages of 18 and 65 within the Mount Sinai Health System who have undergone functional rhinoplasty from 2013 to 2019. We looked at these patients' NOSE scores from any time pre-operation up to 12 months post-operation. NOSE is a 5 question quality-of-life survey in which each question is rated from 0 to 4. A final score is calculated by multiplying the sum by 5. Additional data, such as zip code, insurance (public or private), and surgical intervention were collected. Mean household income data for a patient's zip code was collected using census data.

RESULTS: The mean age was 35.3 (standard deviation [SD] = 1.15) and 116 (60.7%) were female. 29 (15.2%) had public insurance. Zip code data was collected for 150 patients. There was no statistical difference post-operative improvement in NOSE scores based on insurance type. Additionally, there was no significant correlation between the mean income of a patient's zip code and NOSE score outcomes.

CONCLUSIONS: This study found that there were no significant associations between these specific social determinants of health and post-operative NOSE score improvements. Further studies into other aspects of socioeconomic status and healthcare outcomes may highlight inequalities in care.

ABSTRACT 86

USE OF NATURAL LANGUAGE PROCESSING AND DEEP LEARNING TO IDENTIFY RECOMMENDED FOLLOW-UPS AS WELL AS THEIR DETAILS IN DIAGNOSTIC IMAGING REPORTS.

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BACKGROUND: Follow-up imaging can be crucial in patient prognosis. Manually reviewing radiology reports to see if they have follow-up recommendations is time-consuming and inefficient.

HYPOTHESIS/RESEARCH QUESTION: The aim of this study was to see if combining natural language processing with deep learning could identify if a follow-up was needed and if so what for, the recommended imaging modality and within what time frame.

METHODS: After Institutional Review Board approval, 1000 radiology reports were manually labelled for if a follow-up was needed and associated clinical details. An lstm, a type of neural network that works well with context dependent data, trained on 90% of the data and made predictions on which reports needed follow-ups and if they did natural language processing techniques were utilized to determine the associated clinical details. Medical concerns were predicted by finding known pathologies listed in RadLex, a dictionary of terms for radiology, or noun phrases near the follow-up status. Imaging modality was predicted finding matches within a list of radiological tests done at a tertiary medical institution. Time frame was predicted using a temporal tagger.

RESULTS: To quantify the results we used both F1-scores and accuracy. Accuracy looks just at what percent of predictions are correct and F1 looks at how much of each type of predication is right. For follow up status predictions, if people needed a follow up, had a f1-score of .90 and accuracy of 85%. For medical concern predictions, why people needed a follow up, had a f1-score of .74 and accuracy of 69%. For imaging Modality predictions, what type of further imaging they need, had a f1-score of .78 and accuracy of 85%. For time frame predictions, when they need a follow up by, had a f1-score of .50 and accuracy of 96%.

CONCLUSIONS: These results would allow imaging compliance to be in part automated ensuring better clinical outcomes for findings.

ABSTRACT 87

GENERAL SURGERY RESIDENT PERCEPTION OF LAPAROSCOPIC SURGERY AND TRAINING IN THE DOMINICAN REPUBLIC.

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BACKGROUND: Despite its ubiquity in developed countries, laparoscopic surgery and training remains underutilized in developing nations. Capturing the subjective opinions of surgical residents in such countries may offer important insight and identify improvable factors behind this underutilization.

HYPOTHESIS/RESEARCH QUESTION: In this study, we surveyed general surgery residents at two public hospitals in the Dominican Republic, one of which has a newly established laparoscopic simulation center, to evaluate their perspective on laparoscopic surgery and training.

METHODS: Residents in General Surgery training programs at two institutions in Santiago, Dominican Republic - Hospital Jose Maria Cabral y Baez (Cabral) and Hospital Refael Estrella Urena (Urena) - were administered a Spanish language survey regarding laparoscopic surgery implementation and training. The survey was administered by The Mount Sinai Hospital personnel and responses were reviewed post hoc to identify trends. This study was approved by review boards at all three institutions.

RESULTS: 23 out of 32 residents participated in the survey for an overall response rate of 72%. Residents believed insufficient training of residents (60.8%), cost of laparoscopy (52.2%), and lack of infrastructure (47.8% responses) were substantial barriers to widespread implementation. Regarding laparoscopy training, the lack of a formal educational program was highlighted as the most significant deterrent by 56.5% of respondents. 88.2% of respondents agreed or strongly agreed that simulation training improved laparoscopic skills, with 76.5% agreeing or strongly agreeing that proficiency in simulation tasks should be mandatory prior to OR.

CONCLUSIONS: Surgical residents in the Dominican Republic have a keen interest in laparoscopic surgery and desire to pursue formal training during residency. Cost of implementation, absence of proper infrastructure, and lack of formal training pathways were highlighted as important barriers to adoption of laparoscopic surgery and simulation training.

ABSTRACT 88

POSSIBLE SURROGATE MARKERS OF DISEASE PATHOGENESIS IN PATIENTS WITH IDIOPATHIC PULMONARY FIBROSIS.

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BACKGROUND: Idiopathic pulmonary fibrosis (IPF) is a chronic lung disease of unknown etiology characterized by the progressive and irreversible scarring of lung tissue. The disease has a poor prognosis, with a median survival of 2-3 years. Several studies that examined the bronchoalveolar lavage fluid from the lungs of patients with IPF have shown evidence of increased bacterial load and persistent infection with human herpesviruses, raising the possibility that evidence of such infection might be detected in patients with IPF using complete blood counts (CBCs).

HYPOTHESIS/RESEARCH QUESTION: Patients with IPF will have evidence of persistent infection (such as leukocytosis or increased neutrophil counts) in their CBC compared to controls.

METHODS: The study population included patients from the Mount Sinai Interstitial Lung Disease Registry who had at least two documented CBCs, and who had a diagnosis of usual interstitial pneumonia (UIP) confirmed by high-resolution computed tomography (HRCT). Age- and sex-matched patients who were also in the ILD registry but who were diagnosed with a different lung disease served as controls. The records of patients in both groups from 2002 to 2018 were reviewed and their CBC data—including WBC, neutrophil, and lymphocyte counts—was analyzed.

RESULTS: Of 430 patients in the ILD Registry, 36 patients met the study criteria. There were 35 control subjects. There was a slight increase in mean WBC count (9.60±2.54 for patients, 8.64±2.48 for controls), but it was not statistically significant (p=0.111). There was also no significant difference in neutrophil (72.26±8.12 vs 68.32±12.50, p=0.122) or lymphocyte percentages (18.62±6.54 vs 20.49±8.74, p=0.3126) between both groups.

CONCLUSIONS: Determining if there is a link between persistent infection and the development of IPF has the potential to shape treatment decisions for affected patients. Further studies, especially prospective studies with access to patient samples, will be needed to strengthen the link between infection and IPF pathogenesis.

ABSTRACT 89

HEALTH RELATED QUALITY OF LIFE AFTER SMALL BOWEL NET RESECTION.

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BACKGROUND: Neuroendocrine tumors (NETs) are often slow-growing, allowing for extended survival even in patients with malignant tumors. As such, it is increasingly important to investigate quality of life (QoL). We aim to assess predictive factors of health-related quality of life (HRQoL) in patients who underwent SB-NET resection.

HYPOTHESIS/RESEARCH QUESTION: How does NET resection affect QoL?

METHODS: The SF-12 health survey, a 12-question survey with norm-based scoring using US population data, was administered in SB-NET patients who underwent multimodal surgery between 2011-2019 at Mount Sinai Hospital. We studied patient, tumor, and treatment- related factors in relation to various determinants of HRQoL.

RESULTS: 38 patients (66%) completed the surveys. Median physical component summary score (PCS) was 49.54 [IQR: 38.2 – 52.9] and median mental health component summary score (MCS) was 50.60 [IQR: 44.4 – 57.9] for our entire cohort. There was no significant difference between standard small bowel resection and debulking surgery in either PCS (p = 0.615) or MCS (p = 0.490). Patients without symptoms of flushing at the time of surgery reported better QoL, and specifically less bodily pain (Median, [IQR]: 1, [1-2] vs. 3, [2-4]; p = 0.003), higher vitality (Median, [IQR]: 4, [4-5] vs. 3, [2-4]; p = 0.017), and better social functioning (Median, [IQR]: 5, [4-5] vs. 3, [3-4]; p = 0.025) than those that did. Stage III as opposed to Stage IV disease was associated with better QoL, with these patients reporting better general health (Median, [IQR]: 2, [1.5-2] vs. 2, [2-3]; p = 0.008), less bodily pain (Median, [IQR]: 1, [1-2] vs. 2, [1-3]; p = 0.042) and increased vitality (Median, [IQR]: 5, [4-5] vs. 4, [2-4.25]; p = 0.025).

CONCLUSIONS: We found that overall mental health related QoL is comparable to the general population in our surgical cohort. HRQoL was better in patients with no symptoms of flushing, no abdominal pain, or liver metastases, and by comparison, HRQoL scores were lower in patients with Stage IV rather than Stage III disease.

ABSTRACT 90

GENOME WIDE POLYGENIC SCORE AND URINARY TRACT STONE DIAGNOSIS IN A MULTIETHNIC COHORT.

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BACKGROUND: There are no risk prediction tools for *de novo* urinary tract stone formation and traditional risk factors only modestly predict recurrence. Additionally, a subset of urinary tract stones occurs in the absence of known risk factors.

HYPOTHESIS/RESEARCH QUESTION: Using genome-wide association studies (GWAS) summary statistics for urinary tract stones from the UK Biobank (n=361,141), we generated a polygenic risk score (PRS) and determined its association with stone diagnosis overall and in individuals with no clinical risk factors in a biobanked cohort using imputed genotyping data (Bio*Me* Biobank, n=31,441).

METHODS: We assessed association with diagnosis adjusted for age, sex and genetic ancestry using ten principal components. We then stratified individuals into low risk and high categories based on known clinical risk factors and determined association of kidney stone diagnosis with PRS in each subgroup separately.

RESULTS: In Bio*Me* (1208 cases, 30,233 controls), for every standard deviation increase in PRS, we observed an increment in odds ratio for stone diagnosis of 1.07 (95% confidence interval 1.04-1.10; p=1.1 x 10^{-6}). Individuals in the top PRS decile had an adjusted odds ratio of 1.9 (95% confidence interval 1.5 –2.5; p=1.2 x 10^{-6}) for stone diagnosis compared to the lowest decile. In the low risk group, individuals in the top scoring decile had adjusted odds ratio of 3.7 (95% confidence interval 1.7 – 9.3; p = 0.003) for stone diagnosis relative to the lowest decile.

CONCLUSIONS: PRS identifies a subgroup with higher genetic risk and is associated with urinary tract stones overall and in the absence of known clinical risk factors.

ABSTRACT 91

ASSOCIATIONS BETWEEN BODY COMPOSITION PARAMETERS AND GESTATIONAL DIABETES RISK FACTORS AND DIAGNOSIS.

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BACKGROUND: Gestational diabetes mellitus (GDM) is a common complication in pregnancy with an estimated prevalence of around 6-7%. Current protocols for GDM screening involve a 2-step Glucose Challenge Test which can be cumbersome on patients. Visceral fat mass content, measured through bio-impedence body composition analysis, is a well-established risk factor for type 2 diabetes and has been shown to have implications for GDM and other risk factors.

HYPOTHESIS/RESEARCH QUESTION: To determine whether body scan parameters in pregnant women are associated with glucose values, GDM risk factors, GDM diagnosis, and adverse delivery outcomes.

METHODS: We conducted a retrospective, single center, cohort study of 29 pregnant women diagnosed with gestational diabetes over the course of 1 year. Carpenter-Coustan (CC) criteria were used as values indicative of the diagnosis of gestational diabetes. Body composition analysis was performed using the InBody Composition Analyzer at the time of nutrition counseling. Demographic data and body composition parameters was collected on all the patients. Student's t-test and Chi Squared analysis was performed as deemed appropriate.

RESULTS: 29 patients were diagnosed with gestational diabetes. 19 remained diet controlled (GDMA1) while 10 patients progressed to medication (GDMA2) requiring medication to control their finger sticks. The only body composition parameters that statistically significantly predicted progression were visceral fat area region=1 and percent body fat. Additionally, maternal fasting glucose level on the 3 hour GTT was statistically associated with progression.

CONCLUSIONS: Using bioelectrical impedance analysis in pregnant patients' may provide sensitive identification of those likely to require medication to control glucose levels across gestation. Larger cohorts are needed to assess the significance of bioelectrical impedance analysis results with adverse pregnancy outcomes associated with GDM. This novel tool may pave the way for more convenient and accurate universal screening for GDM.

ABSTRACT 92

RACIAL DISPARITIES IN SURGICAL TREATMENT AMONG ASIAN/PACIFIC ISLANDER PATIENTS DIAGNOSED WITH EARLY STAGE LUNG CANCER.

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BACKGROUND: Racial disparities in surgical treatment continue to persist among patients with early stage lung cancer, despite surgery being established as standard of care. However, they have not been adequately studied among Asian/Pacific Islander (API) patients.

HYPOTHESIS/RESEARCH QUESTION: The goal of this study is to examine racial disparities in cancer-directed surgery between API and Non-Hispanic White (NHW) patients, adjusting for demographic and clinical factors.

METHODS: NHW and API patients aged ≥ 18 years diagnosed with primary stage I or II lung cancer from 1990 to 2015 were identified from the Surveillance, Epidemiology, and End Results (SEER) Program. Multivariable logistic regression was used to assess associations between race and receipt, recommendation, and refusal of cancer-directed surgery, accounting for demographics, tumor size, histology, and grade. An adjusted Cox proportional hazards model was performed to evaluate 5-year overall survival, according to race and accounting for treatment.

RESULTS: We identified 115,924 patients of which, 108,229 (93.4%) were NHW and 7,695 (6.6%) API. Compared to NHW, API patients were significantly less likely to receive cancer-directed surgery (adjusted odds ratio [aOR]: aOR: 0.91; 95% confidence interval [CI]: 0.85-0.98). There was no significant difference in the rates at which they were recommended surgery (aOR: 1.02; 95% CI: 0.95-1.10). However, API patients were significantly more likely to refuse recommended surgery (aOR: 2.23; 95% CI: 1.87-2.65). When accounting for surgery, API patients had significantly better overall survival (aHR: 0.84; 95% CI: 0.81-0.87).

CONCLUSIONS: Disparities in the receipt and refusal of curative surgery persist among API and NHW patients after accounting for demographic and clinical factors. However, when API patients receive similar treatment as NHW patients, their survival is significantly better. Given the known benefits of surgery, further efforts to understand reasons for and approaches to minimize rates of surgery refusal are warranted.

ABSTRACT 93

DEVELOPMENT OF A CIRCULATING HPV DNA ASSAY FOR CHEMOTHERAPY DEINTENSIFICATION IN HEAD & NECK CANCERS.

