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# Letter from the Editors

Letter from Editors for The 2022 Annual Special Proceedings

#### Dear Readers,

We are proud to present this Special Proceedings of the *Florida Medical Student Research Journal (FMSRJ)* for the Eighth Annual FIU Herbert Wertheim College of Medicine Research Symposium and the Division of Medical and Population Health Sciences Education and Research. This journal was founded in 2015 by two medical students at the Florida International University (FIU) Herbert Wertheim College of Medicine (HWCOM) as a means to showcase the academic achievements of medical students. The *FMSRJ* publishes work from any health professional or student related to medicine for peer review by Florida medical student editor teams. Through the continued efforts and talent of the student editorial teams, the Journal has developed into an avenue for innovative, scholarly pursuits.

These Proceedings would not have been possible without the hard work and expertise of our reviewers and authors. They have reviewed more than 75 articles. Together, we are preparing students for their future careers as physicians and innovative thinkers, while driving FIU research to new heights. We hope that their generosity will inspire others to follow in their footsteps and volunteer their time to support our FIU student researchers and the Herbert Wertheim College of Medicine community at large. Please join us once again in thanking these incredible women and men.

Sincerely,

Adriana S. Maribona

Remarez

Richard I. Suarez, J.M.

# **Oral Presentations**

### **Best Oral Abstract Presentation**

#### Retrospective Analysis of the Association between Race and Stage at Diagnosis of Thyroid Cancer Using Multinomial Logistic Regression

Cecilia Nosti; Aleeza Ali; Rameen Walters; and Juan Lozano, MD, MSc Herbert Wertheim College of Medicine, Florida International University, Miami, FL

Keywords: health disparity, race, thyroid cancer, stage, diagnosis

Introduction and Objective: Over the last 30 years, the incidence and mortality of thyroid cancer, the most common endocrine cancer in the world, has increased substantially. Localized thyroid cancer is known to have a low mortality rate due to relatively successful treatment modalities making early diagnosis crucial. Race is a well-established social determinant of health. Therefore, we evaluated if patients aged 18 and older diagnosed with primary thyroid cancer of white race had earlier stage at diagnosis compared to those of non-white race.

Methods: Using data from SEER spanning 2007-2016, a multinomial logistic regression was performed comparing race (White and Nonwhite) to stage at diagnosis (localized, regional, distant). Adjustment for potential confounders such as sex, age, insurance status, and year at diagnosis was performed. A total of 98,893 patients 18 years and older diagnosed with primary Papillary or Follicular thyroid cancer were included for this retrospective cohort study. Thyroid cancers secondary to spread, or of anaplastic and medullary origin were excluded. Whites comprised 81.5% (n=56,167) of the study's population and Nonwhites were 18.5% (n=12,676). Of those, 2.5% were uninsured,

9.8% were covered under Medicaid, and 85.4% had insurance.

Results: After adjusting for all potential confounders mentioned, nonwhites were 38% (99% confidence interval = 1.26-1.52) more likely to be diagnosed at distant vs localized stage thyroid cancer, compared to Whites. Overall, it was found that distant disease was diagnosed more frequently in non-whites compared to whites at 3.5% compared to 2.5%. Moreover, male patients presented with distant disease 4.6% of the time compared to women at 2.1%. Lastly, insured patients presented with distant disease 2.5% of the time, while uninsured and Medicaid patients presented with distant disease 4.3% and 4.5% of the time respectively.

**Conclusions-Implications**: Nonwhites are more likely to be diagnosed with thyroid cancer at the distant stage vs localized stage compared to Whites; therefore, delayed diagnosis may contribute to worse outcomes. We hope these results may elucidate existing inequalities. Further research is necessary so that clinicians and epidemiologists may design and implement robust targeted solutions, such as screenings to address this apparent racial disparity.

#### Race/ethnicity and advanced stage of renal cell carcinoma in adults: results from surveillance, epidemiology, and end results program 2007-2015

Alyssa Dobyns, Nino Coutelle, Corey Suthumphong, Pura Rodriguez, Grettel Castro, Marcia Varella

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**Category**: Health Disparities; Epidemiology

**Keywords**: Race, stage, renal cell carcinoma, health disparities, histology

Introduction and Objective: Earlier stage detection and smaller tumor size of renal cell carcinoma (RCC) is associated with improved survival rates. Previous studies demonstrated Blacks to have an earlier stage at diagnosis of RCC compared to Whites. There is lack of research on the association between other minority races and stage at diagnosis of RCC. The objective of the study is to assess the association between racial/ethnic minorities and stage at diagnosis of RCC.

**Methods**: Sourced from the Surveillance, Epidemiology, and End Results Program database of the National Cancer Institute, all patients 20 years and older diagnosed with RCC from 2007 to 2015 were included (n=37,493). The dependent variable assessed was late stage at diagnosis which include regional or metastasis at diagnosis (early stage included only localized RCC). The independent variable was self-reported race/ethnicity categorized as non-Hispanic (NH) White, NH Black, NH Asian Pacific Islander, NH American Indian/Alaskan Native, (NH AI/AN), and Hispanic. We assessed effect modification by histological subtype (clear cell, papillary, chromophobe, and other). Logistic regression analysis was performed to assess the independent association between race/ethnicity and cancer stage, stratified by histology subtype.

Results: In comparison to NH Whites, NH Blacks had lower odds of being diagnosed with advanced stage RCC [odds ratio (OR)=0.79: 95% confidence interval (CI)=0.72-0.87] after adjusting for age, gender, year of diagnosis, histological subtype, and insurance status. Similar results were observed when stratified histologically for clear cell (OR=0.79; CI=0.72-0.87), chromophobe (OR=0.48; CI=0.30-0.78), and other (OR=0.26; CI=0.10-0.35). NH AI/AN, relative to NH Whites, had higher odds of being diagnosed with advanced stage RCC (OR=1.27; CI=1.04-1.55). When stratified histologically, similar results were observed for clear cell RCC (OR=1.27; CI=1.04-1.55). Hispanics had higher odds of being diagnosed with advanced stage papillary RCC than NH Whites (OR=1.58; CI=1.07-2.33).

**Conclusions-Implications**: Racial disparities were seen in late stage of RCC, as relative to NH Whites, NH Blacks with non-papillary RCC had lower odds of being diagnosed with advanced stage RCC, while NH AI/AN with clear cell RCC had higher odds of being diagnosed with advanced stage RCC. The reasons for these racial disparities should be further investigated.

#### Disparities in Insurance Status in Adults with Multiple Myeloma: A Population-Based Survival Analysis

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Category: Oncology; Epidemiology

**Keywords**: Hematologic malignancies, plasma cell disorders, insurance status, survival outcomes

Introduction and Objective: Multiple myeloma (MM) accounts for 10% of all hematological malignancies prompting the introduction of therapeutic advancements which has improved the disease prognosis. The National Cancer Institute reported a 49% increase in 5-year survival of MM from 2005 to 2011 compared to 27% from 1987 to 1989. Existing literature has identified socioeconomic barriers receiving in advanced treatments; however, the direct impact of insurance status is unknown. Objective: To evaluate the association of insurance status with overall survival in adults 18 years and older with MM.

Methods: This was a non-concurrent cohort study analyzing data from the 2007-2016 Surveillance, Epidemiology, and End Results (SEER) database. Patients with a primary malignancy of MM during 2007-2016 were included, while patients with missing data on key variables were excluded. Insurance was categorized as uninsured, Medicaid, private, and other. Survival was measured at one- and five-years post diagnosis. The covariates included were age, sex, race, ethnicity, marital status, and residence. Comparison of baseline characteristics were assessed using Chi-squared tests. Kaplan-Meier and log-rank were used to compare survival. Unadjusted and adjusted Cox regression models were used to calculate hazard ratios (HR) and 95% confidence intervals (CI).

Results: From 2007-2016, there were 41,846 patients with a primary malignancy of MM extracted from the SEER database (Table 1). Those with private insurance had а higher proportion of participants that identified as married (65.5%) and white (76%). Uninsured individuals had the highest of Black proportion participants (37.4%). Unadjusted and adjusted Cox regression for one- and five-year survival in varying insurance groups using univariate and multivariate models are presented in Table 2. Medicaid holders had the highest hazard of mortality at one- and five-year survival (Figure 1 and 2). After adjusting for covariates, the likelihood of five-year survival was lower for those with Medicaid (adjusted (adj) HR, 1.44; 95% CI 1.36-1.53), when compared with private insurance. Further, those who were uninsured had a 26% increased hazard of mortality than those with private coverage (95% CI 1.04-1.53).

Conclusions-Implications: This study reveals that insurance status plays a role in survival for patients with a the overall diagnosis of MM. Compared to privately insured MM patients, adults with no insurance, Medicaid, or unspecified insurance appear to have higher hazard of mortality over one and five years. As treatment modalities for MM continue to advance, the insurance status of a patient should not hinder their ability to receive the most effective therapies.

#### Investigating the Association between Electronic Vapor Products (EVP) and Alcohol or Marijuana Use

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Herbert Wertheim College of Medicine, Florida International University, Miami, FL

Category: Epidemiology; Public Health

**Keywords**: electronic vapor product, alcohol, marijuana, adolescent, behavior

Introduction and Objective: The use of electronic vapor products (EVP) has gained increasing popularity among adolescents, with rates reaching as high as 20.8% in 2018. It's currently understood that alcohol and marijuana use among adolescents are linked to poor health/psychosocial outcomes. The objective of our study was to determine whether there was an association between having ever used EVP and current alcohol or marijuana use.

Methods: We used the 2017 YRBSS database, which surveyed adolescents across high schools in the U.S. Our cross-sectional study sample included adolescents 12 to 18 years old. The main independent variable was ever EVP use and the outcome was current use of alcohol or marijuana. Our data analysis included a descriptive analysis of sample baseline characteristics, a bivariate analysis to determine the association between baseline characteristics and the exposure, and the association between those same characteristics and the outcome, and a multivariate logistic regression analysis determining the odds ratios (OR) while controlling for potential confounders.

**Results**: Our sample included 13,017 adolescents. The unadjusted binary logistic regression indicated that adolescents who had ever tried EVPs were 10.8 times more likely (95% CI 9.1-12.9, p<0.001) to also use marijuana or alcohol. The analysis adjusting for confounders found a similar association (aOR 6.8, 95% CI 5.7-8.1, p<0.001). Other variables independently associated with current marijuana or alcohol use include, but are not limited to: age ( $\geq$ 18 aOR 3.6, 95% CI 2.9-4.5, p:<0.001), sad or hopeless feelings (aOR 2.4, 95% CI 2.1-2.7, p:<0.001), and all current tobacco use (aOR 21.2, 95% CI 16.4-27.3, p:<0.001). The association between EVP use and marijuana / alcohol use was modified by current tobacco use (smokers: aOR 4.3, 95% CI 2.7-6.9; non-smokers: aOR 7.1, 95% CI 5.8-8.5).

**Conclusions-Implications**: Our study found a direct association between EVP use and current use of marijuana or alcohol. The results of this study can be used to adjust current adolescent screening protocols putting more emphasis on prevention in younger adolescents. We also found that current tobacco smoking was an effect modifier of this association. This may be an area where further public health investigation can be expanded.