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BACKGROUND: The incidence of Human Papillomavirus (HPV) driven head & neck squamous cell carcinomas (HNSCCs) is increasing, and they are known to respond well to chemotherapy. As such, there is a possibility of treatment deintensification if treatment response can be measured accurately and frequently. Plasma HPV DNA concentration may be used as a proxy for changes in tumor load if it correlates well with standard-of-care imaging.

HYPOTHESIS/RESEARCH QUESTION: Here we assess whether an amplicon-based Next Generation Sequencing (NGS) HPV circulating DNA (ctDNA) assay can detect HPV ctDNA with sufficient sensitivity for use in a treatment deintensification trial.

METHODS: To determine the assay's limit of detection, 4 HPV-positive patient samples and 2 HPV-positive synthetic samples were serially diluted down to 1:10000 in the HPV-negative control plasma. Serial dilutions for patient samples were done by mass, and synthetic samples were diluted by copy number. A series of 10 negative controls were assessed to determine a raw count threshold to differentiate signal from noise. DNA libraries were incubated, captured, and amplified with HPV 16 and HPV 18 baits, and sequenced on an Illumina HiSeq to obtain raw counts.

RESULTS: We see approximately a 10-fold decrease in the raw count of HPV DNA detected as the samples are serially diluted. Our results on patient samples indicate that the 1:10000 dilution by mass still maintains a positive reading, clearly differentiated from the noise seen in negative controls, indicating high sensitivity and a low limit of detection.

CONCLUSIONS: This amplicon-based NGS HPV ctDNA assay shows promise in detecting very low concentrations of HPV DNA in plasma. We now aim to quantify the limit of detection with results from synthetic samples. To translate this assay to clinical use, this assay will be used in an HNSCC treatment deintensification trial and changes in HPV ctDNA measurements will be correlated with changes in tumor imaging to determine if the assay can be used as a proxy metric for tumor load.

ABSTRACT 94

LOSS OF INDEPENDENCE FOLLOWING LAPAROSCOPIC VS. OPEN PARTIAL NEPHRECTOMY: THE IMPACT OF RACIAL DISPARITIES ON TREATMENT ACCESS AND PERIOPERATIVE OUTCOMES.

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BACKGROUND: In order to ensure equitable access to the best surgical techniques, data must be examined for racial disparities and associated differences in perioperative outcomes.

HYPOTHESIS/RESEARCH QUESTION: It was confirmed that accessibility to advanced, laparoscopic techniques for partial nephrectomy is not uniform across all races. Black patients were found to have lower access than whites and correspondingly less favorable perioperative outcomes.

METHODS: Data from the American College of Surgeons (ACS) National Surgical Quality Improvement Program (NSQIP) was analyzed for 2016-2017. Patients who underwent MIPN versus open partial nephrectomy OPN were identified by race, gender and age. Laparoscopic vs. open surgery by race and perioperative outcomes including mortality, loss of independence, hospital length of stay and 30-day readmission were compared.

RESULTS: 9738 patients underwent partial nephrectomy, 7156 (73.5%) and 2582 (26.5%) were treated with MIPN and OPN, respectively. In-hospital mortality following MIPN or OPN was very low (0.17% vs. 0.45%, P=<0.01). Loss of Independence was lower in MIPN compared to OPN (1.5% vs. 2.7% P=.0002). Blood transfusion (2.9% vs. 10.9%, P<.0001), pulmonary embolism (0.54% vs 1.1%, P<.01), pneumonia (1.1% vs 2.1%;P<.0001), sepsis (0.48% vs. 1.32%, P<.0001), UTI (1.2% vs. 2.2%, P<.01), post-operative renal insufficiency (0.34% vs. 1.3%, P<.0001) and superficial SSI (0.67% vs. 1.4%, P<.001) were all lower in patients undergoing MIPN. Operating time (183.6 vs. 190.3 min, P<.001), hospital LOS (2.6 vs. 4.7 days, P<.0001), return to OR (1.7% vs. 4.1%, P<.0001) and unplanned readmission (4.0% vs. 6.4%, P<.0001) were all lower in MIPN vs. OPN. Access to MIPN was significantly higher for whites compared to blacks (76.4% vs. 68.7%, P<.0001).

CONCLUSIONS: It was confirmed that access to advanced, laparoscopic techniques for partial nephrectomy is marked by racial disparities. As a result, black patients have less favorable perioperative outcomes than whites.

ABSTRACT 95

INSIGHTS ON PHYSICIAN INSTRUCTIONS TO INJECT EPINEPHRINE WITH MILD OR NO SYMPTOMS ON FOOD ALLERGY EMERGENCY PLANS.

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BACKGROUND: Many food allergy action plans contain a controversial option to inject epinephrine for mild ("OptionA") or no ("OptionB") symptoms following allergen ingestion. There are no data on frequency/criteria to select these options.

HYPOTHESIS/RESEARCH QUESTION: This study explored allergists and pediatricians reported use and opinions on these controversial options and also explored the frequency in which allergists use this option in their practice.

METHODS: Surveys were administered in person/by email to a convenience sample of allergists and pediatricians. A retrospective chart review was conducted in a pediatric food allergy referral center to assess option use.

RESULTS: Survey response rate was 35.3% (15 allergists, 43 pediatricians). All allergists and 74% pediatricians were familiar with OptionA; 93% and 72% for OptionB, respectively. Most allergists (80%) indicated that they used OptionA in 1-9% of plans, compared to 28% of pediatricians (p<.05). Most allergists (57%) used OptionB in 1-9% of plans, compared to 26% of pediatricians (p=.05). 20%/14% of allergists and 44%/40% of pediatricians used OptionA (p=.11)/ OptionB (p=.09) in over 9% of plans. The top reasons to use the options for both allergists and pediatricians included past anaphylaxis, PICU admission, intubation, and cardiovascular collapse; the latter 3 were significantly more often identified by allergists (p <.05). Overall, 4.1% of chart review action plans indicated at least one option (OptionA-61%, OptionB-37%, both-2%), varying from 0% to 9% of plans among 9 allergists. Option selection was higher (p<.05) in patients with asthma, use of asthma treatments, prior anaphylaxis and prior epinephrine usage, but not for atopic dermatitis and allergic rhinitis.

CONCLUSIONS: Pediatricians tended to endorse usage of epinephrine for mild/no symptoms more often than allergists. Severity of past reactions were drivers of selecting these options (more so for allergists than pediatricians).

ABSTRACT 96

KINLESSNESS AT THE END OF LIFE: DEMOGRAPHIC TRENDS, PLACE OF DEATH, AND CAREGIVING SUPPORT.

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BACKGROUND: 90% of caregivers providing support in the last year of life are unpaid, of which 75% are close kin. In contrast, national rates of "kinlessness"—the state of lacking close kin—are increasing.

HYPOTHESIS/RESEARCH QUESTION: Given the extensive support kin provide at end of life (EOL), we sought to measure rates of kinlessness and assess whether kinlessness impacted EOL care.

METHODS: Using the Health & Retirement Study, a large nationally representative study of US adults ≥55 from 2002-2015, we identified 3705 decedents. Of the decedents we measured rates of kinlessness, defined as lacking a spouse and children. We also compared sociodemographic characteristics and quality of EOL care (e.g., location of death, healthcare utilization, caregiving, and social support) by kinlessness. Finally, we used a logistic regression model to measure the association between kinlessness and place of death, adjusting for demographic and healthcare characteristics.

RESULTS: We identified 259 participants who were kinless at EOL, reflecting national estimates of 1,027,600 kinless Americans (wt%=7.9%) between 2002-2015. Those who were kinless at EOL were more likely to be female and from the lowest wealth quartile, and less likely to be white and non-Hispanic. While we did not observe differences in rates of hospital death by kin status in our adjusted model, we observed caregiving disparities between groups in bivariate analyses: nursing home-dwelling individuals with kin received 2.7 times as much help from informal caregivers per month compared to those without kin (28.6 vs 10.5 hours, p<0.001). Among the community-dwelling population, individuals with kin received 2.4 times as much help from informal caregivers per month, compared to those without kin (209.9 hours vs 89.0 hours, p<0.001).

CONCLUSIONS: A significant portion of US older adults die without kin. Despite similar rates of hospital deaths between the kinless and those with kin, more work needs to be done to assess whether there are unmet needs in the EOL period for kinless older adults.

ABSTRACT 97

NONSPECIFIC CHANGES ON MPMRI: POSSIBLE PREDICTOR OF AGGRESSIVE PROSTATE CANCER.

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BACKGROUND: The utility of multiparametric magnetic resonance imaging (mpMRI) in prostate cancer diagnosis has recently increased, including preoperative evaluation for clinically significant cancer. The significance of low intensity signals, or "nonspecific changes," on T2 weighted images has not been researched.

HYPOTHESIS/RESEARCH QUESTION: The objective of this study was to determine whether reported nonspecific changes in pre-operative mpMRIs of prostate cancer patients indicate more aggressive cancer as evaluated upon prostatectomy.

METHODS: This study was a retrospective analysis of a single surgeon data cohort of men who tested positive on prostate biopsy and underwent radical prostatectomy from Oct 2013 to May 2017. All patients received a preoperative 3T mpMRI at least 3 weeks prior to biopsy. Patient MRIs were reviewed to identify those characteristic of nonspecificity, including documentation of "diffuse hypointensity," "prositatitis" and "undefined nonspecific changes" with or without cancerous lesions. Chi-square, Mann-Whitney U and Kruskal-Wallis H tests were performed to investigate the relationship between nonspecific changes and T3 disease on final surgical pathology, adjusting for demographic, clinical, radiological and surgical variables.

RESULTS: 868 patients with prostatectomy confirmed cancer were included in the study. Among patients with no reported lesions on mpMRI, men with nonspecific changes showed a significantly higher proportion of aggressive (T3) disease (18/80, 23%) on final pathology than patients with no pathological changes on MRI (3/44, 7%) (p = .024). However, the significance of nonspecific changes on mpMRI was lost in the presence of a lesion, as patients with lesions and nonspecific changes, 46/225 (20%) had significantly less T3 disease than patients with discrete lesions, 150/518 (29%), (p = 0.016).

CONCLUSIONS: Prostate cancer patients with nonspecific changes and no lesions documented on a preoperative mpMRI do not necessarily imply a benign pathology may represent possible T3 disease.

ABSTRACT 98

PROGRESSION TO CHRONIC KIDNEY DISEASE IN CHILDREN WITH A HISTORY OF PREMATURE BIRTH AND NEONATAL ACUTE KIDNEY INJURY.

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BACKGROUND: Preterm birth increases the risk for development of chronic kidney disease (CKD), even in the absence of acute kidney injury (AKI) or known nephrotoxic exposures. The incidence of AKI in preterm infants is 12-40%.

HYPOTHESIS/RESEARCH QUESTION: Preterm infants born at <30 weeks gestation with a history of stage 1 AKI will have evidence of kidney dysfunction at age 5-10 years.

METHODS: Medical records from 2007-2013 were reviewed to identify subjects born at <30 weeks gestation with and without a history of stage 1 AKI during birth hospitalization. At the study visit, height, weight, blood pressure, blood and urine samples were collected. Serum BUN, creatinine, cystatin C and neutrophil gelatinase-associated lipocalin (NGAL), and urine protein, creatinine and beta-2-microglobulin, were measured. eGFR was calculated using both CKiD and bedside Schwartz equations. Renal dysfunction was defined as eGFR <90 mL/min/$1.73m^2$, and/or urine protein:creatinine > 0.2. Retrospective perinatal data and clinical study data from subjects with and without history of AKI, and with and without current evidence of kidney dysfunction were compared using chi square or t-tests as appropriate.

RESULTS: There were 43 subjects, 13 with AKI and 30 without. Stage 1 AKI was not significantly associated with renal dysfunction. Female gender and growth restriction were significantly associated renal dysfunction (p< 0.001 and 0.015, respectively). Serum NGAL was significantly higher in subjects with renal dysfunction (p = 0.03). eGFR calculated by Schwartz equation was higher than eGFR calculated by CKiD equation (p< 0.001).

CONCLUSIONS: History of stage 1 AKI was not associated with renal dysfunction at age 5-10 yrs. In this population, BUN and creatinine alone may miss evolving CKD, and use of the Schwartz equation may also underestimate eGFR. The data suggest that screening children with a history of preterm birth and growth restriction (particularly girls) prior to age 7 using the CKiD equation may be warranted. Serum NGAL may be a promising biomarker.

ABSTRACT 99

PATIENT OUTCOMES AND BLEB MORPHOLOGY FOLLOWING SUB-TENON'S XEN IMPLANT SURGERY.

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BACKGROUND: Microinvasive glaucoma surgery (MIGS) is a developing form of treatment for patients with mild, moderate or early stage glaucoma who are not candidates for traditional surgeries. Xen gel stent implantation, a form of MIGS, shows promise to increase aqueous humor drainage and decrease IOP. Xen implants were recently FDA approved and are a major research focus, as initial outcome reports have varied. Surgical methods have varied between *ab interno* and *ab externo* (sub-Tenon's) approaches.

HYPOTHESIS/RESEARCH QUESTION: Sub-Tenon's surgical implantation of the Xen gel stent is efficacious, safe, and leads to favorable bleb morphology, with low rates of bleb failure and/or needling.

METHODS: Xen implant surgery was performed by Dr. Panarelli on 26 eyes, which underwent AS-OCT imaging at various timepoints. Medical records were reviewed to determine surgical success. Bleb morphology was analyzed from OCT images.

RESULTS: 62% of eyes (16/26) achieved complete success and 31% (8/26) had qualified success. Mean preoperative IOP was 28.1±7.8 mmHg on 3.5±0.9 glaucoma medications. Mean IOP at postoperative month 6 (n=24 eyes) and 12 (n=14 eyes) was 13.3±5.5 mmHg (p<0.01) and 13.4±2.4 mmHg (p<0.01) respectively. Postoperative complications included hypotony (27%) and hyphema (23%) on postop day 1. 3 eyes (12%) required postop needling. Bleb height was higher in late (>24 months) and intermediate (6-12 months) blebs than in early (< 3 months) blebs. Early bleb morphology was characterized by sub-conjunctival microcysts. Later blebs more frequently had multiple internal layer and uniform morphologies. All successful blebs had a posterior episcleral fluid lake (PEF). PEF height was higher in late blebs than in intermediate and early blebs.

CONCLUSIONS: Sub-Tenon's Xen implantation controls IOP with favorable bleb morphology and low rates of bleb needling. The sub-Tenon's method may be a viable alternative to *ab interno* Xen implantation. Prospective study, is needed to determine whether this approach outperforms other methods.

ABSTRACT 100

ILIOCAVAL VENOUS ANOMALIES WITH IMPLICATIONS ON VENOUS STENTING.