#### Racial disparities in infant mortality from congenital heart disease: a national retrospective cohort study

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**Category**: Health Disparities; Epidemiology

**Keywords**: Congenital heart disease, Infant mortality, racial disparities

Introduction and Objective: Congenital heart disease (CHD) is a major cause of infant mortality and morbidity, and racial disparities in diagnosis, treatment, and morbidity/mortality have been documented in prior studies within the US. This study aimed to assess if race/ethnicity were independently associated with the incidence of death from CHD within the first year of life among infants born in the USA.

Methods: Using the 2017/2016 Cohort Linked Birth/infant Death Public Use Data File, we assembled a retrospective cohort of all infants born alive in the USA in 2016 who had an isolated CHD indicated on their birth record. Primary exposure was race/ethnicity with the primary outcome of infant mortality caused by CHD within the first year of life as reported in the linked death certificate. Our study controlled for factors including demographics, socioeconomics, and other health related variables of the mother and the infant. To test for the association between race/ethnicity and infant mortality, both unadjusted and adjusted (multiple logistic regression) odds ratios (OR) and 95% confidence intervals were computed.

Results: A total of 1,840 infants were included in the cohort with an overall mortality rate of 19.1% (351/1,840). Whitenon-Hispanic (WNH), Black-non-Hispanic (BNH), Hispanic, and Other/Mixed (OM) infants had a mortality rate of 18.3% 21.3% (202/1, 107),(57/267), 21.7% (68/314), and 15.8% (24/152), respectively. We found no statistically significant difference in the odds ratios of mortality distributed by race when compared to WNH mortality both before and after adjusting for age, insurance status, WIC use, prenatal care, cigarette BMI. use. and maternal comorbidities. Notably, infants who were born weighing less than 2,500g had higher mortality (OR 2.11; CI 1.44 - 3.08), as did infants placed on a ventilator at birth (OR 1.76 1.31 - 2.36).

**Conclusions-Implications**: Using a national population-based dataset, we did not identify any racial/ethnic disparities in one-year mortality among infants with CHD. Given information limitations inherent to currently available birth certificate-based datasets in the USA, we cannot rule out the presence of a racial disparity. As such, more research is needed to elucidate potential disparities in mortality among patients with CHD.

#### **Retrospective Analysis of the Association** Between Race and Stage at Diagnosis of **Thyroid Cancer Using Multinomial Logistic** Regression

Cecilia Nosti, Aleeza Ali, Rameen Walters, Juan M. Lozano

Herbert Wertheim College of Medicine, Florida International University, Miami, FL

**Category**: Health Disparities, Epidemiology

Keywords: health disparity, race, thyroid cancer, stage, diagnosis

Introduction and Objective: Over the last 30 years, the incidence and mortality of thyroid cancer, the most common endocrine cancer in the world, has increased substantially. Localized thyroid cancer is known to have a low mortality rate due to relatively successful treatment modalities making early diagnosis crucial. Race is a well-established social determinant of health. Therefore, we evaluated if patients aged 18 and older diagnosed with primary thyroid cancer of white race had earlier stage at diagnosis compared to those of non-white race.

Methods: Using data from SEER spanning 2007-2016, a multinomial logistic regression was performed comparing race (White and Nonwhite) to stage at diagnosis (localized, regional, distant). Adjustment for potential confounders such as sex, age, insurance status, and year at diagnosis was performed. A total of 98,893 patients 18 years and older diagnosed with primary Papillary or Follicular thyroid cancer were included for this retrospective cohort study. Thyroid cancers secondary to spread, or of anaplastic and medullary origin were excluded. Whites

comprised 81.5% (n=56,167) of the study's population and Nonwhites were 18.5% (n=12,676). Of those, 2.5% were uninsured, 9.8% were covered under Medicaid, and 85.4% had insurance.

**Results**: After adjusting for all potential confounders mentioned, nonwhites were 38% (99% confidence interval = 1.26-1.52) more likely to be diagnosed at distant vs localized stage thyroid cancer, compared to Whites. Overall, it was found that distant disease was diagnosed more frequently in non-whites compared to whites at 3.5% compared to 2.5%. Moreover, male patients presented with distant disease 4.6% of the time compared to women at 2.1%. Lastly, insured patients presented with distant disease 2.5% of the time, while uninsured and Medicaid patients presented with distant disease 4.3% and 4.5% of the time respectively.

Conclusions-Implications: Nonwhites are more likely to be diagnosed with thyroid cancer at the distant stage vs localized stage compared to Whites; therefore, delayed diagnosis may contribute to worse outcomes. We hope these results may elucidate existing inequalities. Further research is necessary so that clinicians and epidemiologists may design and implement robust targeted solutions, such as screenings to address this apparent racial disparity.

#### **O6**

### Glycoengineering a more effective CAR-T cell therapy

Lee Seng Lau<sup>1</sup>, Liettel Ortiz<sup>1</sup>, Avery Posey<sup>2</sup>, Charles J. Dimitroff<sup>1</sup>

<sup>1</sup>Department of Translational Medicine, Translational Glycobiology Institute, Florida International University, Miami, FL <sup>2</sup> Parker Institute for Cancer Immunotherapy, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA

#### Category: Basic Science; Oncology

**Keywords**: Galectin 1, CAR-T cell, T cell, Immunosuppression, Cancer

Introduction and Objective: Cancer is the second leading cause of death in the US, and there is great emphasis in finding safe and effective therapies. One of these therapies is adoptive chimeric antigen recepotor (CAR)-T cell therapy, consists of a patient's own immune cells (T cells) that are harvested, expanded and engineered to target cancer. However, CAR-T cell therapy requires therapeutic improvements, such as boosting efficiency, efficacy and improving persistence in vivo. T cells express surface carbohydrate chains (or glycans) capable of binding glycan-binding proteins (lectins) compromising their survival and effector function. There are compelling experimental data that ß-galactoside-binding, galectins, which are ubiquitously expressed in host tissues and elevated in patients with B cell lymphomas, can bind T cell surfaces to suppress T cell immunologic anti-tumor activity and/or shorten T cell viability. We hypothesize that galectins play a critical role in the efficacy of CAR-T cell therapy and cell surface glycan modification of CAR-T cells to

evade galectin-binding capabilities can increase persistence and functional activity in vivo.

Methods: We analyzed the surface glycome and galectin-binding activity of control naïve human T cells, ex vivo-expanded human T cells as well as CAR-T cells. We explored binding ability of common immunosuppressive galectins, recombinant human galectin (rhGal)-1, rhGal-3, rhGal-9, by flow cytometry. Moreover, we analyzed the ability of rhGal-1 to elicit a pro-apoptotic activity in cell death assays and examined the expression of glycosyltransferases, ST6Gal1, GCNT1, GCNT2 and MGAT5, involved in the biosynthesis and the inhibition of galectinbinding glycans using RT-qPCR. All methods were conducted a minimum of 3-times and tested for statistical significance using Student's paired t-test :\* $P \le .05$ , \*\* $P \le .001$ .

**Results**: Compared with binding to naïve T cells, we found that ex vivo-expanded human T cells and CAR-T cells exhibited robust binding to Gal-1 and Gal-9, corresponded with elevated susceptibility to Gal-1-dependent pro-apoptotic activity ( $P \le .05$ ). ST6Gal1 gene expression was suppressed in CAR T cells that was inversely related with Gal-1-binding in temporal flow cytometry assessments. Lastly, compared with CAR T cell controls, Gal-1-binding in ST6Gal1 overexpressing CAR T cells was reduced, suggesting that ST6Gal1 expression and  $\alpha$ 2,6 sialylation to surface glycans can potentially enhance longevity of CAR-T cells.

**Conclusions**: The data suggest that understanding a human T cell's surface glycome can provide evidence of the immunosuppressive potential that can compromise the persistence and/or functional activity of CAR-T cells. These findings also indicate that glycoengineering of CAR T cells with ectopic ST6Gal1 expression or other  $\alpha$ 2,6 sialylation methods can help antagonize Gal-1-binding and build a more durable, immunoprotected CAR-T cell.

#### 07

### How is the "Sugar coat" of melanoma cell adapted to enhance tumor progression?

Norhan B. B. Mohammed, Jordan Carroll, Asmi Chakraborty, Liettel Ortega, and Charles J. Dimitroff

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#### Category: Basic Science

Keywords: Melanoma, Glycans, Galectin-3

Introduction and Objective: Metastatic melanoma (MM) is an aggressive skin cancer with a five-vear survival rate of only 27%. Despite recent advances in melanoma management, a reliable diagnostic and prognostic biomarker is still lacking. Glycomic studies showed that normal melanocytes express predominantly I-branched glycans, while MM cells display mainly i-linear glycans with downregulation of the branching enzyme GCNT2. Galectin-3 (Gal-3), which avidly binds to surface  $\beta$ -galactosidecontaining glycans, was shown to surge in sera of melanoma patients. The objective of this study is to reveal the role of MM i-linear glycans predominance in promoting melanoma progression in the light of their interaction with Gal-3.

Methods: This is an experimental in-vitro study conducted on two human MM cell

lines: A375 with induced GCNT2 overexpression (GCNT2hi) and A2058 with knockdown of GCNT2 (GCNT2lo). The effect of GCNT2/I-branching on Gal-3 binding to MM was investigated using flow cytometry. The predilection expression site of Gal-3binding glycans was explored by Gal-3 staining of MM cells after 48-hour treatment with the N-glycosylation inhibitor Kifunensine. The functional significance of enhanced GCNT2 on Gal-3-dependent malignant characteristics was assessed using cell proliferation, migration, and ERK/MAPK phosphorylation assays. For tests involving two groups, unpaired two-tailed Student's t test was used, while the pairing observations (baseline and after treatment) in the same group were compared with a paired twotailed Student's t test.

**Results**: Flow cytometry data from GCNT2hi and GCNT2lo cells showed that Gal-3 favored binding to i-linear glycans over I-branched glycans (P < 0.05 and P &lt; 0.001 respectively). Kifunensine treatment of MM cells caused marked decline in Gal-3 binding to both cell lines compared to untreated cells (P < 0.001), suggesting that Gal-3 binds preferentially to N-glycans. Gal-3-dependent cell migration, proliferation and ERK phosphorylation were significantly inhibited in GCNT2hi cells compared to its control (P < 0.01, P &lt; 0.05, P &lt; 0.05 respectively).

Conclusions-Implications: Loss of GCNT2 enhances Gal-3 binding activity and Gal-3-dependent promotes MM aggressiveness. This study provided new insights into how altered tumor glycome modulates cell interaction with microenvironmental effectors to facilitate tumor progression and placed Gal-3 and ilinear glycans as potential prognostic biomarkers and therapeutic targets for melanoma.

#### 08

Rapid Fluorescence dye-based Method to Differentiate the Membrane Potential of Monocytes during Inflammation/Infection via Flow Cytometry

Mickensone Andre, Allen Caobi, Madhavan P. Nair, Andrea D. Raymond

Herbert Wertheim College of Medicine, Florida International University, Miami, FL

**Category**: Basic Science; Infectious Disease

Introduction and Objective: The cellular membrane potential (MP) is an important property of both non-excitable and excitable cells. The MP is involved in most biological processes such as DNA synthesis, cellular activation, and proliferation. The MP is also theorized to be indicative of cellular status. However, little is known about cellular MP inflammation, infection. during and activation. We theorized that cells' status can be differentiated by their MP. Patch-clamp, the standard technique used to measure MP, is laborious and expensive. Here, we developed a technique to measure the MP utilizing oxonol, a negatively charged fluorescence dye, via flow cytometry to rapidly assessment of the impact of inflammation, cellular activation, and viral infection on the MP.