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BACKGROUND: Typically, the inferior vena cava (IVC) courses posteriorly to the right of the abdominal aorta in the retroperitoneal space of the abdomen. It develops from an intricate process involving the modification and regression of three sets of paired veins: the supracardinal veins, the posterior cardinal veins, and the subcardinal veins. However, any aberration in this complex process can result in multiple variations from the typical anatomy, including duplicate IVC, high IVC confluence, and uncharacteristic drainage of the right internal iliac vein into the proximal left common iliac vein, among others.

HYPOTHESIS/RESEARCH QUESTION: What are the clinical implications on surgical intervention of venous stenting in patients with congenital iliocaval anomalies?

METHODS: A retrospective analysis of patient imaging from an institutional database was reviewed. The database was formulated from individuals who presented to our hospital for chronic venous insufficiency.

RESULTS: Anomalies of the iliocaval venous system was identified in 129 patients. Out of our population of patients with iliocaval anomalies, the frequency of a high IVC confluence was found in 72 (55.81%) patients, a right internal iliac vein draining into the proximal left common iliac vein as found in 29 (22.48%) patients, and a double IVC was found in 11 patients (8.53%). The remaining abnormalities constitute 17 (13.18%) patients.

CONCLUSIONS: There is no concrete data guiding management of venous stenting in the setting of congenital iliocaval anomalies, and thus understanding these anatomical variants for endovascular procedures is imperative. In our study, we describe surgical management of a large pool of patients with said anomalies. However, further studies should assess the efficacy of surgical treatment in this subpopulation of vascular patients.

ABSTRACT 101

THE UTILITY OF GENERAL DOMAIN TRANSFER LEARNING FOR MEDICAL LANGUAGE TASKS.

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BACKGROUND: Text comprises up to 50% of medical data, and the existing gold standard for interpretation is manual chart review.

HYPOTHESIS/RESEARCH QUESTION: We sought to analyze transfer learning and transformer-based models as applied to medical natural language processing (NLP) tasks, namely radiological text classification.

METHODS: We used 1,977 labeled head CT reports to evaluate the efficacy of pretraining using general domain corpora and a combined general and medical domain corpus with a transformer-based model to classify radiology reports. Model performance was evaluated by F1-score and area under the curve (AUC), both an overall and a per-label basis. Model performance was benchmarked against other popular models.

RESULTS: The models using either set of pretrained checkpoints outperformed the linear model, achieving sample-weighted average F1-scores of 0.87 and 0.87 for the general domain model, and the combined general and biomedical-domain model. In comparison, the linear regression achieved a sample-weighted F1-score of 0.53, and the LSTM achieved a sample-weighted F1 score of 0.35. The biomedical-domain model failed to outperform the general domain model, achieving an AUC score that was not significantly higher than the model without the additional pretraining (AUC 95% CI from 0.96 – 0.97 for general domain, as compared to 0.95 – 0.97 for biomedical-domain).

CONCLUSIONS: General text transfer learning is a viable technique to generate state-of-the-art results within medical NLP tasks on radiological corpora, outperforming other deep models such as LSTMs. Domain-specific pretraining following pretraining with large general text corpora showed no additional benefit for radiological text classification. The efficacy of pretraining and transformer-based models could serve to facilitate the creation of groundbreaking NLP models in the uniquely challenging data environment of medical text. Further improvements on clinical subdomain tasks will likely require novel parameters pretrained first on text specific to the task at hand.

ABSTRACT 102

USAGE OF KETOROLAC IN LAPAROSCOPIC GYNECOLOGICAL SURGERY.

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BACKGROUND: Ketorolac tromethamine is a nonsteroidal anti-inflammatory drug that has been shown to reduce postoperative opioid use and aid recovery. However, the effect of various dosages is not well established. Although studies suggest that ketorolac has a ceiling analgesic effect at 10mg, most physicians administer 30mg.

HYPOTHESIS/RESEARCH QUESTION: This study characterizes how the analgesic effects of a 15mg dose of ketorolac compare to a 30mg dose in patients undergoing surgery.

METHODS: We reviewed the records of all American Society of Anesthesiologists-Physical Status 1-2 patients ages 18-64 who underwent ambulatory laparoscopic gynecological surgery at the Mount Sinai Hospital between May 2011 and February 2019. Patients were divided into three propensity matched groups based on whether they received 0mg, 15mg, or 30 mg of ketorolac. The primary outcome was total opioid consumption prior to discharge. Secondary outcomes were pain scores, need for rescues antiemetics, and time to discharge.

RESULTS: There were 3,329 patients who received 0mg, 121 patients who received 15mg, and 3,780 patients who received 30mg of ketorolac. After propensity score matching, 223 were included who received 0mg, 112 who received 15mg, and 226 who received 30mg of ketorolac.

There was no significant difference in the primary outcome, total opioid equivalent in PACU, between the 15mg or 30mg groups, with a significant reduction compared to the 0mg group (median [IQR] of 0[0-5.75] for 15mg vs 0[0-5] for 30mg; $p = 0.35$ and 3.75[0-10] for 0mg vs 0[0-5.75] for 15mg; $p = 0.03$). Maximum reported pain scores were lower in the 30mg group compared to the 15mg or 0mg groups (median[IQR] of 3[0-6] for 15mg vs 1[0-5] for 30 mg; $p = 0.04$ and 4[0-6] for 0mg vs 3[0-6] for 15mg; $p = 0.09$). There was no significant difference in length of stay or need for antiemetics between groups.

CONCLUSIONS: Our study supports the concept of an analgesic "ceiling effect" for ketorolac with respect to reducing postoperative opioid use, but not with pain scores.

ABSTRACT 103

URINE COLLECTION FOR ENVIRONMENTAL CHEMICAL EXPOSURE ASSESSMENT IN THE NICU.

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BACKGROUND: Early exposure to chemicals has been linked to adverse neurodevelopment. In the NICU, plasticizers leach from medical equipment into preterm infants. Although studies of NICU based exposure to plasticizers rely on urinary biomarkers, there is no standard method of collection for environmental analysis. It is known from other populations that collection method may impact the yield and reproducibility of specific organic biomarkers. The "best" method of infant urine collection for biomarker yield and accuracy has not been established.

HYPOTHESIS/RESEARCH QUESTION: To quantify the yield and accuracy of multiple methods for preterm infant urine specimen collection for phthalate biomarkers.

METHODS: We evaluated 6 collection methods: aspirated or squeezed cotton balls, woven and non-woven gauze, disposable diapers, and ostomy bags. First, in a laboratory setting aliquots of standard reference material were dropped on each material in duplicate and extracted to simulate clinical collection. Second, ten collection trials for each method were attempted with preterm infants to determine feasibility in the clinical setting. All samples were analyzed for a panel of nine phthalate metabolites by enzymatic deconjugation, solid phase extraction, and coupled reversed-phase high performance liquid chromatography – triple quadrupole mass spectrometry.

RESULTS: Lab trials: Accuracy of biomarker levels were best for ostomy bags and aspirated cotton balls. Percent recovery was not acceptable for either gauze. Diaper specimens were not analyzable as the diaper absorbent crystallized the specimens. Clinical trials: Only 3 trials of ostomy bags were completed due to the technical difficulties presented. Trial success and volume collected were highest for cotton balls.

CONCLUSIONS: The "aspirated cotton ball" method performed best. These results inform interpretation of existing NICU-based environmental health research and provide guidance towards standardizing urine collection from infants.

ABSTRACT 104

YAP-TEAD ACTIVITY REGULATES ACTIN CYTOSKELETON REMODELING AND MIGRATION IN HUMAN GLIOBLASTOMA.

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BACKGROUND: Glioblastoma (GBM) is a highly lethal primary brain tumor characterized by a great capacity for migration. The aggressive infiltration of GBM cells into the brain parenchyma challenges surgical resection, yet the mechanisms underlying GBM migration are poorly understood. Recent studies have identified the downstream Hippo pathway effectors TEAD and YAP/TAZ as essential regulators of GBM migration *in vitro* and *in vivo*.

HYPOTHESIS/RESEARCH QUESTION: Hippo dysregulation is thought to promote epithelial-mesenchymal transition (EMT), a process wherein expression of epithelial E-cadherin is switched to mesenchymal-associated cadherins such as cadherin-11. The resulting mesenchymal phenotype displays enhanced migration and altered cell-cell adhesion.

METHODS: We investigated how dysregulation of the Hippo pathway impacts the migratory abilities of patient-derived GBM by using the small molecule YAP-TEAD inhibitor Verteporfin (VP), which is FDA-approved for the treatment of macular degeneration.

RESULTS: VP treatment demonstrated decreased GBM cell migration *in vitro*, in spheroid migration assays. We used immunocytochemistry to examine the cellular effects in VP-treated GBM cells associated with migration. Preliminary studies reveal that migratory-deficient VP-GBM cells become rounder in shape, inhibit TEAD1, and downregulate levels of actin and cadherin-11.

CONCLUSIONS: These results suggest that YAP/TEAD activity may promote GBM migration by maintaining cellular shape, actin cytoskeletal organization, and expression of mesenchymal cadherin adhesion molecules and support the hypothesis that dysregulated activation through the Hippo pathway promotes EMT and drives GBM migration.

ABSTRACT 105

TUMOR T2 SIGNAL INTENSITY AND STALK ANGULATION CORRELATES WITH ENDOCRINE STATUS IN PITUITARY ADENOMA PATIENTS: A QUANTITIVATE 7 TESLA MRI STUDY.

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BACKGROUND: Pituitary adenomas are common central nervous system tumors that can cause endocrine dysfunction due to hormone oversecretion and by mass effect on the normal gland. The study of pituitary adenomas and adjacent anatomy with high resolution 7T MRI may further characterize the structural subsrates of endocrine dysfunction in these patients.

HYPOTHESIS/RESEARCH QUESTION: To determine the efficacy of 7T MRI for pituitary adenomas, and to identify radiological markers for endocrine function.

METHODS: MR images obtained were reviewed by consensus between three neuroradiologists. Objective landmarks and criteria were devised to measure radiological features of stalk, tumor, and normal gland. Hormone levels were obtained from preoperative endocrine testing. Fischer's exact tests and nominal logistic regression were performed.

RESULTS: 23 patients with pituitary adenomas were scanned in this study. Mean cross-sectional area of the stalk just below the infundibular recess was $6.3 \pm 3.7 mm^2$. Mean curvature and deviation angles were $34.2° \pm 23.2°$ and $29.7° \pm 17.3°$, respectively. Knosp scores obtained differed between 7T and lower field strength ($P < 0.0001$ [right] and $P = 0.0006$ [left]). Ability to characterize tumor was rated higher at 7T compared with lower field MRI, $P = 0.05$. Confidence in visualizing normal gland was higher using 7T MRI compared with lower field MRI, $P = 0.036$. The six hormone-secreting tumors had higher corrected T2 mean SI than non-secreting tumors (2.54 vs. -0.38, $P = 0.0196$). ROC curve analysis revealed 100% sensitivity and 80% specificity and AUC=0.925 for detecting hormone secretion with corrected lesion mean SI T2 threshold of 0.0699. Seven patients had preoperative hypopituitarism and had significantly greater stalk curvature angles than patients without hypopituitarism (71.7° vs. 36.55°, $P = 0.027$).

CONCLUSIONS: Characterization of pituitary adenomas and adjacent native pituitary tissue may benefit with the use of 7T MRI. T2 SI of tumor may be a sensitive predictor of hormonal secretion.

ABSTRACT 106

ASSESSING TREATMENT OUTCOMES AMONG DEPRESSED PATIENTS IN A STUDENT-RUN OUTPATIENT PSYCHIATRY CLINIC.

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BACKGROUND: The East Harlem Health Outreach Partnership (EHHOP)'s Mental Health Clinic (MHC) is a student-run, faculty-facilitated outpatient psychiatry clinic serving uninsurable individuals. In response to the striking lack of literature and evidence-based practice recommendations for providing mental healthcare in a similar setting, the MHC uses standardized question instruments to assess each patient's clinical course.

HYPOTHESIS/RESEARCH QUESTION: We sought to test the hypothesis that the care provided by the MHC reduces depressive and anxious symptoms in depressed patients.

METHODS: Completed Patient Health Questionnaire (PHQ)-9 for Major Depressive Disorder (MDD) and Generalized Anxiety Disorder (GAD)-7 questionnaires from each appointment provide quantitative measurements of depressive and anxious symptoms. The PHQ-9 and GAD-7 range from 0-27 and 0-21, respectively. The PHQ-9 cutpoints for mild, moderate, moderately severe, and severe depression are 5, 10, 15 and 20. On the GAD-7, scores of 5, 10, and 15 represent cutpoints for mild, moderate, and severe anxiety. All current patients with MDD/Depression with at least 4 clinic visits (n = 19) were included in this study. We used a paired t-test to determine whether or not patients had significant improvement in their symptom severity from baseline (in pre-, post- fashion).

RESULTS: Analysis revealed a highly significant reduction in PHQ9 scores of about 10.6 points (paired t-test; p-value = 1.275e-05) and in GAD7 scores of about 7.9 points (paired t-test; p-value = 0.0002292) across all patients. Interestingly, although patients with more than one psychiatric disorder did not differ from those without in their PHQ9 and GAD7 scores at presentation, there was a trend towards a greater magnitude in depressive symptom improvement in those with a co-morbid psychiatric condition (Welch's two-sample t-test; p-value = 0.08867). This was not observed for anxiety symptoms.

CONCLUSIONS: Our findings support the effectiveness of our student providers.

ABSTRACT 107

AUTOMATED MEASUREMENT OF SPINOPELVIC PARAMETERS ON LATERAL LUMBAR RADIOGRAPHS USING MACHINE LEARNING.

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BACKGROUND: Spinopelvic parameters are important quantitative metrics for the evaluation of spinal disorders. Manual measurement of these parameters is time consuming and subject to rater-dependent error. Thus, a need exists to develop automated methods for spinopelvic parameter measurement.

HYPOTHESIS/RESEARCH QUESTION: This study aims to develop an algorithm for the automated measurement of spinopelvic parameters with comparable accuracy to surgeons.

METHODS: 816 lateral lumbar radiographs were segmented to create masks of the thoracolumbar vertebrae, sacrum, and femoral heads. 653 of these radiograph and mask pairs were used to train and validate the convolutional neural network (CNN) MultiResUNet to segment the thoracolumbar vertebrae, sacrum, and femoral heads from radiographs. A computer vision script was added to process the CNN segmentations for the measurement of spinopelvic parameters (L1-S1 Cobb angle, pelvic incidence, pelvic tilt, and sacral slope). The remaining 153 radiographs were used to test this pipeline. 40 radiographs were randomly selected from this test set and manually measured by three surgeons for algorithm comparison.

RESULTS: The CNN achieved an accuracy of 0.936 and an area under the receiver operating curve of 0.956. Wilcoxon rank-sum test revealed algorithm and surgeon measurements were not significantly different relative to the gold standard surgeon. Relative to the gold standard surgeon, the algorithm performed with a similar mean absolute difference to surgeons for measurement of L1-S1 cobb angle (4.30 ± 4.14 vs 6.00 ± 4.96), pelvic incidence (4.56 ± 5.40 vs 4.39 ± 3.48), pelvic tilt (1.42 ± 2.52 vs 1.82 ± 5.88), and sacral slope (4.76 ± 6.93 vs 4.39 ± 3.48).

CONCLUSIONS: This algorithm measures spinopelvic parameters on lateral lumbar radiographs with comparable accuracy to surgeons. The algorithm could be integrated into existing digital radiograph measurement tools to provide automated spinopelvic measurements during evaluation of lateral lumbar radiographs, reducing clinical workload.

ABSTRACT 108

RISK FACTORS FOR 30-DAY AND 90-DAY READMISSION DUE TO SEPSIS AFTER HIP FRACTURE SURGERY.

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BACKGROUND: Hip fracture surgery is a common orthopedic procedure that can be associated with postoperative complications, including sepsis which affects around 7% of patients readmitted within 30 days of hip fracture surgery. Postoperative sepsis results in increased readmission rates, healthcare costs, and postoperative mortality. Prior studies have identified perioperative risk factors for 30-day readmissions due to sepsis in hip fracture patients, but none have identified similar risk factors for 90-day readmissions.

HYPOTHESIS/RESEARCH QUESTION: The purpose of this study was to identify perioperative characteristics that are associated with 30-day and, for the first time, 90-day readmission due to sepsis following elective hip fracture surgery.

METHODS: Data was sourced from the Healthcare Cost and Utilization Project (HCUP) Nationwide Readmissions Database (NRD). Demographics and medical comorbidities of patients who underwent hip fracture surgery and had a subsequent readmission were obtained. Perioperative characteristics that were significantly different between patients readmitted with an active diagnosis of sepsis and all other patients in the cohort were identified using a bivariate analysis for both 30-day and 90-day readmissions. Significant characteristics were then included in a multivariate analysis to identify those that were independently associated with 30-day and 90-day readmissions.

RESULTS: Age ≥80 years (p < 0.0001), liver disease (p < 0.0001), weight loss (p < 0.0001), fluid and electrolyte disorders (p < 0.0001), and paralysis (p < 0.0001) were found to be some of the strongest independent predictors of both 30-day and 90-day readmission due to sepsis, among others.

CONCLUSIONS: Several perioperative characteristics were found to be risk factors for readmission due to postoperative sepsis following elective hip fracture surgery. Surgeons can mitigate these risk factors through preventative controls such as antibacterial prophylaxis, preoperative counseling, and management of fluid-electrolyte balance.

ABSTRACT 109

EVALUATION OF EX VIVO HERNIATION RISK FOR A NOVEL ANNULAR REPAIR STRATEGY.

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BACKGROUND: The current surgical standard of care addresses painful radiculopathy by removing herniating nucleus pulposus tissue but does not seal residual annulus fibrosus defects. Such defects are significant risk factors for symptomatic reherniation - the leading cause of reoperation. To combat this, we developed a repair strategy comprising: (1) an interpenetrating network hydrogel of poly(ethylene glycol) diacrylate (PEGDA) and fibronectin-conjugated Fibrin and (2) an oxidized and methacrylated hyaluronic acid primer that covalently bonds this hydrogel to IVD collagen. This strategy's ability to seal AF defects has not been evaluated.

HYPOTHESIS/RESEARCH QUESTION: AF defect repair will reduce herniation risk when compared to unrepaired controls. Increasing the molecular weight of PEGDA (larger mesh size/softer gel) will reduce herniation risk.

METHODS: Control IVDs: Intact and Discectomy, Experimental IVDs: AF Repair, Tissue: Bovine IVDs, Defect: 4mm punch biopsy, Assay: MTS Instron 2mm/min displacement-controlled ramp-to-failure, Indep. Vars.: PEGDA MW 575Da, 10kDa, 20kDa, Dep. Vars.: Failure Strength, Failure Strain, Subsidence-to-Failure, Work-to-Failure, Ultimate Strength/Failure Strength, Stats: Kruskal-Wallis Nonparametric Tests.

RESULTS: AF repair partially diminishes herniation risk to that of intact levels with respect to failure strain (p=0.11,20kDa; p=0.03,10kDa) and subsidence (p=0.16,20kDa). 70% of 20kDa repairs endured failure strengths higher than physiological levels; failure strengths were not different between injured and repaired IVDs, suggesting a match to the current standard of care. Work-to-failure and Ultimate Strength/Failure Strength were significantly lower when compared to intact controls for all groups (p<0.05).

CONCLUSIONS: AF repair partially restores the integrity of the AF (per failure strain and subsidence) when compared to surgical standard. Increasing PEGDA mesh size positively affects the viability of repair. Future work will focus on large animal in vivo model for validation.

ABSTRACT 110

TREATMENT BURDEN AT THE END OF LIFE IN A NATIONAL SAMPLE OF OLDER ADULTS.

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BACKGROUND: Treatment burden, difficulty in managing treatment activities on top of life obligations, has emerged as an important consideration for patients who must learn to live with and manage chronic illness, including older adults. Despite its relevance to the care of older adults with multiple chronic conditions, treatment burden is not well-understood in the context of the end of life period.

HYPOTHESIS/RESEARCH QUESTION: Our study aimed to characterize the population of older adults experiencing treatment burden at the end of life.

METHODS: We conducted a cross-sectional study using the 2012 National Health Aging and Trends Study (NHATS), a nationally representative study of adults ages 65 and older. We dichotomized respondents as having treatment burden if they self-reported difficulty managing treatment activities, had delays in treatments, or felt that their physicians asked for too much. We determined prevalence rates of treatment burden among older adults in their last three years of life. Among those with multiple chronic conditions, we compared sociodemographic, health, and caregiving information by treatment burden status.

RESULTS: Half (43.29%) of the 356 older adults in their last three years of life experienced treatment burden. Individuals with treatment burden were more likely to be a racial/ethnic minority (18.69% vs 9.87%, $p<0.05$), and to have depression (34.26% vs 22.31%, $p<0.05$), anxiety (28.70% vs 17.69, $p<0.05$) or a cancer diagnosis (51.94% vs 44.44%, $p<0.05$) than those without treatment burden. In adjusted regression models, these characteristics were not significantly associated with treatment burden.

CONCLUSIONS: Our study suggests that treatment burden is a common experience that impacts individuals regardless of their sociodemographic, clinical, and caregiving factors. Future research should continue to examine how end-of-life treatment activities and caregiving support may be associated with treatment burden.

ABSTRACT 111

IMPACT OF SCREENING MAMMOGRAPHY ON TREATMENT IN YOUNG WOMEN DIAGNOSED WITH BREAST CANCER.

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BACKGROUND: The American Cancer Society recently amended their guidelines, now recommending biennial screening for women ages 55+ and optional screening for women ages 40-44. The reason cited for these amendments is the greater risk associated with early screening--namely false positives and subsequent superfluous treatment--outweighing the benefits. However, in 2017, 20% of new in situ breast cancers and 15% of all invasive breast cancers were detected in women in their 40s. Additionally, young women diagnosed with breast cancer commonly present with more advanced stage and aggressive disease.

HYPOTHESIS/RESEARCH QUESTION: What is the impact of screening mammography on stage as well as surgical and medical treatment following a breast cancer diagnosis in women ages 40-49?

METHODS: All data was obtained from EPIC. A study sample of 891 patients was identified from a database established across Mount Sinai Health System sites. Women treated for breast cancer within the Mount Sinai Health System between 1/10/2010 – 11/19/2018 were included in the study. Cases for which exact dates could not be found for "date of detection" and "date of last screening mammogram" were excluded from the study.

RESULTS: Analysis showed that the patients who had never received a screening mammogram prior to their diagnosis and those who were screened greater than 25 months prior were more likely to receive chemotherapy (neoadjuvant or adjuvant) on univariate analysis as compared with those that had been screened 24 months are less prior to their diagnosis (p=0.0007, p=0.0266). Surgically, patients who were never screened were significantly more likely to receive mastectomy and ALND on both univariate and multivariate analysis (p = 0.0003).

CONCLUSIONS: These results support that there are significant benefits to early detection of breast cancer in women aged 40 to 49 as patients that were never screened or had a longer interval between screenings prior to diagnosis were more likely to undergo aggressive treatment regimes such as mastectomy and chemotherapy.

ABSTRACT 112

AN ANALYSIS OF THE EXPERIENCES AND NEEDS OF LGBTQ TORTURE SURVIVORS AT THE LIBERTAS CENTER FOR HUMAN RIGHTS.

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BACKGROUND: Greater than one million torture survivors are estimated to live in the United States. LGBTQ torture survivors are a particularly vulnerable subset of this already at-risk population and little research exists documenting their experiences and needs. Since March 2010, the Libertas Center for Human Rights at Elmhurst Hospital has provided comprehensive mental health, medical, social, and legal services to torture survivors.

HYPOTHESIS/RESEARCH QUESTION: Are there differences in the experiences of LGBTQ vs non-LGBTQ survivors of torture?

METHODS: A retrospective chart review was conducted of the Libertas Center database and Elmhurst hospital's electronic medical records from 2010-June 2019 to identify LGBTQ vs non-LGBTQ Libertas clients. 392 clients met the inclusion criteria for the study. Demographic information and torture histories were compared between the two groups.

RESULTS: 16% of Libertas Center clients identified as LGBTQ. The majority (70%) of LGBTQ vs non-LGBTQ (50%) clients were male. Almost all LGBTQ clients (92%) were persecuted because of their identity whereas non-LGBTQ clients were persecuted mostly for their membership in a social group (41%) or political affiliation (46.5%). A greater proportion (22%) of LGBTQ clients first experienced torture at the early age of 10 compared with their non-LGBTQ counterparts (11%). There was a much higher prevalence of sexual torture (57% vs 29%) and community persecution (44% vs 7%) in the LGBTQ compared with the non-LGBTQ cohort. The LGBTQ group reported past suicidal ideation at a markedly higher rate than the non-LGBTQ group (46% vs. 17%).

CONCLUSIONS: These findings demonstrate the increased vulnerability of LGBTQ torture survivors, warranting enhanced sexual and mental health screening and support for these clients to mitigate their high risk for adverse health outcomes. Further, they point to the pressing need for greater advocacy to end the high degree of community persecution faced by LGBTQ torture survivors.

ABSTRACT 113

ADDITION OF WENDLER GLOTTOPLASTY TO VOICE THERAPY IMPROVES TRANSFEMALE VOICE OUTCOMES.

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BACKGROUND: Voice therapy is often considered the most effective therapy for vocal feminization in transgender patients. However, Wendler glottoplasty offers a surgical option for increasing fundamental frequency and perception of vocal femininity.

HYPOTHESIS/RESEARCH QUESTION: We aim to determine whether the addition of glottoplasty to voice therapy improves outcomes in patients' speaking fundamental frequency and patients' confidence in their voice through the transsexual voice questionnaire (TVQ).

METHODS: Preliminary data from 31 transfemale patients treated for vocal feminization were collected. All patients underwent voice therapy (VT); 15 of these patients underwent additional glottoplasty (VTWG). Pre- and post-treatment acoustic measures and transsexual voice questionnaire (TVQ) data were compared through a retrospective case series.

RESULTS: Speaking fundamental frequency (F0) increased by 22Hz in the VT group (p<0.001) and 42Hz in the VTWG group (p<0.001). There was greater elevation of F0 in patients treated with VTWG compared to VT alone (p = 0.013). TVQ improved by 17.8 in the VT group (p=0.03) and 47.6 in the VTWG group (p=0.003). Improvement in TVQ was greater in patients undergoing VTWG compared to VT (p=0.03). Semitone range decreased by 4.3 in the VTWG group (p=0.006) and was unchanged in the VT group (p=0.3). There was no statistically significant change in CPP or CSID in any group.

CONCLUSIONS: Preliminary data show that voice therapy results in F0 elevation and improvement in TVQ. Addition of glottoplasty to voice therapy results in further improvements in F0 and TVQ.

ABSTRACT 114

TWELVE-YEAR RATES AND CAUSES OF ADMISSION AMONG THOSE WITH NEUROLOGICAL CONDITIONS IN THE USA: A NATIONALLY REPRESENTATIVE STUDY.

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BACKGROUND: Current literature largely examines trends of single conditions with specific interventions. To our knowledge, there are no comprehensive population-based investigations into national administrative data of admission trends and causes among neurologic patients.

HYPOTHESIS/RESEARCH QUESTION: We hypothesized that absolute number and proportion of admissions for each neurologic condition will rise from 2003 to 2014, and that the top three reasons for admission for each condition will include preventable causes.

METHODS: We used the 2003-2014 National Inpatient Sample database capturing 20% of USA hospitalizations to examine the outcomes of interest: trends and top causes of neurological admissions. Hospital admissions for eight neurological conditions, Brain Tumor (BT), Motor Neuron Disease (MND), Multiple Sclerosis (MS), Parkinson's disease (PD), Spinal Cord Injury (SCI), Traumatic Brain Injury (TBI), Stroke, Cerebral Palsy (CP), at any diagnostic position were identified using validated ICD-9-CM diagnostic case definitions. Descriptive statistics were used to determine weighted rates of admission and top 3 causes of admissions.

RESULTS: The admission rates in 2003 and 2014 were: BT (0.64%, 0.83%), MND (0.03%, 0.04%), MS (0.30%, 0.42%), PD (0.86%, 0.78%), SCI (0.13%, 0.18%), TBI (0.80%, 0.98%), Stroke (5.14%, 5.84%), CP (0.21%, 0.30%). For PD, the top cause of admission changed from pneumonia (2003-2008) to septicemia (2009-2014). For CP, the top cause of admission changed from epilepsy/convulsions (2003-2012) to septicemia (2012-2014). Notably, from 2011-2014 septicemia was among the top three causes of all hospital admissions for all control groups and neurologic patients, except for BT and TBI.

CONCLUSIONS: Rates of admission remained largely consistent for all neurological conditions. All conditions except BT have at least one top cause of admission that is potentially preventable. Further emphasis on infection prevention in particular would likely reduce the occurrence of admission in those with neurological conditions.

ABSTRACT 115

FACTORS IMPACTING KNOWLEDGE AND PERCEPTIONS OF HEALTH IN PREGNANCY AMONG WOMEN ENROLLED IN THE "MAISHA MAPYA HYPERTENSION IN PREGNANCY FEASIBILITY PILOT" IN RURAL KENYA.

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BACKGROUND: Kenya's maternal mortality rate is 1.6 times the global rate. Knowledge and perceptions about health in pregnancy (HIP) are important determinants of antenatal care (ANC) utilization and health behaviors. Medtronic's "Maisha Mapya Hypertension in Pregnancy Feasibility Pilot" (MMP) assessed a community-based, technology-enhanced ANC model.