**Methods**: U937 monocytes were treated with TNF- $\alpha$ /PMA for 24 hours or infected with HIV and then separated into a fixed (depolarized) or non-fixed (polarized) population. Fixed and non-fixed cell groups were mixed and placed in a solution with and without oxonol (100 nM). A viability dye was utilized to differentiate fixed and non-fixed cells in flow cytometry. The MP was calculated using the mean fluorescence intensity of the fixed (extracellular oxonol value) and non-fixed (intracellular oxonol value) cells via the Nernst equation.

**Results**: HIV infected monocyte exhibited MP depolarization (-26 mV +/- 2.5) compared to uninfected control (-44 mV +/- 5). Monocytes treated with TNF- $\alpha$  and PMA displayed MP of -24 mV +/- 2.2 and -13 +/- 1.7 mV, respectively. Compared to the MP untreated control -26 +/- 1 mV, TNF- $\alpha$  had a modest effect on the MP. PMA on the other had a significant effect on the MP. Statistical significance was determined by Student's ttest, ANOVA, and Dunnett's multiple comparison test. \*\*p<0.01, \*p&lt;0.05.

**Conclusions-Implications**: Overall, the oxonol-based method allowed for rapid and accurate MP measurement in human monocytes. HIV and perhaps other infectious microbes depolarized the MP. Moreover, cellular activation via PMA resulted in greater depolarization suggesting that activated cells can be differentiated by their MP. Lastly, TNF- $\alpha$  effect on u937 cells was not significant, implying that inflammation does not alter the MP.

#### 09

#### Association Between Glycosyltransferase Expression and Survival in Head and Neck Cancer

Brittany Montesino, Nan Hu, Juan M. Lozano, Robert Sackstein, Kevin Brown Chandler

Herbert Wertheim College of Medicine, Florida International University, Miami, FL Category: Basic Science; Oncology

**Keywords**: head and neck squamous cell carcinoma, head and neck cancer, glycosylation, fucosyltransferase, GalNAc transferase

Introduction and Objective: Head and neck cancer is the sixth most common tumor type worldwide, but despite advances in treatment, the 5-year survival rate is only ~50%. Glycosylation, a common posttranslational modification in eukaryotic cells, is frequently altered in cancer. Changes in glycosyltransferase expression in cancer are associated with cellular invasion, tumor growth, and metastasis. However, the role of this expression in head and neck cancer survival is poorly understood. Here, we examine the association between glycosyltransferase expression and survival in head and neck squamous cell carcinoma (HNSCC).

Methods: A retrospective cohort study was performed with data from the Cancer Genome Atlas (TCGA) HNSCC dataset (n=499), containing expression (mRNA) level data. generated via high-throughput sequencing, of primary tumor tissue from patients with a diagnosis of HNSCC (deidentified). A set of glycosyltransferase genes: FUT1-11, POFUT1-2, ST3Gal1-6, ST6Gal1-2, ST6GalNac1-6, ST8Sia1-6, GALNT2-3, C1GALT1, B4GALT4, GCNT2 were considered. Median expression was used to delineate high and low expression groups. Kaplan-Meier analyses Univariate and logrank tests were conducted. Multivariate performed analyses were via Сох proportional hazards regression to adjust for covariates (HPV status, age at initial diagnosis, sex, alcohol history, tobacco usage, and primary site).

**Results**: Based on the Kaplan-Meier analysis of FUT2, the median survival time (MST) of the high FUT2-expressing group was 4.7 years, while low expression was associated with an MST of 2.7 years. Cox regression analysis yielded adjusted hazard ratio (aHR) of 0.72 (CI = 0.54-0.95). The MST of the FUT6 high expression group was 4.7 years versus 2.9 years for low expression, with an aHR of 0.62 (CI = 0.47-0.83). The MST of the high-FUT7 expressing group was 4.7 years versus 3.5 years for the low level group, with an aHR of 0.72 (CI = 0.54-0.95). GALNT3 showed the opposite effect, with high expression yielding an MST of 3.1 years versus 4.9 years for the low-expressing group, with aHR of 1.47 (1.11-1.95). An aHR of <1 indicates a protective effect from high expression.

**Conclusions-Implications**: Overexpression of FUT2, FUT6, and FUT7 were associated with increased overall survival, while overexpression of GALNT3 was associated with decreased overall survival in HNSCC. FUT2 is expressed in endoderm-derived epithelial tissue including the digestive tract and salivary glands, while FUT6 and FUT7 are prominently expressed in immune cells. Thus, FUT6 and FUT7 expression may indicate immune cell infiltration into tumor tissue. Future studies will seek to sort tumor tissue based on cell type, to gain a better understanding of the cell-type specific glycosyltransferase expression in HNSCC tumors. The glycosyltransferase genes associated with survival in this study may serve as future drug targets in head and neck cancer.

#### **RXFP2 Small Molecule Agonists: Potential** Therapeutics for Osteoporosis

Maria Esteban-Lopez<sup>1</sup>, Kenneth J Wilson, PhD, NCATS NIH; Courtney Myhr<sup>1</sup>, Elena M Kaftanovskaya<sup>1</sup>, PhD, Mark J Henderson, PhD, NCATS NIH; Noel T Southall, PhD, NCATS NIH; Xin Hu, PhD, NCATS NIH; Elena Barnaeva, M.S., NCATS NIH; Marc Ferrer, PhD, NCATS NIH; Wenjuan Ye, M.B., NCATS NIH; Roy Morello, PhD, University of Arkansas for Medical Sciences; Irina U Agoulnik<sup>1</sup>, PhD; Juan J Marugan, PhD, NCATS NIH; Alexander I Agoulnik<sup>1</sup>, PhD

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**Category**: Basic Science, Orthopedics

**Keywords**: Drug Discovery, GPCR, Small molecules, Osteoporosis, Bone loss

Introduction and Objective: Osteoporosis is a chronic disease characterized by decreased bone mass and increased risk of developing fractures, affecting approximately 10 million people in the US. The pathophysiological cause of the disease is a decrease in the of the bone-forming activity cells (osteoblasts) that alters bone remodeling in favor of bone resorption, leading to a decrease in bone mass. Recent studies identified the G protein-coupled receptor (GPCR) for insulin-like 3 peptide (INSL3), relaxin family peptide receptor 2 (RXFP2), as an attractive target for the treatment of osteoporosis. The goal of this study is to develop small molecule agonists of RXFP2, expressed in osteoblast cells, to promote bone growth. Currently, the most effective treatment for osteoporosis is an expensive

hormone therapy that requires daily injections. We aim to create drugs that are stable and can be delivered orally.

Methods: A high-throughput screen of the NCATS small molecule library was used to identify compounds that induced a cAMP response in RXFP2-transfected HEK293T cells. This was followed by an extensive structure-activity relationship campaign and counter-screening against other GPCRs. A mineralization assay was used to quantify hydroxyapatite in the osteoblasts cell matrix and a pharmacokinetics (PK) study was done for in vivo testing of the lead compound. Finally, an efficacy study was performed using 2-month-old wild-type female mice treated orally with 10 mg/kg of compound 3 times a week for 8 weeks and micro-CT scan analysis was used to measure trabecular bone parameters.

Results: Several low molecular weight compounds were identified as highly potent, efficient, and selective allosteric agonists of the RXFP2 receptor. The identified drug candidates promoted mineralization in primary human osteoblasts and had low cytotoxicity in various cell types. The RXFP2 agonist with the highest activity in vitro was selected for PK profiling in mice, showing optimal oral bioavailability and bone exposure. The compound efficacy study in vivo revealed a significant increase of the vertebral trabecular number and thickness compared to vehicle treated controls.

**Conclusions-Implications:** We expect that the further characterization of these compounds may lead to the development of a new class of cost-effective drugs for the treatment of osteoporosis and other diseases associated with bone loss.

#### Pre-pregnancy BMI and the Incidence of Csection in the United States

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**Category**: Obstetrics & Gynecology; Health Disparities

**Keywords**: BMI, C-section, Pregnancy, Obesity, delivery

Introduction and Objective: Obesity in the United States is a significant contributor to health care cost and disease prevalence in the US. Obesity increases risk for comorbidities in the general population as well as in women who are entering pregnancy, increasing the risk for cesarean delivery (CS) and obstetric complications. Our study aimed to identify the relationship between pre-pregnancy Body Mass Index (BMI) and risk of CS with race as an effect modifier.

Methods: A retrospective cohort study based on secondary analysis of the CDC 2018 Birth Data File. Our study selected primiparous adult women who had full-term pregnancies within the US. The independent variable BMI includes: Underweight, Normal, Overweight, Obesity I, Obesity II, and Extreme Obesity. The dependent variable was the delivery method, primary vaginal and primary cesarean deliveries. Descriptive analysis assessed the baseline characteristics which included: age, race, education, payment method, prenatal care, smoking status, and comorbidities. A bivariate analysis followed to determine associations between baseline characteristics and exposure and baseline characteristics and outcomes. A multiple logistic regression model was performed to test and control for confounders and assess whether race/ethnicity is an effect modifier of the BMI-CS relationship.

Results: Our sample included 944,611 women primiparous women who delivered via cesarean or vaginal delivery. The highest incidence of CS occurred in NH-Black women(31.6%). The odds of CS generally increased as BMI increased for all races/ethnicities. Race/ethnicity was found to significantly modify the effect of the BMI-CS relationship. Non-Hispanic white women had the highest increase in odds for CS as BMI increased compared to other races/ethnicities. The Extreme Obesity category for NH-White women(OR 3.5,Cl 3.41-3.62) showed the greatest increase in odds compared to NH-Black(OR 3.17,CI 3.01-3.32,), NHOPI(OR 2.39,CI 1.63-3.52), and Hispanic women (OR=2.96, CI 2.82-3.10).

**Conclusions-Implications**: Our study found as BMI increases in primiparous adult women so does the proportion of CS. Primiparous women are 3 times more likely to have a CS when they fall into the Extreme Obesity category than those of normal BMI. Non-Hispanic white women consistently had higher odds of receiving a CS on as BMI increased. Further research should be conducted to explore the associations between race, BMI, and CS in adult women.

#### Investigating Insurance Status as a Predictive Factor for Cesarean Section Utilization in Adult Females

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**Category**: Obstetrics & Gynecology; Health Services Research

**Keywords**: Insurance, Cesarean Section, Morbidity

Introduction and Objective: Cesarean delivery (CS) is one of the most common surgical procedures across the country. CS offers critical, life-saving care, but overuse contributes to increased rates of maternal and perinatal morbidity and mortality. Research is relatively limited to comparing those categories of private or public coverage, and the uninsured. The military health insurance system has been proposed as a model within which to evaluate influences in delivery and obstetric care. The objective of this study is to estimate the association of CS and type of insurance, and in particular to compare the CS frequency in women insured by TRICARE/CHAMPUS, with those observed in other insurance types.