HYPOTHESIS/RESEARCH QUESTION: What factors affect women's knowledge, perceptions, and preferred resources for HIP information in rural Kenya?

METHODS: This mixed-methods study surveyed pregnant women actively enrolled in MMP in Siaya County, Kenya. Recruitment occurred during routine home visits. The verbally administered survey included 55 open- and closed-ended questions with additional questions for positive responses. Health and demographic data were collected from MMP. Thematic analysis was performed for open-ended questions. Descriptive statistics, Fisher's exact tests, correlations, and risk ratios were performed.

RESULTS: 41 of 95 (43.2%) eligible women were interviewed. Those who believed pregnancy can cause health problems (66.7%, n=26) were more likely to have schooling beyond primary education (OR=7.8, CI [1.5, 39.8]). The number of ANC visits attended in prior pregnancies was not correlated with known danger signs in pregnancy (p=0.90). Most women were on anti-anemia (100%, n=35) and antimalarial (77.1%, n=27) prophylaxis, but awareness of recommendations to take anti-anemia medications (54.5%, n=18) and antimalarials (12.1%, n=4) was low. Healthcare professionals were ranked the most important resource (91.4%, n=32). The next most preferred (TV/radio, Internet, magazine, or friends/family) differed between groups of educational attainment (p=0.02).

CONCLUSIONS: Education level was a key factor affecting knowledge and perceptions of HIP information. Although healthcare professionals are considered the most important resource, prior ANC attendance did not affect HIP knowledge. Health education interventions during ANC visits should target retention of HIP knowledge.

ABSTRACT 116

THE MAGIC ALGORITHM PROBABILITY (MAP) IS A VALIDATED RESPONSE BIOMARKER FOR TREATMENT OF ACUTE GRAFT-VERSUS-HOST DISEASE.

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BACKGROUND: There are no validated biomarkers that measure a patient's response to therapy for acute graft-versus-host disease (GVHD), the leading cause of non-relapse mortality (NRM) after allogeneic hematopoietic cell transplant (HCT). Recent studies from the Mount Sinai Acute GVHD International Consortium (MAGIC) have validated an algorithm probability (MAP) that combines serum concentrations of two biomarkers of GVHD (REG3 & ST2) to generate an individual's estimated probability of 6 month NRM.

HYPOTHESIS/RESEARCH QUESTION: We hypothesized that the change in MAP after 28 days of treatment could serve as a response biomarker & would compare favorably to clinical response, the gold standard surrogate for long term survival & primary endpoint in most GVHD trials.

METHODS: We prospectively collected serum samples & clinical staging from 368 sequential HCT patients treated systemically for acute GVHD at one of 20 MAGIC centers from 2016 to 2018. We computed MAPs & clinical responses for each patient.

RESULTS: MAPs of patients who experienced 6 month NRM increased significantly compared to MAPs of those who survived (p=0.0004). We found that patients whose MAPs rose above a previously determined high-risk threshold had significantly worse survival compared to those who remained below it, whereas the patients with initially high MAPs that remained above the threshold had much higher mortality. When measured at day 28, MAPs predicted NRM more accurately than clinical responses, with areas under the ROC curve (AUC) of 0.86 and 0.70, respectively (p<0.0001). An algorithm combining clinical response with biomarkers generated the same AUC as the MAP alone (0.83 v 0.86, p = NS). The MAP also predicted NRM for patients with or without clinical responses, & for those with or without lower GI disease.

CONCLUSIONS: The MAP is the first validated response biomarker for acute GVHD treatment & more accurately predicts survival than clinical response after 28 days of treatment. The MAP may serve as a novel endpoint in future trials of GVHD treatment.

ABSTRACT 117

DO SOCIOECONOMIC DISPARITIES EXIST IN POSTOPERATIVE OPIOID PRESCRIPTION & CONSUMPTION?

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BACKGROUND: From 1999-2017, >200,000 people in the U.S. died from prescription opioid overdose. Patients of lower SES are thought to be at greater risk for opioid misuse; however, there is little evidence on the effect of SES on postop opioid consumption.

HYPOTHESIS/RESEARCH QUESTION: This study aims to investigate socioeconomic disparities in both postop opioid prescription & consumption.

METHODS: Between Sept 2018-April 2019, 128 patients at an academic hospital were surveyed postop regarding opioid consumption, pain levels, and satisfaction with pain management following ambulatory surgery. Neighborhood disadvantage was calculated using Area Deprivation Index (ADI), which considers several measures from US Census data based on patient address. The least disadvantaged top 3 quartiles of the study population were classified as "high SES" and the most disadvantaged bottom quartile of the study population as "low SES". Chi-square and Wilcoxon signed-rank tests were used to study differences in postop opioid prescription and consumption between SES groups.

RESULTS: The study population consisted of 96 (75.0%) patients of high SES, median ADI of 6 (IQR 2-12.3) and 32 (25.0%) patients of low SES, median ADI of 94.5 (IQR 81.3-97.3). For both SES groups, the median number of pills prescribed (Oxycodone 5mg) was 20(high SES IQR 15-30; low SES IQR 15-27.5). 29.2% of high SES consumed 0 pills, 40.6% 1-9, and 27.1% 10+ pills. 25.0% of low SES consumed 0 pills, 46.9% 1-9, and 18.8% 10+ pills. There was no significant difference in opioid prescription (*p*-value 0.792) or consumption (*p*-value 0.508) between high and low SES patients. There was no significant difference in non-opioid painkiller use, satisfaction, and pain immediately and two weeks postop between groups.

CONCLUSIONS: Despite previous evidence showing that lower SES increases a patient's risk for opioid misuse, patients of all socioeconomic backgrounds were prescribed and consumed opioids in similar patterns with no significant difference in reported postoperative pain following ambulatory surgery.

ABSTRACT 118

"I'D LIKE TO LET PEOPLE KNOW WHAT WE DID:" VALUES OF FUKUSHIMA MEDICAL STUDENTS FOLLOWING THE GREAT EAST JAPAN EARTHQUAKE.

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BACKGROUND: The Great East Japan Earthquake and the resulting tsunami and nuclear disaster on March 11, 2011 have had a profound and lasting effect on residents of Japan's Fukushima Prefecture.

HYPOTHESIS/RESEARCH QUESTION: In the years since, there has been little sense of personal narrative in both the news coverage and academic research surrounding Fukushima Prefecture's recovery.

METHODS: This study aims to illuminate some individual stories through thematic analysis of open-ended ethnographic interviews with 10 medical students at Fukushima Medical University (FMU) who lived in the prefecture at the time of the Earthquake.

RESULTS: Three major topics emerged from these interviews: first, that the events following the Earthquake influenced not only these students' decisions to become doctors, but the ways in which they hope to practice medicine in the future. Second, that these students were motivated to share their experiences by a desire to change Fukushima Prefecture's public image. And lastly, that the students viewed the opportunity to discuss their experiences through these interviews as healing, both for themselves and for the future.

CONCLUSIONS: The Earthquake has a complex significance for the interview participants. For most, the event was career-defining – it opened doors not only to areas of study within the field of medicine, but for some, to medicine as the field of pursuit. At the same time, the lasting, burdening effects of the Earthquake endure: trauma, loss of life and destruction of property, stigma. And yet, even these consequences act as galvanizing agents. These students stand eager, motivated, and poised to make change.

ABSTRACT 119

EVALUATING EFFECTS OF STATE POLICIES ON THE IMPACTS OF INTIMATE PARTNER VIOLENCE.

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BACKGROUND: Intimate partner violence (IPV) is a serious public health burden affecting nearly 1 in 4 women and 1 in 10 men. IPV/DV policies are controversial for their substantial variation across US states.

HYPOTHESIS/RESEARCH QUESTION: We hypothesize that different IPV/DV policies affect IPV impacts on patients.

METHODS: Data were pooled from the 2010-2012 National Intimate Partner and Sexual Violence Survey, resulting in a cross-sectional sample of 22,590 women and 18,584 men over 18. State Reports across Departments of Health were coded for the presence of various IPV/DV policies. Two-way MANOVA models with bootstrapping estimated effects of different policies on lifetime IPV prevalence by gender and self-reported IPV impacts.

RESULTS: States that did not require a mandatory review of IPV/DV-related fatalities had a higher proportion of IPV patients that required legal services (M=22.955, SD=0.898) than states that did have this policy (M=20.82, SD=0.71) with association (F=6.72, p=0.02), where F values increase with the degree of difference between means. Similar impacts were found in states that did not outlaw insurance discrimination against IPV/DV patients (M=23.312, SD=1.37) when compared with states who did (M=21.20, SD=0.60) with association (F=7.94, p=0.01). States that did not require healthcare facilities to implement IPV/DV protocols had a higher proportion of patients who reported missing at least one day of work/school (M=26.25, SD=1.33) than states that did (M=24.22, SD=1.07) with association (F=5.12, p=0.03). States that did not require DV training for providers also had a higher incidence of IPV among women (M=37.39, SD=0.85) than states that required training (M=37.44, 0.93). Mandatory reporting of IPV/DV by providers and required IPV/DV screening by providers were not associated with differences in IPV impacts. Significant interaction effects were found between several policies and 3 impact measures (p<0.05).

CONCLUSIONS: Results indicate that some IPV/DV policies protect against IPV impacts on patients.

ABSTRACT 120

MATERNAL TRAIT ANGER EXPRESSION AND LIFETIME TRAUMATIC STRESS ARE ASSOCIATED WITH PRETERM BIRTH.

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BACKGROUND: Preterm birth (PTB) is a leading cause of infant mortality and morbidity in the U.S. and has enduring consequences for lifelong health. Growing evidence suggests that psychosocial factors like traumatic stressful events experienced over a lifetime and adverse childhood experiences all contribute to increased risk for PTB. However, there are few studies that explore the impact of negative emotions experienced during pregnancy, in particular, anger, on adverse birth outcomes.

HYPOTHESIS/RESEARCH QUESTION: We investigated associations between maternal anger expression and the risk of PTB in a diverse, urban pregnancy cohort. We also examined the impact of lifetime stress and trauma on any associations between maternal anger expression and PTB risk. We hypothesized that higher maternal anger expression and lifetime experience of stress and trauma interact to increase the risk of PTB.

METHODS: Participants were mother-newborn pairs enrolled in the PRogramming of Intergenerational Stress Mechanisms (PRISM) study based in Boston and New York City. Women completed the State-Trait Anger Expression Inventory-2 (STAXI-2), Life Stressor Checklist-Revised (LSC-R), and Childhood Trauma Questionnaire (CTQ) during pregnancy. The adjusted relative risk of PTB was estimated in relation to Anger Expression-In (AX-I) and Anger Expression-Out (AX-O) subscales, in relation to LSC-R scores, and between mothers who experienced childhood abuse and mothers who did not.

RESULTS: Younger, single, minority women had higher anger expression and suppression. AX-I and AX-O scores were higher among mothers who experienced childhood abuse and among mothers who had higher lifetime stress compared to those who did not. Maternal lifetime stress, anger expression, and anger suppression were individually associated with an increased risk of PTB, but they did not interact to further increase the risk for PTB.

CONCLUSIONS: Higher anger expression and higher lifetime stress may be risk factors for PTB among a diverse, urban sample of pregnant women.

ABSTRACT 121

RISK FACTORS FOR 30-DAY AND 90-DAY READMISSIONS DUE TO SURGICAL SITE INFECTION FOLLOWING POSTERIOR LUMBAR FUSION.

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BACKGROUND: SSI is a significant cause of morbidity in the 30- and 90-day windows following hospital discharge. There remains a gap in the literature on independent risk factors for readmission due to SSI following PLF procedures. In addition, readmission for SSI following spine surgery beyond the 30-day postoperative period has not been well-studied.

HYPOTHESIS/RESEARCH QUESTION: Identify the independent risk factors for 30- and 90-day readmission due to surgical site infection (SSI) in patients undergoing elective posterior lumbar fusion (PLF).

METHODS: A retrospective analysis was performed on data from the 2012-2014 Healthcare Cost and Utilization Project Nationwide Readmissions Database (HCUP-NRD). We identified 65,121 patients who underwent PLF. There were 191 patients (0.30%) readmitted with a diagnosis of SSI in the 30-day readmission window, and 283 (0.43%) patients readmitted with a diagnosis of SSI in the 90-day window. Baseline patient demographics and medical comorbidities were assessed. Bivariate and multivariate analyses were performed to examine the independent risk factors for readmission due to SSI.

RESULTS: In the 30-day window after discharge, this study identified patients with liver disease, uncomplicated diabetes, deficiency anemia, depression, psychosis, renal failure, obesity, and Medicaid or Medicare insurance as higher risk patients for unplanned readmission with a diagnosis of SSI. The study identified the same risk factors in the 90-day window with the addition of diabetes with chronic complications, chronic pulmonary disease, and pulmonary circulation disease.

CONCLUSIONS: Independent risk factors for readmission due to SSI included liver disease and uncomplicated diabetes. These findings suggest that additional intervention in the perioperative workup for patients with these risk factors may be necessary to lower unplanned readmission due to SSI following PLF surgery.

ABSTRACT 122

GENE THERAPY WITH A NOVEL DELIVERY METHOD FOR TREATING PULMONARY HYPERTENSION: A TRANSLATIONAL APPROACH.

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BACKGROUND: Pulmonary hypertension (PH) is an increase in mean pulmonary arterial pressure above 20 mmHg. The disease has a median untreated survival of 2.8 years and there are no curative treatments. We sought to design a curative gene therapy for PH that targets the root cause of its pathophysiology: vascular remodeling driven by abnormal Ca^{2+} cycling. One method to restore normal Ca^{2+} homeostasis is cellular delivery of the Ca^{2+} pump SERCA2a. We proposed delivering an adenoviral vector AAV1.SERCA2a to the lungs using flexible bronchoscopy. This is a method that is clinically feasible and also directly targets the therapy to the small vasculature in the lung, where it is needed.

HYPOTHESIS/RESEARCH QUESTION: We hypothesized that delivering AAV1.SERCA2a therapy via bronchoscopy inhibits pulmonary vascular remodeling and restores right heart function in a safe and efficient manner.

METHODS: Nine pigs underwent pulmonary vein banding to induce PH. Eight weeks later, one group (n=3) received low-dose bronchoscopy delivery of AAV1.SERCA2a, a second group (n=3) received high dose bronchoscopy delivery of AAV1.SERCA2a and the control group (n=3) received bronchoscopy delivery of saline. At 16 weeks post the initial operation, the animals were euthanized and tissues harvested.