Methods: A historical cohort of 1,038,092 primiparous adult women who received prenatal care was assembled using the CDC 2018 Natality Public Use File. Exposure is the Payment source for delivery (Medicaid, Private Insurance, Self-Pay, CHAMPUS/TRICARE, Other Government). The primary outcome is the final delivery route (CS or Vaginal delivery (VD)). Control variables include demographics, obstetric history, health risks in pregnancy, and characteristics of labor and delivery. Both crude and adjusted odds ratios (OR) and 95% confidence intervals were obtained. Multiple logistic regression modeling was used to adjust OR for potential confounders.

**Results**: The majority of women had Private Insurance, a Bachelor's Degree, were born in the U.S., married, White, and underwent a VD. In the unadjusted model all payment types besides Other Government had significantly lower odds of CS, compared to Private Insurance. Once adjusted for potential confounders, Medicaid had higher odds of CS (AOR 1.08, 95% CI 1.07- 1.09, p<0.001) while Self-Pay had lower odds of CS (AOR 0.94, 95% CI 0.91-0.97, p <0.001), and CHAMPUS/TRICARE was found to be nonsignificant (AOR 0.98, 95% CI 0.94-1.02, p=0.379) compared to Private Insurance.

**Conclusions-Implications**: CS delivery was more likely amongst women with Medicaid, compared to Private Insurance. This suggests there may be financial incentives playing a systemic role in CS utilization. Further studies with the ability to control for facility type and geographic location are required to confirm this finding and reveal if such patterns can be demonstrated on a national scale.

#### The Growth of Medicare Advantage Plans May Limit Access to Orthopedic Joint Replacements

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#### Category: Orthopedics, Public Health

**Keywords**: Total knee arthroplasty (TKA), Medicare, Medicare Advantage (MA), Access to care

Introduction and Objective: Total knee arthroplasty (TKA) is one of Medicare patients' most frequently performed procedures. Among this population. enrollment in Medicare Advantage (MA) plans has increased, projected to 42% by 2028. Rates of elective TKA are 10-20% lower in MA health maintenance organization (HMO) plans compared to traditional Medicare (TM). While there are benefits to MA plans, they may limit provider networks and require authorizations that reduce or delay access to specialty care. The purpose of this study is to evaluate the effect of various Medicare plan types on patient access to TKA within Florida.

**Methods:** This is a cross-sectional study that used the AAOS directory to search for total joint surgeons and practices within 20 miles of the largest zip codes in five Florida counties. The primary independent variable was types of insurance (TM, Blue Medicare Select PPO, Humana Gold Plus HMO, and commercial Cigna). The dependent variable was access to care measured by whether clinics accepted the insurance and average number of business days until earliest appointment. Each office was called four times, each two weeks apart to avoid caller recognition. An appointment was requested for the caller's fictitious 66- or 61-year-old mother needing a right TKA. Chi-Square and ANOVA analyses were conducted to determine the association between accepted insurance types and time to earliest appointment.

**Results:** Of the 133 Orthopedics clinics called, 63 were accepting new TKA patients. Of those accepting new TKA patients, 91.7% accepted commercial Cigna, 96.8% accepted TM, 70.5% accepted MA Humana Gold Plus, and 50.8% accepted MA Blue Medicare Select. Compared to TM and Cigna, both MA plans had significantly lower appointment success rates (p < 0.001 & p < 0.001, respectively). Time to earliest appointment did not significantly vary by insurance type or county.

Conclusions–Implications: This study indicates that MA programs limit access to Orthopedic care compared to TM and commercial insurance. Delay in treatment could potentially increase the risk of complications post-operatively. With recent rises in MA enrollment, increased awareness that selection of these plans could limit access to surgery and care will be pivotal for Medicare patients, surgeons, and policymakers when addressing future program expansion.

#### Diabetes Mellitus and Risk of Surgical Site Infection After Total Hip Arthroplasty

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#### Category: Surgery; Diabetes

**Keywords**: Diabetes mellitus, surgical site infection, total hip arthroplasty, postoperative infection, surgical joint replacement

Introduction and Objective: Over 300,000 hip replacements are performed annually in the United States. Due to the effects of hyperglycemia on the vascular and immune systems, patients with diabetes mellitus (DM) are at an increased risk for developing postoperative complications. However, there is little scientific evidence on surgical site infection (SSI) rates in patients with DM undergoing total hip arthroplasty (THA). The objective of this study was to determine whether there is an association between DM and post-operative SSIs or other complications in patients undergoing THA.

Methods: This study was a non-concurrent cohort study. Participants included 35,197 adults, ages 18 or older, who underwent THA in 2016 per the American College of Surgeons National Surgical Quality Improvement Program Database. Patients on dialysis or patients with disseminated cancer were excluded from the study. The main exposure variable was diabetes mellitus. The main outcome variable was SSI within 30 days of surgery. The other outcomes investigated were sepsis, myocardial infarction, pulmonary embolism, cerebral vascular accident/stroke, pneumonia, urinary tract infection, deep vein thrombosis/thrombophlebitis and death. Covariates included age, sex, race, Hispanic ethnicity, smoking, BMI, and hypertension. Unadjusted and adjusted logistic regression models were used to calculate odds ratios (OR) and 95% confidence intervals (CI).

**Results:** DM was not associated with increased odds of SSIs (OR 1.22; 95% CI 0.89-1.67). Higher odds of developing SSIs were observed in patients who smoke (OR 1.86; 95% CI 1.37-2.52) as well as in those within obesity classes I (OR 1.89; 95% CI 1.20-2.96), II (OR 3.98; 95% CI 2.52, 6.27) and III (OR 7.05; 95% CI 4.40-11.29). Finally, other outcomes were more likely in patients within obesity class II (OR 1.49 95% CI 1.15-1.93)

**Conclusions-Implications:** Our findings suggest that obesity and smoking, rather than DM, increase the odds of SSI post THA. Future studies should investigate the influence of hyperglycemia on SSI and clarify why obesity is associated with increased postoperative complications. Understanding the mechanisms that predispose patients with DM to postoperative complications is crucial to reduce morbidity and mortality.

#### The Association Between Problematic Internet Use and Depression in Miami-Dade Adolescents

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Category: Public Health; Mental Health

**Keywords**: depression, problematic internet use, adolescents

Introduction and Objective: Depression is the most prevalent mood disorder in the US, affecting more than 20 million Americans. Problematic internet use, although not included in the DSM-5, has been described as similar to an impulse control disorder. Problematic internet use has become increasingly prevalent. The relationship between problematic internet use and depression has been demonstrated. However, few studies have looked at this association in adolescents with a Hispanic background. The objective of this study was to investigate whether problematic internet use was associated with depression in Hispanic adolescents in Miami-Dade County.

Methods: This cross-sectional study used a secondary data analysis of the CUIDATE survey, which included 199 urban Hispanic adolescents ages 11 to 17 years-old in Miami-Dade County, Florida. In order to be eligible, youth had to live in Miami-Dade County, selfidentify as Latino, and be willing to participate in three educational sessions and six-month follow-up interview. а Respondents who were outside of the specified age range were excluded. Participants received small incentives for participation. Problematic internet use was measured using an adapted version of Young's Internet Addiction Test (IAT). Depression was assessed using the Center for Epidemiologic Studies Depression Scale (CES-D). Covariates analyzed included gender, age, GPA, socioeconomic status, physical activity, alcohol use, marijuana use language spoken at home, and language spoken with friends. Unadjusted and adjusted logistic regression analysis were used to calculate odds ratios (OR) and 95% confidence intervals (CI).

**Results**: The prevalence of depression was 25.5%. Results demonstrated that there was a statistically significant association between problematic internet use and depression (aOR 3.93; 95% CI 1.90-8.14). Participants who consumed marijuana in the last 30 days were more likely to have depression than those who did not (aOR 4.25; 95% CI 1.44-12.5).

**Conclusions-Implications**: We found an association between problematic internet use and depression in Hispanic adolescents in Miami-Dade County. This may serve as a directive for clinical screening guidelines, screen time recommendations, and school and government policy surrounding internet use. Further research is recommended to investigate if the association between problematic internet use and depression is causal.

# **Poster Presentations**

### **Best Poster Presentations**

#### Development and Implementation of an Evidence-based COVID-19 Remote Assessment Tool by Medical Students

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Keywords: COVID-19, Remote Assessment Tool, NeighborhoodHELP, Medical Students, Primary Care Provider

Introduction and Objective: To mitigate the rapidly increasing caseload for primary care providers (PCP) at the start of the COVID-19 pandemic, FIU HWCOM medical students and faculty generated a remote assessment tool for use in the electronic medical record (EMR). The tool monitored individuals with COVID-19 or suspected COVID-19 enrolled in the Green Family Foundation NeighborhoodHELP (NHELP) program. This study aims to describe the development and implementation of this tool and quantify it's educational impact.

Methods: Development: Development included review of COVID-19 literature, CDC guidelines, and medical expert consultation. Information regarding exposure status, risk factors for severe disease, vital signs, and presenting symptoms were synthesized into questionnaire format with responses assigned numerical а score. Implementation: Medical students from the classes of 2021-2023 were recruited and trained on the workflow of patient monitoring. Once a patient was referred, the student remotely assessed and followed patients utilizing the tool within the EMR. Pulse oximeters were mailed to patients to facilitate assessments. Students reported to the provider to discuss patients, the need for medical management, or discharge from the program. Follow up frequency was based on the score generated by the tool as well as clinical judgment by the provider. Data Collection:

Assessments began on May 6, 2020. All non-PHI data related to this survey was collected by student leaders in excel format to monitor the program until June 2, 2021. Categories included student participants, providers, and total number of patients and encounters.

**Results**: The total number of students who participated is 51. This included 26 members from the class of 2021, 10 members from the class of 2022, and 15 members from the class of 2023. A total of 8 PCPs referred their patients for follow-up with the tool. A total of 93 patients enrolled in NHELP were followed during this time period, which amounted to a total of 530 patient encounters.

Conclusions-Implications: Utilizing this assessment tool, medical students remotely contributed to the COVID-19 pandemic response. They assisted providers with appropriate followup on patients who either were presenting with symptoms, had been exposed to, or tested positive for COVID-19. Students contributed to the needs of an at risk underserved population while also practicing their clinical skills during a when clerkships were suspended. time Additionally, FIU HWCOM providers were able to care for their patients while maintaining their roles as medical educators. Future studies will be conducted to further evaluate the quality of this educational experienc

### **Best Poster Presentations**

#### Illicit Substance Use Disparities among Lesbian, Gay, and Bisexual High School Students in the US in 2017

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Keywords: Adolescent, bisexuality, homosexuality, heterosexuality, substance use

Introduction and Objective: Studies have demonstrated a disparity in sexual minority adolescents and substance use, possibly due to factors contributing to minority stress. The objective of this study is to investigate the association between self-identifying as lesbian, gay, or bisexual and illicit substance use compared to those who identify as heterosexual among high school students in the U.S.

Methods: A secondary data analysis of a cross-sectional study was performed using data from the Youth Risk Behavior Surveillance System in 2017. The study included adolescents attending public, Catholic, or private U.S. high schools. Participants with missing data on substance use and sexual orientation were excluded. The final sample size was 12,370. The main outcome variable was illicit substance use, which included marijuana and cocaine, among others. The main exposure variable was students who identified as heterosexual, gay or lesbian, bisexual, and unsure. Binary logistic regression analysis was used to calculate unadjusted and adjusted odds ratios and 95% confidence intervals (CIs).