RESULTS: PCR analysis on lung tissue successfully detected viral genome copies only in the experimental animals in a dose-dependent manner. Viral genome delivery was localized to the base of the lungs where the virus was injected and not detectable in extra-pulmonary organs. This increase in vector delivery also translated to higher SERCA2a gene expression in the lungs, ameliorating pulmonary vascular remodeling in the experimental groups as assessed by hematoxylin and eosin staining. Finally, while the mean PA pressure of control animals significantly increased over time, the mean PA pressure for the gene therapy pigs remained stable.

CONCLUSIONS: We conclude that AAV1.SERCA2a gene therapy is a feasible method to efficiently treat PH in a dose-dependent, localized manner.

ABSTRACT 123

NATURAL PROGRESSION OF ASCENDING AORTA ANEURYSMS IN PATIENTS WITH TRICUSPID AND BICUSPID AORTIC VALVES.

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BACKGROUND: We aim to describe the results of an aortic surveillance program that prospectively followed 177 patients with ascending aortic aneurysms.

HYPOTHESIS/RESEARCH QUESTION: The objective was to compare the outcomes of patients under surveillance for small–to-medium (<5.0 cm) (STM) ascending aneurysms and large (≥5cm) ascending aneurysms with either a tricuspid aortic valve or bicuspid aortic valve.

METHODS: From 2016 to 2019, 177 patients with an ascending aortic aneurysm were prospectively followed. Median follow-up time was 26 months. Inclusion criterion was at least two CT scans with contrast obtained at least six months apart.

RESULTS: Overall median diameter of the mid-ascending aorta at first CT scan was 4.3 cm (median for small to medium, 4.2 cm and for large aneurysm, 5.1 cm). The average overall rate of growth was 0.029 ± 0.167 cm/year; for STM aneurysms it was 0.028 ± 0.167 cm/year and for large aneurysms 0.037 ± 0.169 cm/year ($p > 0.05$). The average rate of growth for TAV patients was 0.028 ± 0.16 cm/year and for BAV patients was 0.034 ± 0.19 cm/year ($p > 0.05$). Thirteen patients eventually went on to repair with mean size 4.51 ± 0.75 cm and growth rate of 0.06 ± 0.13 cm/year compared to those 133 subjects without repair with mean ascending size 4.26 ± 0.56 cm and growth rate of 0.03 cm ± 0.17 cm/year. Size nor growth rate was significantly different between the populations with and without repair ($p > 0.05$). Adverse event rate, including death related to aneurysm, rupture, dissection, CVA, and surgery, was 12.7% for STM aneurysms vs 25% for large aneurysms ($p > 0.05$).

CONCLUSIONS: Annual imaging and clinic visit resulted in similar rates of adverse outcomes for patients with an ascending aneurysm <5.0 cm and ≥5.0cm aneurysm regardless of valve type. These two populations also had similar aneurysm growth rates. STM aneurysm risk of rupture/dissection is low; however, size alone may not predict an adverse event. Lastly, aortic complications in carefully monitored patients with ≥5.0 cm aneurysm may be lower than previously understood.

ABSTRACT 124

METAPHOR IN MEDICAL EDUCATION: USING POETRY IN PRECLINICAL TRAINING TO BUILD MEDICAL STUDENTS' TOLERANCE OF UNCERTAINTY AND REFLECTIVE CAPACITY.

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BACKGROUND: Over half of all U.S. medical students experience burnout before reaching residency. In addition to structural changes, personal protective factors such as tolerance of uncertainty and time for reflection have been linked to better well-being. We propose that the close reading of poetry, a genre that does not always provide narrative resolution, can support students in building these characteristics.

HYPOTHESIS/RESEARCH QUESTION: Can the analysis of poetry support medical students in (1) understanding the patient experience and (2) developing tolerance of uncertainty and reflective capacity?

METHODS: We piloted Metaphor in Medicine, a series of five, two-hour poetry classes, at the Icahn School of Medicine at Mount Sinai in the Fall 2019 semester. 37 students participated in at least one class; 18 students (49%) completed the Tolerance for Ambiguity (TOA) Scale and Groningen Reflection Ability Scale (GRAS) after their first and last class. Paired t tests and repeated measures ANOVA analyses compared changes over time.

RESULTS: Statistically significant improvements were found in the TOA scale (t=-2.661, df=17, p=0.016) and GRAS (t=-2.328, df=17, p=0.033). The number of classes taken did not significantly influence the improvement (TOA: $F_{(1, 16)}=0.545$, p=0.471, GRAS: $F_{(1, 16)}=0.695$, p=0.417). In anonymous evaluations, all students (n=35, not unique) agreed with the following statements: "This class allowed me to understand the patient from a different point-of-view" and "This type of class would be a worthy addition to the medical school curriculum."

CONCLUSIONS: Incorporating the analysis of poetry into medical education curricula is an effective way to address core training competencies, such as tolerance of uncertainty and self-reflection. Future work will expand the course content and continue data collection in a second course iteration.

ABSTRACT 125

OUTCOMES FOLLOWING STEREOTACTIC BODY RADIATION THERAPY IN OLDER PATIENTS WITH NON-SMALL CELL LUNG CANCER >5CM IN SIZE.

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BACKGROUND: Stereotactic body radiation therapy (SBRT) is emerging as a non-invasive treatment option for non-small cell lung cancer (NSCLC) patients who are unable to tolerate surgical procedures. However, little is known about the risks and benefits of SBRT for older patients with larger NSCLCs >5 cm tumors in size.

HYPOTHESIS/RESEARCH QUESTION: To examine outcomes of NSCLC tumors >5 cm treated with SBRT in older patients.

METHODS: We used the Surveillance, Epidemiology and End Results-Medicare database to identify all older (>65 years of age), stage II lymph node-negative NSCLC patients with tumors >5 cm in size who were treated with SBRT between 2005 and 2013. We evaluated complication rates using logistic regression and estimated survival using the Kaplan-Meier method. Cox regression was then used to determine predictors of survival in these patients.

RESULTS: We identified 71 NSCLC subjects >65 years old who were treated with SBRT for larger (>5cm) stage II tumors. Patients who received SBRT experienced few complications in the first six months following treatment, with 1.4% cases with hemoptysis; 2.8% with radiation pneumonitis; and 5.6% with rib fracture. Median lung cancer specific and overall survival were 28 months (95% CI: 19-44 months) and 20 months (95% CI: 17-26 months), respectively. Lung cancer specific and overall survival at 3-years was 63.7% and 29.6%, respectively. Tumor size conferred an independent increased risk for overall mortality (hazard ratio [HR]: 1.04; 95% CI: 1.01-1.08), while marital status was independently associated with decreased risk in overall mortality (HR: 0.47; 95% CI: 0.25-0.86).

CONCLUSIONS: SBRT is well tolerated and may provide survival benefit for older NSCLC patients with larger tumors. Further research should continue to investigate the role of SBRT in the treatment of NSCLC patients and compare complication rates and survival to other standard of care treatments for the management of NSCLC >5 cm tumors in older populations.

ABSTRACT 126

GLIOBLASTOMA MRI ANALYTICS USING DEEP LEARNING.

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BACKGROUND: Gliomas are among the deadliest neurological diseases. Their characterization has evolved to molecular analyses, where genetic mutations inform prognosis and management. Tumor characterization, however, requires surgical biopsy and is prone to sampling error. Modern biomedical imaging combined with machine learning may provide a non-invasive means of molecularly characterizing tumors.

HYPOTHESIS/RESEARCH QUESTION: We aim to develop a deep learning-based end-to-end analytics pipeline that takes a patient's pre-operative MRI, automatically segments tumor pathology, and predicts its genomic profile.

METHODS: MRIs and genomic information were obtained from The Cancer Genome Atlas for 119 patients with low-grade and 292 patients with high-grade gliomas. A 3D U-Net model was developed to segment the whole tumor (WT), enhancing tumor (ET), and necrotic tumor core (TC). A DenseNet neural network was trained to molecularly characterize biomarkers of interest from segmentations. We developed a novel pretraining method to facilitate training on tumor grade followed by fine-tuning on biomarkers, and multimodal models that incorporate demographic factors to mimic how physicians evaluate such studies. Segmentations were evaluated using the Dice coefficient, which quantifies the fraction of voxels that were segmented correctly, and biomarker prediction was assessed using area under the curve (AUC).

RESULTS: The U-Net achieved Dice scores of 0.889, 0.838, and 0.887 for WT, ET and TC segmentation, respectively. The DenseNet achieved an AUC of 0.97 for predicting tumor grade and the fine-tuned model achieved AUCs of 0.93, 0.63, 0.82 and 0.60 for predicting IDH1, MGMT, 1p/19q and EGFR statuses, respectively. Incorporating demographics improved prediction of MGMT and EGFR statuses to 0.77 and 0.71, respectively.

CONCLUSIONS: We present a novel approach to non-invasively characterize tumors with high clinical efficacy. Future work will assess our algorithms across additional hospital sites with the aim of deployment into clinical workflows.

ABSTRACT 127

SQUAMOUS CELL CARCINOMA OF THE ORAL TONGUE IN YOUNG NON-SMOKING NON-DRINKING PATIENTS.

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BACKGROUND: OTSCC in nonsmoking and nondrinking young patients has been described as having an aggressive phenotype; risk factors and oncological outcomes of this cancer are poorly understood.

HYPOTHESIS/RESEARCH QUESTION: We hypothesize OTSCC in young, nonsmoking, nondrinking patients is aggressive with high rates of locoregional and distant failure.

METHODS: A retrospective review of patients presenting to our institution with OTSCC between January 2008 and June 2019 was performed. Inclusion criteria were diagnosis of primary OTSCC and no history of alcohol or smoking. The young cohort age threshold was under 45 years, and old cohort age over 45 years. Demographic, pathological staging, locoregional failure, distant failure, and survival data were evaluated. Statistical analysis was performed with standard t-tests, chi-squared tests, and Fisher's exact test.

RESULTS: 61 patients met inclusion criteria for this study (54.0% young and 46.0% old), with mean cohort ages of 40.8 and 61.5 years. 19 (57.6%, young) vs five (17.9%, old) patients had pathological stage 0-II tumors and 14 (42.4%, young) vs 23 (82.1%, old) had pathological stage III-IVB tumors (p < 0.001). Mean tumor size was $2.55 \pm 1.88 cm^3$(young) and $1.02 \pm 1.71 cm^3$(old) (p = 0.22). The younger cohort had a higher rate of locoregional failure 15 (45.5%) compared with the older cohort 6 (21.4%) (p < 0.05). Young patients exhibited a higher rate of distant failure (8, 24.2%) compared with old patients 3 (10.7%), with a shorter time to distant failure after treatment (10.6 vs 11.8 months) with the same length of survival from treatment at 27.7 months. Of patients with locoregional failure who received RT, 100% demonstrated in-field failures.

CONCLUSIONS: OTSCC in young, non-drinking, non-smoking patients exhibited a complex disease course, demonstrating greater rates of locoregional and in-field failures compared to similar patients in an older cohort. Future studies are warranted to examine factors driving these outcomes and determine appropriate treatment strategies in this population.

ABSTRACT 128

D²S²: COMBINING DISEASE AND DRUG GENE SETS.

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BACKGROUND: Drug repositioning through connectivity mapping has the potential to accelerate drug discovery by predicting the activity of drugs without the need to know the specific drug target. Currently, the L1000 connectivity map – an assay that measures the expression level of 978 landmark mRNAs – is the largest connectivity mapping resource with over 1.3 million samples and over 400,000 signatures. However, there is still extensive skepticism about the applicability of applying this connectivity mapping resource broadly.

HYPOTHESIS/RESEARCH QUESTION: This project aims to address two questions: Can we validate the utility of the L1000 data for connectivity mapping applications by exploring the consistency between L1000 signatures for FDA approved drugs and disease signatures for diseases that these drugs are used to treat? Can we compare the current Sinai EMR prescription practices against the drug signatures fetched from L1000 and other datasets?

METHODS: Disease and Drug Signatures Search (D²S²) aims to globally validate L1000 predictions based on current clinical applications of approved drugs. To achieve this, D²S² fetches gene sets and signatures from the following resources: L1000FWD, CREEDS, Geneshot, X2K, Enrichr, GWAS Catalog, and a GWAS applied to the UK Biobank.

RESULTS: Global analysis of all the signatures and gene sets within D²S² enabled us to determine which drugs reverse or mimic the disease signatures. A full-stack web service with a user interface provide disease and drug centric gene sets, fetched from the multiple resources, for download, analysis, and visualization. D²S² visualizes the similarity between the gene sets and signatures with Clustergrammer.

CONCLUSIONS: Further experimental validation of the surprising drugs/disease connections is needed.

ABSTRACT 129

ANALYSIS OF PARKINSON'S DISEASE SUBTYPES VIA CLUSTER ANALYSIS.

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BACKGROUND: Parkinson's disease (PD) is the second most common neurodegenerative disorder. PD's heterogeneous presentation has prompted investigation into whether PD is a collection of multiple distinct diseases. Ongoing research efforts to determine clinical subtypes could help further elucidate disease pathology, improve disease management planning, and inform subject selection in clinical trial design.

HYPOTHESIS/RESEARCH QUESTION: Does unbiased cluster analysis of PD motor and nonmotor symptoms reveal distinct disease subtypes?

METHODS: Mount Sinai Movement Disorders Center (MSMD) data was collected via chart review of PD patients already consented to a larger study. Parkinson's Progression Markers Initiative (PPMI) data was downloaded from the LONI database. Correlations between traits, hierarchical clustering of traits, and nonhierarchical kmeans clustering of subjects via Principal Component Analysis were performed for both cohorts.

RESULTS: In the MSMD cohort (n=85), the following traits clustered: fluctuations and dyskinesias (p = .02). Non-hierarchical clustering of subjects revealed three clusters: (i) enriched in fluctuations, dyskinesias, freezing of gait, and depression; (ii) enriched in dyskinesias and fluctuations; (iii) milder symptoms. In the PPMI cohort (n = 371), the following traits clustered: (i) depression and anxiety (p < .01), (ii) disease duration and tremor (p = .04), (iii) bradykinesia and rigidity (p = .02), (iv) cognitive assessment scores (p = .05). Non-hierarchical clustering of subjects revealed three clusters: (i) atremulous PD and worse psychiatric and autonomic symptoms; (ii) tremulous PD and older onset, worse cognition; (iii) milder symptoms. Comparing the two cohorts is difficult as PPMI enrolled unmedicated early stage PD patients, whereas MSMD clustering primarily depended on medication-related symptoms.

CONCLUSIONS: Multiple clinical subtypes were found in both cohorts. Further characterizing these subtypes and incorporating molecular profiling can help with personalized treatment for PD in the future.

ABSTRACT 130

RACIAL DISPARITIES IN CLINICAL CHARACTERISTICS AND OUTCOMES OF ADVANCED PANCREATIC CANCER PATIENTS TREATED AT MOUNT SINAI HOSPITAL.