**Results**: Participants who identified as bisexual had 1.65-fold increased odds (95% CI 1.32-2.05) of ever using illicit substance(s) compared to heterosexuals. Those who identified as "not sure" of their sexual identity had 1.37-fold increased odds of ever using illicit substance(s) compared to heterosexuals (95% CI 1.03-1.83).

**Conclusions-Implications**: The results will provide health professionals with more information about illicit substance use among lesbian, gay, or bisexual identified adolescents. An increase in the understanding of health disparities associated with sexual identity may assist in the development of interventions.

#### Dietary Intake of Carbohydrate-to-Fiber Ratio as an Indicator of Depressive Symptoms

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Category: Gastroenterology; Psychiatry

**Keywords:** Depression; Carbohydrates; Dietary Fiber; Prebiotics; NHANES

Introduction and Objective: Depression is one of the most common psychiatric disorders in the U.S, and significantly impairs daily function both at work, home, or with social activities. Moreover, depression increases the risk of chronic disease. productivity loss, and suicide. Given these widespread and diverse effects, it is necessary to identify modifiable risk factors for depression that may have therapeutic potential. In addition to the current standards of care, one of the most promising avenues for intervention is via the gut microbiome and gut-brain axis. This study seeks evaluate the to association between the dietary intake of carbohydrateto-fiber (CF) ratio and depressive symptoms.

**Methods:** This is a cross-sectional study using the National Health and Nutrition Examination Survey (NHANES) database during years 2013-2016. Individuals 18 years and older were included in this study. Participants with total energy intake outside of three standard deviations of the mean, pregnant or breastfeeding women, and those with missing data of key variables used were excluded. The main independent variable, CF ratio, was generated using corresponding variables in NHANES and divided into quartiles. The main outcome was depressive symptoms using the Patient Health Questionnaire-9 (PHQ-9). Unadjusted and adjusted logistic regression analyses were used to calculate odds ratios and their corresponding 95% confidence interval (CI).

**Results:** Among all participants (n=9,728), 8.3% reported to have depressive symptoms (n=833). The highest proportion of depressive symptoms was reported in respondents in quartile 4 (Q4), the highest CF ratio (13.0%; p<0.001). After adjustment, the odds of depressive symptoms significantly increased in Q4 of the CF ratio, when compared with Q1 (adjusted odds ratio (adjOR) 1.4, 95% CI 1.0-1.9). The prevalence depressive symptoms significantly of increased in females, lower federal poverty levels, non-married individuals, smokers, and those with hypertension.

**Conclusion-Implications:** This nationally representative sample suggests that a higher CF dietary intake ratio increases the risk of depressive symptoms. This study shows that using a patient's CF ratio can allow both clinicians and patients to evaluate their dietary risk for depressive symptoms and act accordingly. Since the CF ratio is a new marker, further prospective studies are needed to validate this tool as a dietary measurement.

#### A study of the association between alcohol exposure and risky sexual behavior in Hispanic adolescents in the United States

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Category: Public Health

Keywords: Alcohol use, risky sexual behavior

Introduction and Objective: Alcohol use has been shown to be linked to risky sexual behavior in adult populations in the United States. Studies determining the association between alcohol use and risky sexual behavior in adolescents has not been as well established. Additionally. Hispanic adolescents having a high propensity for risky sexual behavior makes this ethnic group of particular interest for targeted public health interventions. The objective of this study is to determine if alcohol use is associated with increased risk of risky sexual behavior in US adolescents, and if such association is modified by race/ethnicity.

**Methods:** We conducted a secondary data analysis of the nationwide Youth Risk Behavior Surveillance System (YBRSS) completed in 2017. All participants who reported being sexually active were included (n=5,192). We assessed the association of alcohol use in the last 30 days and risky sexual behavior. A multivariable logistic regression was done to assess the independent associations and to test for interaction by race/ethnicity. **Results:** About 53% of participants reported having any alcohol exposure over the last 30 days. About 67% of participants reported risky sexual behavior. In the model adjusted for demographics, social exposures, and drug use, alcohol use in the past 30 days was associated with an increased odds of risky sexual behavior [adjusted Odds Ratio (aOR) 1.6, 95% confidence interval (CI) 1.3-2.0]. Minorities were associated with higher odds for the toucome cmpared to Whites (aOR 2.9, 95% CI [1.9-4.5] for NH-blacks; aOR 1.6, 95% CI [1.1-2.2] for Hispanics) but we found no evidence for effect modification by race/ethnicity.

**Conclusions-Implications**: The prevalence of risk sexual behavior and of alcohol exposure was high. Alcohol exposure increased by 60% the odds of sexual risky behavior. Initiatives should be developed targetting alcohol exposure in adolescents as an approach to reduce risky sexual behavior and associated consequences.

#### **P03**

Factors Associated with Effective Control ofDiabetesandHypertensionAmongNeighborhoodHELPPatients:AMultivariable Analysis

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**Category**: Public Health; Health Disparities

**Keywords**: Diabetes mellitus, hypertension, NeighborhoodHELP, socioeconomic status, language Introduction and Objective: Literature shows that control of hypertension and diabetes is often impacted by socioeconomic disparities. This study seeks to identify specific factors affecting the control of hypertension and diabetes among patients at the NeighborhoodHELP (NHELP) Mobile Health Center (MHC), a multidisciplinary program in Miami-Dade County that engages medically underserved communities stricken by various social determinants of health.

Methods: A historical cohort of 365 adults with diabetes (143) or hypertension (222) who met HEDIS criteria was assembled. Independent variables included age, gender, ethnicity. marital status. language, catchment area, income per capita, and medical student assignment. The outcome was condition control, i.e., systolic blood pressure ≤130 mmHg, diastolic blood pressure ≤80 mmHg, and HbA1c ≤7%. First, a bivariate analysis was performed to determine the presence of associations between the factors of interest and outcome. Then, a multiple binary logistic regression model was fitted for each outcome (HTN control and diabetes control) to identify factors associated with each outcome.

**Results:** Bivariate analysis showed that non-Hispanic blacks had a lower likelihood of diabetes (OR 0.52; 95% CI 0.26-1.04) and hypertension (OR 0.51; 95% CI 0.28-0.93) control than Hispanics. After multivariable modeling, diabetes control was found to be more likely among the Hippocrates (OR 4.9; 95% CI 1.23-19.37) and Semmelweis (OR 3.71; 95% CI 1.07-12.83) catchment areas, but less likely among Creole-speaking patients (OR 0.13; 95% CI 0.02-0.75). In hypertensive patients, income per capita  $\geq$ \$10,000 showed a significantly greater likelihood of control (OR 2.22; 95% CI 1.03-4.8).

Conclusions-Implications: Income and language spoken impact control of diabetes and hypertension among patients seen at the NHELP MHC. Special consideration of language barriers and financial difficulties should be taken when providing care to this population, especially patient Creole speakers and those with an income per capita less than \$10,000. Further research and public health programming is necessitated to evaluate and address these social determinants of health, using larger samples to increase the likelihood of identifying additional relevant factors.

#### P04

The Association Between the Use of Online Dating Applications and Sexual Risk Behaviors Among Emerging Adult Latinos: Preliminary Data for Evidenced Based Action

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#### Category: Public Health

**Keywords**: Dating applications, Sexual risk behaviors, Latino, Young adults, Gender roles

Introduction and Objective: The use of downloadable dating applications to meet sexual partners has become common with the rise of technology and social media, especially among young adults. This study aimed to examine the association between dating app use and sexual risk behaviors (SRBs), which include inconsistent condom use, use of alcohol and/or drugs during sex, and multiple sex partners, in U.S. Latino young adults.

Methods: Data for the present study is a subset of a larger cross-sectional study by Project HEAL. The participants were Latino emerging adults (ages 18-25) in Miami and Phoenix and were surveyed between August 2018 and February 2019. Our study selected those who reported being sexually active and responded to the item regarding dating app use (n=155). The independent variable was having ever used a dating app use and the dependent variab.le was SRBs (yes/no). Unadjusted and adjusted logistic regression analysis were used to calculate odds ratios (OR) and their corresponding 95% confidence intervals (CI).

**Results**: There was no statistically significant association between use of online dating apps and SRBs (OR 1.18; 95% CI 0.55 - 2.51). Secondary findings revealed that machismo (uOR 1.10; 95% CI 1.02 - 1.19), marianismo (uOR 2.38; 95% CI 1.05 - 5.39), and employment status (uOR .221; 95% CI 0.09 - 0.51) were independently associated with SRBs.

**Conclusions-Implications**: Our study found that using online dating apps did not increase the odds of engaging in SRBs in this Latino population. However, Latino gender roles of machismo and marianismo, as well as employment status, were related with SRBs. Our primary findings differed from similar studies in other populations, thus we recommend that future research be conducted with a greater sample size to explore this relationship further.

#### P05

#### Association between race/ethnicity and Complete Meningitis Vaccination

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**Category**: Health Disparities; Public Health

**Keywords**: Race, ethnicity, meningitis vaccination, social disparities, National Immunizations Survey (NIS).

Introduction and Objective: Current estimates suggest that 1 in 5 children in America has not received the meningococcal vaccine. Racial and ethnic disparities propose varying health outcomes due to biological, sociocultural, and economic differences. Data for the uptake of the second dose is lacking. This research study will explore if there is an association between race/ethnicity and completion of the meningococcal vaccine series.

Methods: We use data from 17-year-old teenagers that have participated in the the National Immunization Surveys (NIS). The main exposures were race and ethnicity, categorized as Hispanic, Non-Hispanic White, Non-Hispanic Black, and Non-Hispanic Other. The main outcome variable of this study is meningitis vaccination dichotomized as complete, having received at least two doses, or incomplete if less than 2 doses. Unadjusted and adjusted logistic regression analyses were used to calculate odds ratios and 95% confidence intervals.

Results: Our study reviewed 3.723 participants and found an overall vaccination rate of 57%. Our data revealed that the association between race/ethnicity was not statistically significant with having completed the meningococcal vaccination compared to non-Hispanic Whites. Non-Hispanic whites had the greatest percent of participants with complete vaccination (n:1388, 59.1%). Out of the 335 Hispanic participants 56.0% were completely vaccinated. 48.3% of the 160 Non-Hispanic Blacks had complete vaccination status. Lastly, Out of the 246 Non-Hispanic others 52.8% were fully vaccinated. The odds for Hispanic patients, Non-Hispanic blacks and Non-Hispanic Others were OR 1.40; 95% CI 0.93-2.10, OR 0.85; 95% CI 0.56-1.29 and OR 0.99; 95% CI 0.66-1.48, respectively.

Conclusions-Implications: In conclusion, we found no evidence for an association between and race ethnicity and meningococcal vaccination completion. We believe that the limitations of our study (such as to information bias, missing information, and selection bias may have prevented us from finding an association. Assessing the role of social determinants of health for use in determining adherence to complete vaccination status may aid in improving vaccination efforts and ultimately improve complete vaccination rates across our country. Keywords: Race; ethnicity; Meningitis Vaccination; social disparities; the National Immunizations Survey (NIS).

#### **P06**

A New Mosquito Midgut Protein AGAP008138 facilitates Plasmodium Falciparum Transmission in Anopheles Gambiae Mosquitoes

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**Category**: Infectious Disease; Microbiology/Genetics

**Keywords**: Malaria, Plasmodium falciparum, Anopheles gambiae, Transmission blocking vaccine, Midgut

Introduction and Objective: Malaria is one of the most dangerous tropical infectious diseases: up to 241 million new clinical infections occur every year, with an annual death toll of about 627,000. According to the most recent WHO malaria report, this denotes an increase of 14 million cases and 69,000 more deaths in 2020 as compared to 2019. Approximately two-thirds of these additional deaths have been linked to disruptions in the provision of malaria prevention, diagnosis, and treatment during the pandemic. Emphasizing on the need for innovative strategies to combat this devastating disease. The malaria mosquito vector, Anopheles gambiae, is largely responsible for Plasmodium falciparum transmission and the spreading of malaria. Due to the increase in parasite resistance observed in humans, research in the past years has shifted to transmission-blocking vaccines which target the vector. Some mosquito midgut proteins are critical for

malaria invasion, as the P. falciparum ookinetes travel through midgut endothelial cells and develop into oocysts between the endothelium and basal membrane. Hence, the discovery of a new key protein facilitating the invasion of ookinetes into the mosquito midgut will aid to uncover a new infection mechanism. The main objective of this study is to determine whether AGAP008138 can assist in P. falciparum transmission.

Methods: To investigate the transmission potential of AGAP008138 in vivo, mosquitoes were fed with 250µL of mature P. falciparum parasite in a blood/serum mixture and anti-AGAP008138 IgG at 0.1, 0.4, and 1 mg/mL concentrations using a glass membrane feeder. Unfed mosquitoes were separated, and infected mosquitoes were dissected 7 days post-infection. Midguts were stained with 0.1% mercurochrome and the oocysts were counted under a light microscope. Analysis was done with GraphPad Prism 9 using the non-parametric Mann-Whitney U test. We also detected endogenous AGAP008138 in blood-fed mosquito midguts by using the anti-AGAP008138 and secondary anti-rabbit Alexa-Fluor 594 antibodies. The midguts were analyzed with an Olympus Fluoview confocal microscope and processed with ImageJ.

**Results**: The results demonstrated that the polyclonal antibodies against AGAP008138 were able to significantly reduce the number of oocysts when compared to the control mosquitoes (p-value = 0.0221, <0.0001, &lt;0.0001 for 0.1, 0.4, and 1 mg/mL respectively). Results showed that the majority of endogenous AGAP008138 protein is located at the midgut epithelial cell surface towards the lumen side. Notably, the protein localizes at specific locations and to some vesicles.

**Conclusions-Implications**: This study demonstrated that AGAP008138 facilitates parasite development. Additionally, IgG targeting AGAP008138 can halt parasite encystment and transmission. The results from this study have set the groundwork for further investigation into its specific mechanism such as possible protein-protein interactions and protein structure/function.

#### P07

#### Clinicopathological Analysis of Recurrence and Progression of Low-Grade Papillary Urothelial Carcinoma of the Urinary Bladder: Predicting the Outcome

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#### Category: Pathology; Oncology

**Keywords**: Papillary Urothelial Carcinoma, Recurrence, Progression, Bladder cancer, Prognosis

**Introduction and Objective**: Urinary bladder cancer is the most common malignancy of the urinary system. Tumor pathologic grade is an important factor in predicting outcomes. Patients with low-grade papillary urothelial carcinoma (LGPUC) usually have a low risk for tumor recurrence and progression; yet a subset of patients develop recurrence or grade/stage progression to high-grade papillary urothelial carcinoma (HGPUC). We aimed to assess the incidence and clinicopathological factors associated with tumor recurrence/progression of LGPUC.

**Methods**: IRB approval from Mount Sinai Medical Center of Florida was obtained prior to commencement of our retrospective cohort study. In total, 258 patients with initial diagnosis of LGPUC of the urinary bladder between August 2011 and July 2021 were included. Patients with papilloma, papillary urothelial neoplasm of low malignant potential (PUNLMP), HGPUC, or urothelial carcinoma of the ureter/kidney/urethra were excluded. Statistical analysis was performed using SPSS.

Results: Of the 258 patients, 157 (60.9%) had "no recurrence", 85 (32.9%) had ≥1 "recurrence of LGPUC", and 16 (6.2%) had "grade progression to HGPUC." The mean follow up time was  $31.5 \pm 32$  months. Larger mean tumor size was seen in "grade progression" (2.52 ±1.51 cm) and "recurrence of LGPUC" (2.38 ±1.43 cm) compared "no recurrence" (2.17 ±1.60 cm; p=0.264). Also, patients with "recurrence of LGPUC" and "grade progression" are more likely to have multiple lesions on initial cystoscopy (56.3% and 60.0%, respectively) than patients with "no recurrence" (46.5%). Although lamina propria invasion on initial biopsy was not correlated with recurrence or grade progression, lamina propria invasion on subsequent biopsies was correlated to both (p<0.001). Current smokers have higher risk of recurrence of LGPUC (HR=2.545, p=0.005) and grade progression (HR=8.458, p=0.007) than non-smokers.

**Conclusions-Implications**: Approximately two-third of patients with LGPUC did not develop recurrent tumor and only 6% underwent grade progression. The risk of recurrence and grade progression was higher among patients with multiple lesions or larger mean tumor size at initial diagnosis and lamina propria invasion on subsequent biopsies. Since the majority of patients did not develop recurrence, we question whether there is tendency to overclassify the papillomas as LGPUC based on the 2004 WHO/ISUP consensus grading classification.

#### **P08**

Pulmonary Granulomas and Mycobacterial Infection: Concordance Between the Results of Special Stains Performed on Lung Tissue Sections and Tissue Cultures

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**Category**: Pathology; Infectious Diseases

**Keywords**: Pulmonary Granulomas, Mycobacterial Infection, Special Stains, Tissue Cultures

**Introduction and Objective**: Granulomas are organized aggregates of epithelioid macrophages that are thought to form because of a complex innate and adaptive cellular immune process. The most common cause of pulmonary necrotizing granulomas worldwide is *M. tuberculosis*. Different studies, and our personal experience, have shown that high levels of discrepancy might exist between these diagnostic approaches of mycobacterial infections in lung resection specimens. Our aim is to assess the degree of concordance between special stains and tissue cultures in the diagnosis of mycobacterial infections.

Methods: IRB approval from Mount Sinai Medical Center of Florida was obtained prior to commencement of our retrospective cohort study. This is a single-center retrospective cohort analysis that includes data collected for a 10-year period. 79 patients with a diagnosis of granulomas (necrotizing or non-necrotizing) on lung resection specimens were identified. Cohen's kappa was used to measure the reliability of the diagnosis and general concordance between the results of the histopathological special stains and bacteriological tissue cultures. Statistical analyses were performed using SPSS.

Kinyoun acid-fast Results: stain was performed on 41/79 (51.9%) cases. FITE stain was performed on 49/79 (62%) cases. With Kinyoun acid-fast stain, 6/41 (14.6%) cases were positive for acid fast bacilli (AFB). With FITE stain, 8/49 (16.3%) cases were positive for AFB. There was strong agreement between Kinyoun acid-fast and FITE stains (Kappa = 0.873; *p*-value < 0.001). Tissue cultures were performed on 34/79 cases (43%). 9/34 (26.5%) of tissue cultures were positive for mycobacteria. Non-tuberculous mycobacteria were isolated in cultures from lung resection specimens with necrotizing granulomas. There was no concordance between Kinyoun acid-fast stains and tissue cultures results as well as between FITE stains and tissue cultures results.

**Conclusions-Implications**: We found no concordance between the results of special stains for AFB and corresponding tissue

cultures in the diagnosis of mycobacterial infections in lung resection specimens. Our observations represent an initial step in the process of reviewing the two methods routinely used in our institution to diagnose mycobacterial infections on lung resection specimens with granulomas.

#### P09

#### Prognostic Significance of p53 and p63 in Diffuse Large B-Cell Lymphoma: A Single-Institution Experience

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#### Category: Pathology; Oncology

**Keywords**: p53, p63, Diffuse Large B-Cell Lymphoma, Biomarkers, Prognosis

Introduction and Objective: Diffuse large Bcell lymphoma (DLBCL) is the most common lymphoma in adults. Multiple classification schemes exist for DLBCL based on morphology, clinical behavior, and molecular studies. Yet, many cases remain biologically heterogenous and their biologic behavior cannot be predicted accurately. We evaluated the immunohistochemical expression of p63 and p53 in DLBCL and correlated between the level of expression and other clinicopathological parameters to determine their significance on overall survival (OS) and progression-free survival (PFS).

**Methods**: IRB approval from Mount Sinai Medical Center of Florida (MSMC) was obtained. We conducted a retrospective cohort study including 177 patients with DLBCL presenting to MSMC between January 2010 and December 2020. IHC staining for p63 and p53 were scored as positive or negative based on 20% as cutoff. QuPath software for bioimage analysis was used to quantify p63 and p53 stains. Statistical analysis was performed using SPSS software (significance was set at p<0.05).

**Results**: Our cohort included 91 men (51.4%) and 86 women (48.6%). The mean overall follow-up was 28.39 months (range 0.75 to 114 months). A significant correlation was found between p63 positive cases and p53 positive cases (p=0.007), p53/p63 copositivity (p<0.001), high Ki67 proliferation index (p=0.002), MYC expression (p=0.042), and MYC/BCL2 double expression (p=0.025). After stratifying patients into germinal center B-cell like (GCB) and non-GCB subgroups, both showed significant correlation between p63+ and p53/p63 co-positivity, with a trend among p63+ patients in the non-CGB group to have MYC/BCL2 double expression. Regardless of GCB subgrouping, there was a trend among p53+ patients to have MYC/BCL2 double expression, positive MYC expression, and lower OS and PFS compared to the p53- group. A tendency of poor OS and PFS was seen in p53+ patients in the non-GCB, GCB and double expressors subgroups. There was a tendency of poor OS and PFS in

p63+ patients in both the non-double expressors and double expressors subgroup.

**Conclusions-Implications**: In conclusion, our results suggest that p63 and p53 may represent potential additional biomarkers of prognosis in DLBCL cases and be integrated in the different subgroups would be ideal to improve patient care and follow-up.

#### P10

### Arsinothricin: a new and novel potent antibiotic against Mycobacterium bovis

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#### Category: Infectious Disease; Basic Science

**Keywords**: Arsinothricin, Mycobacterium bovis, Glutamine synthetase, Antibiotic resistance, Tuberculosis

Introduction and Objective: Tuberculosis (TB), one of the top 10 causes of death worldwide, exceeds HIV as the leading cause of death from a single infectious agent and poses an increasing threat to global public health due to the emergence of multidrugresistant TB (MDR-TB). Currently available are becoming increasingly antibiotics ineffective for the treatment of this infectious killer disease. Arsinothricin (AST) is natural broad-spectrum antibiotic а produced by the soil bacterium Burkholderia gladioli GBSR05. AST is an irreversible inhibitor of glutamine synthetase (GS), an essential enzyme in the nitrogen metabolism of many bacteria and plants. New inhibitors

of Mycobacterium tuberculosis (Mtb) GS are potential targets for drug discovery. GS is essential for the growth of M. tuberculosis and plays a crucial role in the synthesis of the poly-L-glutamine layer (PLG), a cell wall component found exclusively in pathogenic strains. The goal of this study is to demonstrate the ability of AST to treat lines infected human cell with Mycobacterium bovis, the causative agent of animal tuberculosis and is closely related to Mtb.