Matthew Williams[1], Umut Ozbek[2], Celina Ang[3]. [1]Medical Education, [2]Population Health Science and Policy, [3]Medicine. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND: African American (AA) pancreatic ductal adenocarcinoma (PDA) patients are frequently diagnosed younger and at more advanced stages than Whites (W). Few reports on PDA outcome disparities exist in the modern treatment era.

HYPOTHESIS/RESEARCH QUESTION: We investigated racial disparities among unresectable/metastatic PDA patients treated with modern chemotherapy at Mount Sinai Hospital (MSH). The primary endpoint was overall survival (OS) in AA VS W.

METHODS: We retrospectively reviewed medical records of all PDA patients treated at MSH between 2012-2017. Chi-square analysis for descriptive statistics and Kaplan-Meier OS analysis with univariate/multivariate models investigating potential OS confounders were performed.

RESULTS: 145 evaluable patients identified as: W (69), AA (34), Asian (As, 15), and Other (27). 55.7% of patients received gemcitabine-based therapy VS 36.6% received 5-FU based therapy, specifically 26.1% received FOLFIRINOX and 43.7% received gemcitabine/nab-paclitaxel. In a univariate model, As had significantly worse OS than W (HR 2.74, P=0.013), but there were no OS differences between AA VS W (HR = 1.51, P=0.297) nor Other VS W (HR 2.05, P=0.062). Ethnicity (Hispanic/Latino VS not Hispanic/Latino), surgery for recurrent/metastatic disease, gender, insurance status, ECOG, and baseline CA19-9 did not impact OS on univariate analysis, but gemcitabine-based chemotherapy was inferior to 5-FU based therapy (HR 2.43, P=0.008). On multivariate analysis, As had worse OS VS W (HR 2.86, P=0.01), and gemcitabine-based regimens were inferior to 5-FU based therapy (HR 2.56, P=0.006), but there were no OS differences between AA VS W nor Other VS W (HR 1.25, P=0.582) and (HR 1.75, P=0.156), respectively.

CONCLUSIONS: In this series of advanced PDA patients treated with contemporary chemotherapy, AA and W patients had comparable outcomes, but As had worse OS than W patients. Further investigation of socioeconomic and biologic contributors to this health disparity is warranted.

ABSTRACT 131

TRENDS IN RADICAL PROSTATECTOMIES.

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BACKGROUND: Prostate cancer is one of the most common cancers in men. Radical prostatectomy is the most common form of treatment chosen to treat prostate cancer. Robotic assisted laparoscopic surgery was first approved by the FDA in 2000 and quickly became adapted to radical prostatectomies. The use of robotic assisted laparoscopic prostatectomies (RALPs) has grown as more physicians become trained in the system.

HYPOTHESIS/RESEARCH QUESTION: We aim to quantify the utilization of robotic assisted and open approaches to radical prostatectomy amongst physicians and determine predictors of post-operative outcomes.

METHODS: We utilized the New York State Planning and Research Cooperative System (SPARCS), an all-payer reporting system, to search for all prostatectomies, open and robotic assisted, performed in New York State from 2000-2015. We utilized records from 68,897 prostatectomies, with 22,104 being robotic assisted. We analyzed each physician's case load to determine any trends in the use and outcomes of these two approaches.

RESULTS: The top three RALP providers performed 32.4% of the total number of RALPs. Patients who underwent RALPs had a 13% reduced likelihood of having a prolonged length of stay (pLOS), defined as more than 3 days, compared to those who underwent the open approach (p<.001). Patients operated on by medium and high-volume surgeons had a 17% and 30% reduced likelihood, respectively, of having a pLOS (p<.001) compared to low-volume surgeons. Age, race, ethnicity, Charlson Comorbidity Index, and Source of Payment were all significant predictors of pLOS (p<.001).

CONCLUSIONS: Robotic approach and increasing physician case volume were associated with a decreased likelihood of pLOS. However, there appears to be increased centralization of care with regards to robotic utilization as a few physicians perform a large percentage of procedures. Given this information, future studies can determine whether there is equal access to these high-volume physicians with regards to race, location, and socioeconomic status.

ABSTRACT 132

PREDICTING THE RELATIONSHIP BETWEEN O-LINK ANALYTES AND DIFFERENT PHENOTYPES AFTER ENDOSCOPY IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE.

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BACKGROUND: IBD equally comprised of Crohn's Disease (CD) and Ulcerative Colitis (UC). The gold standard to check for inflammation is endoscopy, but blood tests can be used. Blood is preferred by patients, but there have been no advances in peripheral blood biomarkers since C-Reactive Protein (CRP). In this study, we use O-Link assays to look for predictive proteins for different disease states.

HYPOTHESIS/RESEARCH QUESTION: Does activity in the plasma of patients with inflammatory bowel disease correlate with the results of endoscopic evaluation?

METHODS: CD patients undergoing ileocecal resection were recruited by the NIDDK IBD Genetics Consortium. Blood samples were taken at first colonoscopy and second colonoscopy. 580 blood samples were used for O-Link assays. After deleting replicated assays and including only first endoscopy, 240 blood samples remained. Recurrence was defined as Rutgeerts score ≥ i2. Anti-TNF use was defined as having used any anti-TNF agent pre- or post-surgery. Multiple univariate logistic regressions were used to assess which proteins from an O-Link data panel are upregulated or down-regulated.

RESULTS: Regression Coefficient divided by the standard error was plotted for the 89 analytes and values over 3, and under -3 were analyzed. The Rutgeerts regressions found that the O-Link analytes il6 and mmp1(Coefficient range 0. 577948-0. 784997, p-value<.05) were significantly upregulated in in recurrence. The TNF regressions found that the O-Link analytes cxcl9, cxcl10, ccl4, tnfrsf9, mcp1 (Coefficient range (-)0.71473- (-)1.70864, p-value<.05) were down-regulated with TNF use.

CONCLUSIONS: Independent with patient risk factors, there are 2 analytes upregulated in patients with recurrence of disease, and 5 analytes downregulated in patients using anti-TNF. Further analysis would be necessary to determine whether these analytes have predictive utility.

ABSTRACT 133

BASELINE COMORBIDITIES AS PREDICTORS OF BREAST RECONSTRUCTION IN GERIATRIC CANCER PATIENTS: A CLAIMS-BASED STUDY.

Hope Xu[1], Jenny Lin[2], Keith Sigel[2], Peter Taub[3]. [1]Medical Education, [2]Medicine, [3]Surgery. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND: An abundance of sociodemographic and tumor-related factors have been identified that influence breast reconstruction rates. The relationship between reconstruction and baseline medical comorbidities has yet to be examined in a large study population.

HYPOTHESIS/RESEARCH QUESTION: The purpose of this study was to analyze specific comorbidities as a predictive factor for breast reconstruction in post-mastectomy women.

METHODS: A longitudinal, retrospective cohort of women age 66+ years with primary breast cancer between 2000-2011 who underwent mastectomy was identified in the SEER-Medicare database. Mastectomy, breast reconstruction, and comorbidities as delineated by the Elixhauser Index were identified using billing codes. Weighted Elixhauser scores were calculated to estimate comorbidity burden. Univariate analyses and multivariate logistic regression models were fit to analyze breast reconstruction rates.

RESULTS: Of 192,465 women, 63,696 (33.2%) underwent mastectomy. Of these, 4,962 women (7.80%) then underwent reconstruction. In univariate analyses, women who underwent reconstruction were more likely to be younger (median age 70.8 vs. 76.5 years, $p<0.0001$), white (8.28% vs. 4.61% for Blacks), and have lower comorbidity burden (mean weighted Elixhauser score 1.40 vs. 2.53, $p<0.0001$). In predictive modeling, a baseline comorbidity of CHF (OR=0.70), PVD (OR=0.79), uncomplicated HTN (OR=0.82), neurological disorders (OR=0.64), COPD (OR=0.86), uncomplicated and complicated DM (OR=0.65, 0.62), obesity (OR=0.69), fluid and electrolyte disorders (OR=0.75), and psychoses (OR=0.32) were associated with decreased odds of reconstruction. Hypothyroidism (OR=1.22) and depression (OR=1.19) were associated with increased odds.

CONCLUSIONS: In older women, reconstruction after mastectomy is associated with specific comorbidities and overall comorbidity burden. This predictive study demonstrates the significance of precise medical characterization, which can aid surgical candidate selection and inform counseling for pre-mastectomy patients.

ABSTRACT 134

BASELINE COMORBIDITIES AS PREDICTORS OF COMPLICATIONS AFTER BREAST RECONSTRUCTION IN GERIATRIC WOMEN: A CLAIMS-BASED STUDY.

Hope Xu[1], Jenny Lin[2], Keith Sigel[2], Peter Taub[3]. [1]Medical Education, [2]Medicine, [3]Surgery. [1,2,3]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND: Despite increasing prevalence of breast cancer and reconstruction in geriatric women, the relationship between complications and comorbidity burden has yet to be examined in a large population.

HYPOTHESIS/RESEARCH QUESTION: The purpose of this study was to analyze medical comorbidities as a predictive factor for complications following breast reconstruction in geriatric women.

METHODS: A longitudinal, retrospective cohort study of women age 66+ years diagnosed with primary breast cancer between 2000-2011 in the SEER-Medicare database who underwent mastectomy was identified. Mastectomy, reconstruction, comorbidities in the Elixhauser Index, and complications were identified using billing codes. Weighted Elixhauser scores were calculated to estimate comorbidity burden. Univariate analyses and multivariate logistic regression models were fit to analyze 30-day complications.

RESULTS: A total of 63,696 women underwent mastectomy, and 4,962 (7.80%) received implant (70.8%) or autologous (29.2%) reconstruction. None suffered 30-day mortality and 1,255 (25.3%) had 30-day complications, including 473 seromas, 173 hematomas, 901 infections, 398 wound healing failures, and 50 graft failures. In univariate analyses, women with complications were more likely to have had autologous reconstruction ($p<0.0001$), lower income ($p=0.0430$), positive lymph nodes ($p=0.0043$), higher AJCC stage ($p=0.0002$), greater comorbidity burden (mean weighted Elixhauser score 1.69 vs. 1.30, $p=0.0069$), and a history of cardiac arrhythmia, HTN, neurological disorders, COPD, DM, obesity, and/or depression. Predictive modeling showed increased odds of complications in patients with uncomplicated DM (OR=1.318) and COPD (OR=1.356), autologous reconstruction (OR=1.543), and higher AJCC stage (OR=1.168).

CONCLUSIONS: Only DM and COPD were significant predictors of complications after reconstruction, and age itself was not associated. Elderly women should not be considered inherently poor candidates for reconstruction before careful evaluation of their medical status.

ABSTRACT 135

SPATIAL MAPPING OF COLLAGEN CONTENT AND STRUCTURE IN HUMAN INTERVERTEBRAL DISC DEGENERATION.

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BACKGROUND: Intervertebral disc (IVD) degeneration is the most common diagnosis in low back pain. Despite its prevalence, specific phenotypic and morphological characteristics of IVD degeneration are insufficiently described. Using an imaging method known as second harmonic generation (SHG) imaging, we seek to systematically analyze collagen structure in human IVDs at various degeneration grades within the nucleus pulposus (NP) and annulus fibrosus (AF).

HYPOTHESIS/RESEARCH QUESTION: We hypothesize that nucleus pulposus SHG intensity and entropy will increase with degenerative grade as fibrosis leads to deposition of type I collagen.

METHODS: Using an institutional biobank of cadaveric IVDs, 23 lumbar IVDs were obtained. IVDs were all either L2/3 or L3/4 and were graded on the Rutges and Thompson degeneration scales. A systematic protocol for taking 10 images along the midline of each IVD was used. SHG intensity was quantified in FIJI after background subtraction. Image intensity entropy and orientation entropy were calculated in Matlab. Two-way ANOVA and linear regression was performed in Graphpad to analyze the effect of position and degeneration grade.

RESULTS: SHG intensity increases significantly with Rutges degeneration grade (p=0.0038, R^2=0.3357). SHG entropy decreased in the anterior AF (AAF) (p=0.0187, R^2=0.2363) and posterior AF (PAF) (p=0.0250, R^2=0.2173). Orientation entropy was decreased in the AAF (p=0.0266, R^2=0.2131) and NP (p=0.0004, R^2=0.4547). Qualitatively, NP SHG intensity was relatively uniform in low-grade IVD's, while more irregularities in signal intensity were observed in high-grade IVDs.

CONCLUSIONS: The increase in SHG intensity and entropy with increasing degeneration in the NP, along with the structural disruption observed across the IVD, suggests an increase in local fibrotic deposition of collagen with degeneration. Future directions include the use of collagen-hybridizing-peptide to visualize molecular degeneration, and the use of a more rigorous histological grading scale for degeneration assessment.

ABSTRACT 136

DIFFERENCES IN TREATMENT OUTCOMES IN RUPTURED VS. NON-RUPTURED LOW-GRADE APPENDICEAL MUCINOUS NEOPLASMS.

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BACKGROUND: Low-grade appendiceal mucinous neoplasms (LAMN) are rare tumors that, if ruptured, can cause pseudomyxoma peritonei, malignant growths within the abdominal cavity. While an appendectomy is usually sufficient to treat unruptured disease, hyperthermic intraperitoneal chemotherapy (HIPEC), despite its toxicity, is routinely offered to patients with ruptured tumors.

HYPOTHESIS/RESEARCH QUESTION: The current LAMN classification systems using peritoneal location and implant grade may not provide sufficiently accurate prognostic tools to determine adequate treatment plans. We hypothesize that patient presentation at time of diagnosis can predict treatment outcomes.

METHODS: A retrospective analysis was performed on 147 patients treated for LAMN at our high-volume institution between 2000 and 2018. Pathological specimens of appendiceal tumors were examined to confirm the diagnosis, and their reports were used to classify patients into four categories: (1) non-ruptured LAMN, (2) peri-appendiceal mucin deposits, (3) diffuse spread of acellular mucin, and (4) diffuse spread of mucin containing neoplastic epithelium.

RESULTS: Of the 147 patient analyzed, 80 had non-ruptured LAMN, 13 had peri-appendiceal mucin deposits, 22 had diffuse spread of acellular mucin, and 52 had diffused spread of mucin containing neoplastic epithelium. HIPEC was administered predominantly in the groups with disseminated mucin. The radiological Peritoneal Carcinomatosis Indices (PCI) were (0, 1, 18, 13) whereas the operative PCI were higher for the patients with PMPs (0, 2, 20, 18). Patients who were symptomatic at presentation, when compared to those who were diagnosed incidentally, had an increased chance of recurrence (%, 2 vs 20, $P<0.01$) and worse disease-free survival ($p<0.01$), but similar overall survival ($p>0.05$).

CONCLUSIONS: Because presentation was a significant predictor of recurrence and DFS, screening, prompt diagnosis and adequate treatment play an important role in improving patients' outcomes.