Methods: Macrophages were differentiated from the THP-1 cell line by phorbol 12myristate 13-acetate. The cytotoxicity of AST and other organoarsenicals was tested against the macrophages using a colorimetric MTT assay for cell viability. For macrophage infection assays, monolayers of THP-1 differentiated macrophages were infected with an attenuated strain of M. bovis for 60 -90 min, washed and cultured for 2-5 days in the absence and presence of various concentrations (50  $\mu$ M – 200  $\mu$ M) of AST or other glutamine synthetase inhibitors. The culture media was changed after every two days, and the cells were lysed with mild detergent and plated on 7H9 agar to determine the number of intracellular mycobacteria.

**Results**: AST at 100  $\mu$ M is not cytotoxic to the macrophages and inhibited the growth of M. bovis in macrophages by 77% compared to 45.6% by methionine sulfoximine (MSO), another glutamine synthetase inhibitor.

**Conclusions-Implications**: AST is a better GS inhibitor than MSO for killing intracellular mycobacteria and has the potential to usher in a new class of arsonate antibiotics.

#### P11

#### Development and Implementation of an Evidence-Based COVID-19 Remote Assessment Tool by Medical Students

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Category: Medical Education; Public Health

**Keywords**: COVID-19, Remote Assessment Tool, NeighborhoodHELP, Medical Students, Primary Care Provider

Introduction and Objective: To mitigate the rapidly increasing caseload for primary care providers (PCP) at the start of the COVID-19 pandemic, FIU HWCOM medical students and faculty generated a remote assessment tool for use in the electronic medical record (EMR). The tool monitored individuals with COVID-19 or suspected COVID-19 enrolled in Foundation the Green Family NeighborhoodHELP (NHELP) program. This study aims to describe the development and implementation of this tool and quantify it's educational impact.

Methods: Development: Development included review of COVID-19 literature, CDC guidelines, and medical expert consultation. Information regarding exposure status, risk factors for severe disease, vital signs, and presenting symptoms were synthesized into questionnaire format with responses assigned a numerical score. Implementation: Medical students from the classes of 2021-2023 were recruited and trained on the workflow of patient monitoring. Once a patient was referred, the student remotely assessed and followed patients utilizing the tool within the EMR. Pulse oximeters were mailed to patients to facilitate assessments. Students reported to the provider to discuss patients, the need for medical management, or discharge from the program. Follow up frequency was based on the score generated by the tool as well as clinical judgment by the provider. Data Collection: Assessments began on May 6, 2020. All non-PHI data related to this survey was collected by student leaders in excel format to monitor the program until June 2, 2021. Categories included student participants, providers, and total number of patients and encounters.

**Results**: The total number of students who participated is 51. This included 26 members from the class of 2021, 10 members from the class of 2022, and 15 members from the class of 2023. A total of 8 PCPs referred their patients for follow-up with the tool. A total of 93 patients enrolled in NHELP were followed during this time period, which amounted to a total of 530 patient encounters.

Conclusions-Implications: Utilizing this assessment tool, medical students remotely contributed to the COVID-19 pandemic response. They assisted providers with appropriate follow-up on patients who either were presenting with symptoms, had been exposed to, or tested positive for COVID-19. Students contributed to the needs of an at risk underserved population while also practicing their clinical skills during a time when clerkships were suspended. Additionally, FIU HWCOM providers were able to care for their patients while maintaining their roles as medical educators. Future studies will be conducted to further

evaluate the quality of this educational experience.

#### P12

#### Discrepancies in Skin Prick Testing for Common Aeroallergens in Patients Tested in Triplicate

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#### Category: Medical Education

**Keywords**: Skin Prick Test, different companies, triplicate, discrepancies, allergen

**Introduction and Objective**: Skin prick tests (SPT) are an important clinical tool that can help guide diagnosis and management. However, some limitations exist, such as the variation in SPT results. This has been shown with duplicate tests using extracts from different companies. We aimed to study differences in SPT reactivity in a cohort of patients to aeroallergen extracts from three different companies for each allergen.

**Methods**: We conducted a retrospective study on 193 consecutive patients with at least one positive aeroallergen skin test at a single center in Kitchener, Ontario between January 22 – May 19, 2019. All subjects were skin tested to ragweed, birch, grass, cat, dog, Dermatophagoides pteronyssinus, and Dermatophagoides farinae from three companies: Hollister-Stier (HS), Stallergenes-Greer, and ALK. Discrepant SPT were defined as one negative SPT when a SPT for the same allergen from a different company was positive. Data were analyzed using n/N, %, and mean standard deviation.

Results: Overall, 193 patients (64.8% female; mean age 35.6 15.2 years) underwent a total of 4053 SPT to 7 aeroallergens. Testing was performed approximately equally between Winter and Spring (54.9% vs. 45.1%, respectively). Of these 193 patients, 119 (61.7%) patients had a total of 192 discrepant SPT, representing 14.2% of all SPT. The most commonly discrepant SPT, at 20.3% each, were grass, D. farina, and D. pteronyssinus. Discrepant SPT to dog were uncommon (5.7%). Greer had more negative SPT when at least one other manufacturer's tests were positive, whereas HS had more positive SPT when at least one other manufacturers' tests were negative.

Conclusions-Implications: Discrepancies exist the results of different amongst aeroallergens tested different from companies, including standardized extracts. The highest percentages of discrepancies were noted for grass, D. farina, and D.pteronyssinus. Clinicians should consider testing in triplicate with extracts from three companies when testing for aeroallergens.

#### P13

An Explorative Study of a Fourth-year Narrative Medicine Elective: Promoting Strategies for Personal Well-being and Improved Patient Care

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Category: Medical Education, Mental Health

**Keywords**: medical education, Narrative medicine, medical humanities, medical student resilience, medical student self-reflection

Introduction and Objective: Narrative medicine promotes the effective practice of medicine by requiring clinicians to listen, reflect, and manage patient stories; thereby improving patient care and creating more resilient physicians. Florida International University Herbert Wertheim College of Medicine offers a narrative medicine elective to fourth-year students who participate in reading, writing, and discussion activities that focus on processing their medical school experiences. This study evaluated the potential roles of this course in promoting strategies for personal well-being and improved patient care.

Methods: Students completed an anonymous, optional, post-course survey consisting of Likert-type and short answer questions. The Likert-type questions assessed students' perceived impact of the curriculum on their knowledge of Narrative Medicine, likelihood to write about patients in the future, and their understanding of their own patient care experiences. The shortanswer questions asked why students took the course and how they would apply their learning to patient care and their own wellbeing. These responses were analyzed separately by two coders through an inductive approach which grouped responses into themes, which were then agreed upon through an iterative process.

**Results:** All students "agreed" or "strongly agreed" that the course encouraged them to write, reflect, and share their experiences. A common theme across short-answer responses was a desire to write about, share,

and reflect on experiences, as well as to develop skills regarding demonstrating empathy, processing emotions, and advocating for patients.

**Conclusions-Implications:** Students reported that the Narrative Medicine Elective taught them strategies for improving patient care and personal well-being, which they planned to continue to practice in the future. These findings show how the practice of narrative medicine during medical school may provide opportunities to promote reflection and resilience.

#### P14

#### The Use of Virtual Patients in Teaching Suicide Risk Assessment Among Clinical Students

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Category: Mental Health; Medical Education

**Keywords**: Suicide Risk Assessment, Suicide, Medical education

Introduction and Objective: Suicide risk assessment is an important component of preventing suicide, and building strong therapeutic relationships is fundamental to a successful assessment. Determining effective educational tools to teach students how to recognize and reduce their negative emotions, before they encounter these patients when the stakes are dire, is crucial. Virtual patients (VP) are becoming more popular in healthcare education and they currently exist in many forms. The goal of this study is to determine if student clinicians who complete a suicide risk assessment on a 3D VP elicit a more negative emotional responses and have improved satisfaction scores when compared to the 1D VP.

Methods: We describe results from two cross-sectional studies that recruited healthcare students to complete a suicide risk assessment with the VP. One study had students interact with the 1-dimensional VP which only had chat-like text features. The second study had the students interact with a more life-like 3-dimensional VP that was able to listen and respond verbally. After the interaction with the corresponding VP, students completed the Therapist Response Questionnaire - Suicide Form (TRQ-SF) to measure the negative emotional responses in regards to hopelessness, detachment, and distress and a Virtual Human Interaction Survey to measure the student's satisfaction with the experience.

**Results**: Interaction with the 1D VP consisted of 54 undergraduate students, interaction with the 3D VP consisted of 26 graduate students. Satisfaction of the overall interaction was found to be high with both 1D and 3D virtual patients, being 64.2% and 55.6% respectively (p=0.516 for difference between groups). Regarding negative emotions, participants who interacted with the 1D VP had statistically significant higher levels of detachment compared to the 3D group, (mean= 10.8 SD= 3.1, mean= 7.0 SD= 2.2, respectively, p<0.001). No significant difference in reported feelings of distress, (1D mean= 3.7 SD= 2.5, 3D mean= 3.0 SD= 1.7, p=0.43) and hopelessness (1D mean= 3.3) SD= 1.6, 3D mean= 2.5 SD= 1.3, p=0.06)

**Conclusions-Implications**: In this preliminary assessment, we found little evidence of

differences between the responses for 1D or 3D VP, however, findings should be interpreted in light of limited sample size and differences in the type of students in each group. Further studies are warranted. Since reducing countertransference has been shown to improve outcomes in patients, it is important to determine effective educational tools to improve the quality of care for patients in need.

#### P15

### The Association between E-cigarette Use and Adolescent Suicidality

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**Category**: Mental Health; Public Health

**Keywords**: e-cigarette, suicidality, cigarette, vaping, adolescent

Introduction and Objective: Adolescent suicide is the second leading cause of death among children and young adults age 10 to 19 years and tenth leading cause of death in the United States overall. E-cigarettes have become widely popular among adolescents in the United States, as demonstrated by a 2016 report by the US Surgeon General that showed US adolescent e-cigarette use increased by 900%. It has been shown that there is an association between cigarette use and suicidality. The objective of this study is to evaluate the association between ecigarette use and self-reported suicidal ideation, suicidal attempt, and injurious suicide attempt in adolescents throughout

grade levels 6-12 collected in the United States' Youth Risk Behavior Survey.

Methods: We will be conducting a crosssectional study using the Youth Risk Behavior Survey (YRBS) database for the years 2017 and 2019 among US high school students. Inclusion criteria includes all respondents to the YRBS survey in grade levels 9th-12<sup>th</sup> grade. Exclusions criteria includes nonresponse to survey questions assessing exposure and outcome variable. The main exposure variable is use of cigarettes, ecigarettes, or dual-use. The main outcome variable will be suicidal ideation, attempt, and/or self-inflicted injury. Unadjusted and adjusted logistic regression models will be used to calculate odds ratios and 95% confidence intervals.

**Results**: After adjustment for covariates, users of e-cigarettes were twice as likely to report suicidal ideation of (OR: 1.89, 95% CI of 1.67-2.13), cigarette exclusive users were nearly three times as likely to report suicidal ideation (OR: 2.87, 95% CI of 1.91-4.31) and dual users were nearly two times as likely to report suicidal ideation (OR: 1.75, 95% CI of 1.30-2.35) when compared to respondents who did not have any cigarette or e-cigarette use.