ABSTRACT 137

RATE OF HPV+ OROPHARYNGEAL SQUAMOUS CELL CARCINOMA IN PATIENTS UNDERGOING TRANSORAL ROBOTIC BILATERAL TONSILLECTOMY AT MOUNT SINAI HOSPITAL.

Kimia Ziadkhanpour[1], Noel Phan[2], Brett Miles[2]. [1]Medical Education, [2]Otolaryngology. [1,2]Icahn School of Medicine at Mount Sinai, New York, New York.

BACKGROUND: Incidence of oropharyngeal squamous cell carcinoma (OPSCC) is increasing and patients with HPV-associated OPSCC are at an elevated risk of developing second primary cancers of the head and neck. Specifically, recent case reports have shed light on the occurrence of bilateral tonsillar cancers although the incidence of bilateral tonsillar cancers in the case of a known tonsillar cancer has yet to be determined. Dziegielewski et al report a 10% rate of contralateral tonsillar cancers identified in a series of 79 consecutive patients undergoing transoral robotic surgery (TORS) for a known primary tonsillar cancer and argue for routine contralateral tonsillectomy, which has sparked a discussion within the field.

HYPOTHESIS/RESEARCH QUESTION: We aim to analyze the rate of contralateral OPSCC in patients undergoing TORS for a known primary tonsillar OPSCC in order to further the discussion on routine contralateral tonsillectomy.

METHODS: To address this issue, our team conducted a retrospective study of patients undergoing TORS at the Mount Sinai Hospital. Our database included 284 tonsillectomies performed out of 489 total TORS procedures.

RESULTS: The rate of contralateral tonsillectomy was 15.1% (43/284) with a 4.7% (2/43) rate of contralateral OPSCC. In patients without contralateral SCC, tumor pathology showed perineural invasion (PNI) in 7.31% of patients, lymphovascular invasion (LVI) in 19.5%, and extracapsular spread (ECS) in 17.1% (n= 43). These patients had a 73% rate of HPV+ and 43% underwent bilateral neck dissection. There was no incidence of G-tube placement. In the other cohort, consisting of patients with contralateral OPSCC, one patient had HPV+, p16+ bilateral OPSCC without PNI, LVI or ECS, and the other had HPV- p16- contralateral OPSCC with PNI, LVI and ECS present. There was a 100% incidence of G-tube placement in this cohort.

CONCLUSIONS: Given the limited cases of contralateral tonsillectomy and SCC in this cohort, it would be beneficial to assess rates of bilateral OPSCCa in a prospective research study.

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111	Siderides, Cleo	Hank Schmidt, MD, PhD	Surgery
112	Singh, Nausheen	Dinali Fernando, MD, MPH	Emergency Medicine
113	Sivakumar, Ganesh	Mark Courey, MD	Otolaryngology/Mount Sinai Hospital New York, NY
114	Solmssen, Charlotte	Nathalie Jette, MD	Neurology
115	Spiera, Emily	Tanya Rogo, MD, MPH	Pediatrics
116	Srinagesh, Hrishi	James Ferrara, MD	Medicine
117	Srinivasan, Maya	Celia Divino, MD	Surgery
118	Stacy, Anna	Robert Yanagisawa, MD Craig Katz, MD, MPH	Medicine Psychiatry
119	Sun, Mary	Jacob Appel, MD, MPH	Psychiatry
120	Taing, Lilly	Rosalind Wright, MD, MPH	Pediatrics

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121	Taree, Amir	Samuel Cho, MD	Orthopaedics
122	Tharakan, Serena	Kiyotake Ishikawa, MD, PhD	Medicine
123	Tharakan, Serena	Gabriele Di Luozzo, MD	Cardiovascular Surgery
124	Tong, Michelle	Jacob Appel, MD	Psychiatry
125	Tran, Jessica	Juan Wisnivesky, MD Rajwanth Veluswamy, MD	Medicine Oncological Sciences
126	Valliani, Aly	Costas Hadjipanayis, MD, PhD Eric Oermann, MD	Neurosurgery
127	Villavisanis, Dillan	Richard Bakst, MD	Radiation Oncology
128	Warburton, Andrew	Avi Ma'ayan, PhD	Pharmacology and Systems Therapeutics
129	Watkins, Kristen	Towfique Raj, PhD	Neuroscience
130	Williams, Matthew	Celina Ang, MD	Medicine

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131	Williams, Baggio	Michael Palese, MD	Urology
132	Wiseman, Dean	Judy Cho, MD	Genetics and Genomic Sciences
133, 134	Xu, Hope	Jenny Lin, MD, MPH Peter Taub, MD	Medicine Surgery
135	Zeldin, Lawrence	James Iatridis, PhD	Orthopaedics
136	Zheng, Serena	Umut Sarpel, MD	Surgery
137	Ziadkhanpour, Kimia	Noel Phan, MD Brett Miles, MD	Otolaryngology

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93	Agrawal	Nishant	MD	Otolaryngology, University of Chicago
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130	Ang	Celina	MD	Medicine, Icahn School of Medicine at Mount Sinai
110	Ankuda	Claire	MD, MPH	Geriatrics and Palliative Medicine, Icahn School of Medicine at Mount Sinai
39, 119, 124	Appel	Jacob	MD, MPH	Psychiatry, Icahn School of Medicine at Mount Sinai
127	Bakst	Richard	MD	Radiation Oncology, Icahn School of Medicine at Mount Sinai
105	Balchandani	Priti	PhD	Radiology, Icahn School of Medicine at Mount Sinai
25	Baranowski	Kim	PhD	Medical Education, Icahn School of Medicine at Mount Sinai
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77	Bentley	Suzanne	MD, MPH	Emergency Medicine, Icahn School of Medicine at Mount Sinai
20, 67	Buckstein	Michael	MD, PhD	Radiation Oncology, Icahn School of Medicine at Mount Sinai

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27, 28	Campbell	Kirk	MD	Medicine, Icahn School of Medicine at Mount Sinai
65	Chelnis	James	MD	Ophthalmology, Icahn School of Medicine at Mount Sinai
19	Chipuk	Jerry	PhD	Oncological Sciences, Icahn School of Medicine at Mount Sinai
132	Cho	Judy	MD	Genetics and Genomic Sciences, Icahn School of Medicine at Mount Sinai
83, 107, 108, 121	Cho	Samuel	MD	Orthopaedics, Icahn School of Medicine at Mount Sinai
26, 46	Choudhri	Tanvir	MD	Neurosurgery, Icahn School of Medicine at Mount Sinai
36	Coakley	Brian	MD	Surgery, Icahn School of Medicine at Mount Sinai
32	Copperman	Alan	MD	Obstetrics, Gynecology, and Reproductive Science, Reproductive Medicine Associates of New York, New York, NY
113	Courey	Mark	MD	Otolaryngology, Mount Sinai Hospital New York, NY
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123	Di Luozzo	Gabriele	MD	Cardiovascular Surgery, Icahn School of Medicine at Mount Sinai
89, 117	Divino	Celia	MD	Surgery, Icahn School of Medicine at Mount Sinai
12	Feder	Adriana	MD	Psychiatry, Icahn School of Medicine at Mount Sinai
78	Ferket	Bart	MD, PhD	Population Health Science and Policy, Icahn School of Medicine at Mount Sinai
112	Fernando	Dinali	MD, MPH	Emergency Medicine, Icahn School of Medicine at Mount Sinai
56, 116	Ferrara	James	MD	Oncological Sciences, Icahn School of Medicine at Mount Sinai
71	Fischman	Aaron	MD	Radiology, Icahn School of Medicine at Mount Sinai
92	Flores	Raja	MD	Thoracic Surgery, Icahn School of Medicine at Mount Sinai
17, 80	Fox	Nathan	MD	Obstetrics, Gynecology, and Reproductive Science, Icahn School of Medicine at Mount Sinai
74	Gallagher	Emily	MD	Medicine, Icahn School of Medicine at Mount Sinai
43	Glod	John	MD, PhD	Pediatrics, National Institutes of Health

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55	Gupta	Mantu	MD	Urology, Icahn School of Medicine at Mount Sinai
18, 22, 45	Guttman-Yassky	Emma	MD, PhD	Dermatology, Icahn School of Medicine at Mount Sinai
126	Hadjipanayis	Costas	MD, PhD	Neurosurgery, Icahn School of Medicine at Mount Sinai
8	Han	Daniel	MD	Surgery, Icahn School of Medicine at Mount Sinai
47	Heeger	Peter	MD	Medicine, Icahn School of Medicine at Mount Sinai
4	Henderson	Peter	MD	Otolaryngology, Icahn School of Medicine at Mount Sinai
15	Horowitz	Amir	PhD	Oncological Sciences, Icahn School of Medicine at Mount Sinai
102	Hyman	Jaime	MD	Anesthesiology, Icahn School of Medicine at Mount Sinai
24, 70, 109, 135	Iatridis	James	PhD	Orthopaedics, Icahn School of Medicine at Mount Sinai
81	Iloreta	Alfred-Marc	MD	Otolaryngology, Icahn School of Medicine at Mount Sinai
122	Ishikawa	Kiyotake	MD, PhD	Medicine, Icahn School of Medicine at Mount Sinai
114	Jette	Nathalie	MD	Neurology, Icahn School of Medicine at Mount Sinai

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66, 79, 106, 118	Katz	Craig	MD	Psychiatry, Icahn School of Medicine at Mount Sinai
40, 41	Katz	Daniel	MD	Anesthesiology, Icahn School of Medicine at Mount Sinai
63	Katz	Michael	MD, PhD	Medicine, Icahn School of Medicine at Mount Sinai
76	Kelley	Amy	MD	Geriatrics and Palliative Medicine, Icahn School of Medicine at Mount Sinai
33	Kellner	Christopher	MD	Neurosurgery, Icahn School of Medicine at Mount Sinai
5	Kontaxis	Andreas	PhD	Motion Analysis Laboratory, Hospital for Special Surgery, NY, NY
37	Kontorovich	Amy	MD, PhD	Medicine, Icahn School of Medicine at Mount Sinai
86	Lacson	Ronilda	MD, PhD	Radiology, Brigham's woman's Hospital, Boston, MA
6, 94	Leitman	Michael	MD	Medical Education, Icahn School of Medicine at Mount Sinai
11	Levin	Matthew	MD	Anesthesiology, Mount Sinai Hospital
49, 133, 134	Lin	Jenny	MD, MPH	Medicine, Icahn School of Medicine at Mount Sinai
128	Ma'ayan	Avi	PhD	Pharmacology and Systems Therapeutics, Icahn School of Medicine at Mount Sinai

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9	Mayberg	Helen	MD	Neurosurgery, Icahn School of Medicine at Mount Sinai
60	Merad	Miriam	MD, PhD	Oncological Sciences, Icahn School of Medicine at Mount Sinai
44, 137	Miles	Brett	MD	Otolaryngology, Icahn School of Medicine at Mount Sinai
62	Moucha	Calin	MD	Orthopaedics, Icahn School of Medicine at Mount Sinai
52, 90	Nadkarni	Girish	MD	Medicine, Icahn School of Medicine at Mount Sinai
23	Niss	Barbara	MA	Levy Library, Icahn School of Medicine at Mount Sinai
101, 126	Oermann	Eric	MD	Neurosurgery, Icahn School of Medicine at Mount Sinai
96, 110	Ornstein	Katherine	PhD	Geriatrics and Palliative Medicine, Icahn School of Medicine at Mount Sinai
131	Palese	Michael	MD	Urology, Icahn School of Medicine at Mount Sinai
75, 99	Panarelli	Joseph	MD	Ophthalmology, Icahn School of Medicine at Mount Sinai

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82	Pesce	Sarah	RN	Institute for Next Generation Healthcare, Icahn School of Medicine at Mount Sinai
137	Phan	Noel	MD	Otolaryngology, Icahn School of Medicine at Mount Sinai
42	Prine	Linda	MD	Family Medicine and Community Health, Institute for Family Health, New York, NY
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91	Rebarber	Andrei	MD	Obstetrics, Gynecology, and Reproductive Science, Icahn School of Medicine at Mount Sinai
29	Richardson	Lynne	MD	Emergency Medicine, Icahn School of Medicine at Mount Sinai
1, 58, 115	Rogo	Tanya	MD, MPH	Pediatrics, BronxCare Health System
85	Rosenberg	Joshua	MD	Otolaryngology, Icahn School of Medicine at Mount Sinai
14	Rubin	Susan	MD	Family Medicine and Community Health, Icahn School of Medicine at Mount Sinai
73	Safer	Joshua	MD	Medicine, Icahn School of Medicine at Mount Sinai

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136	Sarpel	Umut	MD	Surgery, Icahn School of Medicine at Mount Sinai
48	Schmidt	Hank	MD, PhD	Surgery, Icahn School of Medicine at Mount Sinai
111	Schmidt	Hank	MD, PhD	Surgery, Icahn School of Medicine at Mount Sinai
93	Segal	Jeremy	MD, PhD	Pathology, University of Chicago
16	Sfakianos	John	MD	Urology, Icahn School of Medicine at Mount Sinai
95	Sicherer	Scott	MD	Pediatrics, Icahn School of Medicine at Mount Sinai
54	Sigel	Keith	MD, PhD	Medicine, Icahn School of Medicine at Mount Sinai
57	Singer	Elizabeth	MD	Medical Education, Icahn School of Medicine at Mount Sinai
30	Stein	Laura	MD	Neurology, Icahn School of Medicine at Mount Sinai
7	Stewart	Andrew	MD	Medicine, Icahn School of Medicine at Mount Sinai
103	Stroustrup	Annemarie	MD, MPH	Pediatrics, Icahn School of Medicine at Mount Sinai

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13, 61, 133, 134	Taub	Peter	MD	Surgery, Icahn School of Medicine at Mount Sinai
97	Tewari	Ash	MD	Urology, Icahn School of Medicine at Mount Sinai
69, 100	Ting	Windsor	MD	Surgery, Icahn School of Medicine at Mount Sinai
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125	Veluswamy	Rajwanth	MD	Oncological Sciences, Icahn School of Medicine at Mount Sinai
98	Weintraub	Andrea	MD	Pediatrics, Icahn School of Medicine at Mount Sinai
125	Wisnivesky	Juan	MD	Medicine, Icahn School of Medicine at Mount Sinai
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21, 72	Yeshokumar	Anusha	MD	Neurology, Icahn School of Medicine at Mount Sinai
35, 87	Zhang	Linda	MD	Surgery, Icahn School of Medicine at Mount Sinai

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Real-Time Assessment of Residents' Perceptions of Inappropriate

Caroline Gentile BA, Emma Loebel BA, Charles Sanky BA, & Stephen Krieger

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Presented at the 2nd Annual Karen Zier Medical Student Research Day, March 14th, 2019

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PURPOSE

DATA ANALYSIS & RESULTS:
Consult Demographics

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Acknowledgements

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