**Conclusions-Implications**: This study can help assess the association between suicidality and depression with use of cigarettes and ecigarettes. The findings of this study have potential implications in both understanding and efforts to reduce adolescent suicidality. It potentiates the need for the promotion of smoking cessation programs and other interventions for cigarette and e-cigarette use to adolescents by health professionals. Illicit Substance Use Disparities Among Lesbian, Gay, and Bisexual High School Students in the U.S. in 2017

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Category: Health Disparities; Public Health

**Keywords**: Adolescent, bisexuality, homosexuality, heterosexuality, substance use

Introduction and Objective: Studies have demonstrated a disparity in sexual minority adolescents and substance use, possibly due to factors contributing to minority stress. The objective of this study is to investigate the association between self-identifying as lesbian, gay, or bisexual and illicit substance use compared to those who identify as heterosexual among high school students in the U.S.

Methods: A secondary data analysis of a cross-sectional study was performed using data from the Youth Risk Behavior Surveillance System in 2017. The study included adolescents attending public, Catholic, or private U.S. high schools. Participants with missing data on substance use and sexual orientation were excluded. The final sample size was 12,370. The main outcome variable was illicit substance use, which included marijuana and cocaine, among others. The main exposure variable was students who identified as heterosexual, gay or lesbian, bisexual, and unsure. Binary

logistic regression analysis was used to calculate unadjusted and adjusted odds ratios and 95% confidence intervals (CIs).

**Results**: Participants who identified as bisexual had 1.65-fold increased odds (95% Cl 1.32-2.05) of ever using illicit substance(s) compared to heterosexuals. Those who identified as "not sure" of their sexual identity had 1.37-fold increased odds of ever using illicit substance(s) compared to heterosexuals (95% Cl 1.03-1.83).

**Conclusions-Implications**: The results will provide health professionals with more information about illicit substance use among lesbian, gay, or bisexual identified adolescents. An increase in the understanding of health disparities associated with sexual identity may assist in the development of interventions.

#### P17

### Association Between Marijuana Use and Cardiovascular Disease in US Adults

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Category: Cardiology; Epidemiology

**Keywords**: cannabis, cardiovascular disease, prevalence, marijuana

**Introduction and Objective**: The prevalence of marijuana use has increased by about 16% since 2006, translating to approximately 200 million people worldwide. Being so widely used, the long-term effects of marijuana use on cardiovascular health are largely unknown. Previous studies have had conflicting results, either showing marijuana use having a negative impact or no significant impact on cardiovascular health. This study aims to add evidence regarding the impact marijuana use has on the prevalence of cardiovascular disease.

Methods: This retrospective study was conducted using the Behavioral Risk Factor Surveillance System (BRFSS) database. Patients who completed the questionnaire and answered all questions in relation to marijuana use and the diagnosis of cardiovascular disease in 2017 were a part of this study. Subjects were excluded if they were children (<18 years old) or had missing data for marijuana use or cardiovascular disease. Age, gender, race/ethnicity, BMI, income, exercise, tobacco use, alcohol use, and depression all considered were potential as confounders. Bivariate analysis was conducted to find an initial association between marijuana use and cardiovascular disease, which was followed by a multivariate regression analysis to adjust for confounders.

**Results**: A total of 56,742 subjects were included in the analysis. The unadjusted bivariate analysis showed a reduced prevalence of cardiovascular disease in individuals using marijuana (OR 0.65, 95%CI [0.50-0.84]). After adjustment with all additional variables, an adjusted model showed a similar odds ratio, but statistical significance of the association was lost (OR 0.74, 95%CI [0.54-1.01]).

**Conclusions-Implications**: Although previous literature has shown that marijuana use has a negative impact on cardiovascular health, our study suggests that users and non-users

of marijuana did not have a significant difference in the prevalence of cardiovascular disease. Varying levels of support within the literature highlight the need for further research of this association.

#### **P18**

### The Effect of Health Insurance Status on School Attendance

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**Category**: Public Health; Health Disparities

**Keywords**: health insurance, school absenteeism, missed school days

Introduction and Objective: Educational achievement is impacted by a student's ability to be present and motivated in the classroom. Since health and education influence one another, disparities in health insurance status amongst children may exert relevant educationally consequences. However, the association between health insurance coverage and school absenteeism remains poorly understood. Our study aims to assess the association between not having / having gaps in health insurance coverage and an increased number of missed school days.

Methods: Historical cohort study performed via secondary analysis of data collected as part of the 2018 National Survey of Children's Health (NSCH). We included children enrolled in school between the ages of 5-17 years, and who provided answers to survey questions involving our two variables of interest: health insurance status and missed school days. Our data analysis included 1) a descriptive analysis of the baseline sample characteristics, 2) a bivariate analysis to determine the association between baseline characteristics/confounding variable and the outcome, and 3) a multivariate regression analysis using logistic regression to determine the association of interest while controlling for potential confounding variables.

Results: A total of 23,494 respondents were included. The unadjusted odds of chronic absenteeism was found to be 16% (OR=1.16) higher in children without insurance or with gaps in insurance compared to children with consistent insurance throughout the year, but the association was not statistically significant (95% CI 0.74 - 1.82, p=0.051). After adjustment by age, sex, race, Hispanic ethnicity, parental education level, and various adverse childhood events, the odds of chronic absenteeism in children without insurance or with gaps in insurance remained statistically insignificant (aOR=1.05; 95% CI 1.05 - 1.73, p=0.848) compared to those with consistent insurance coverage.

**Conclusions-Implications**: According to our analysis, the percentage of >10 missed days of school was slightly higher in children that were uninsured compared to those that were insured, but we did not find a significant association between lack of / gaps in health insurance coverage and chronic absenteeism. Our findings do not support our hypothesis of a significant difference in missed school days among those children who had health insurance compared to those without health insurance.

#### P19

### Smoking cessation during the prenatal period and postpartum depression

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#### Category: Mental Health

**Keywords**: postpartum depression, smoking status, smoking cessation, stress

Introduction and Objective: Postpartum depression affects approximately 15% of women in the U.S. who are of childbearing age. While smoking cessation has been associated with less depressive symptoms in the general population, there is less information available about whether smoking cessation during pregnancy is a risk factor for postpartum depression. We hypothesized that smoking cessation introduce a novel stress into the lives of pregnant women who smoke that could predispose to postpartum depression. This study aimed to test this hypothesis.

Methods: All women with livebirths who participated the Pregnancy Risk in Assessment Monitoring System (PRAMS) year 2016, and who reported having smoked within three months before pregnancy. The independent variable was change of smoking status during pregnancy categorized as cessation (not smoking during pregnancy), reduction (any reduction in the amount of cigarette smoked), or no change. The outcome was self-reported symptoms of postpartum depression (decreased interest in previously enjoyable activities, or feelings

of hopelessness after giving birth). We used multivariable logistic regression analyses to assess independent associations. STATA software was utilized for all analyses accounting for the complex sampling design.

Results: We studied 13,514 women had smoked three months before pregnancy. Of those, 52% quit smoking, and 30% reduced smoking. Overall, 17.4% had postpartum depression symptoms. After adjusting for demographics, socio-economic factors, abuse by partner, and prior history of depression, compared to women who guit smoking during pregnancy, the odds ratio (OR) of post-partum depression was 1.47, 95% Confidence Interval (CI)=1.18 - 1.84 among women who did not change the smoking status, and OR=1.35, 95% CI: 1.12 -1.64 among women who reduced smoking during pregnancy.

**Conclusions-Implications**: Women who did quit smoking during pregnancy had higher odds of developing post-partum depression symptoms. Guidelines for smoking cessation should focus on helping women with strategies to quit smoking, but also in finding ways to mitigate stress faced during and after pregnancy so as to best prevent post-partum depression.

#### **P20**

Sweetened beverage consumption and risk of depression in high school aged teenagers in the United States

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**Keywords**: Depression, Sweetened Beverage, Sugary Beverage, Teenagers, Mental Health

**Introduction and Objective**: In the U.S. between 2005 and 2015, teenage depression rates increased by 4%. This study investigated the association between the sugary beverage consumption (SBC) and feelings of depression in U.S. teenagers in 2017.

Methods: Secondary data analysis of the CDC's cross-sectional National Youth Risk Behavior Survey (YRBS). The data surveyed students from public, private and catholic schools in 9-12th grade across all 50 states and Washington D.C.. Puerto Rico, the Virgin Islands and trust territories were excluded. The main exposure was how often participants consumed a serving of soda within the past week. SBC was classified as either not excessive, 1x, 2x, 3x, or 4x a day. The main outcome was the presence of selfreported depression, significant enough to impede daily activities. Covariates included were race, age, BMI, physical activity, hours of TV per week and gender. Unadjusted and adjusted logistic regression analysis were used to calculate odds ratios (OR) and corresponding 95% confidence intervals (CI).

**Results**: 13,815 high school students were included. The highest rate of SBC increased the odds of depressive symptoms by 69% (OR 1.69; 95% CI 1.32-2.16). SBC of 3x per day increased the odds of depressive symptoms by 57% (OR 1.57; 95% CI 1.10-2.22), and 2x per day by 44% (OR 1.44; 95% CI 1.18-1.76). Other variables independently associated with depressive symptoms were BMI, race, and physical activity.

**Conclusions-Implications**: Attempts should be made towards prevention and cessation of SBC through public policy. Additional studies should be conducted to strengthen this association with primary data.

#### **P21**

The Association between Latinx Gender Roles and Alcohol Use Among Latinx Adolescents in Miami-Dade County

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Category: Epidemiology; Mental Health

**Keywords**: Gender Roles, Alcohol Use, Adolescent Health

Introduction and Objective: Latinx youth are disproportionately more likely to use and abuse alcohol. Several studies have examined the role that traditional cultural values play on alcohol use among Latinx adolescents; however, most have centered on Mexican/Chicano populations, and with scarce evidence regarding traditional gender roles. Our aim is to assess the association between traditional gender role beliefs and alcohol use risk behaviors among Latinx adolescents.

**Methods**: Cross sectional analysis of 198 adolescents between 12 and 17 years of age recruited from "CUIDATE," a parent interventional study aimed at examining the efficacy of a curriculum designed to decrease HIV in a Latinx neighborhood of Miami, Florida. The independent variable was traditional Latinx gender role beliefs (measured with the Mexican American Cultural Values Scale), and the dependent variable was alcohol use risk behaviors (assessed with the Standard High School Youth Risk Behavior Survey). Logistic regression analyses were performed to examine independent association, adjusting for potential demographic, socioeconomic, and clinical confounders. Other independent variables assessed include depression status and self-esteem.

**Results**: Approximately 60% of Latinx adolescents engaged in at least one alcohol use risk behavior. The adjusted odds of engaging in at least one alcohol use risk behavior decreased by 32% for every one point increase in the cultural values gender role scale score. Additionally, for every one year increase in a participant's age, the odds of engaging in at least one alcohol use risk behavior increased by 27%. Self esteem and depression were non-significant in the adjusted model.

**Conclusions-Implications**: Stronger ties to Latinx cultural values pertaining to gender roles may be associated with lower risky alcohol use behaviors in this sample. Further analysis of this association may allow for the development of multi-dimensional and culturally sensitive prevention programs that address alcohol use among Latinx adolescents.

#### P22

Social Isolation as an Independent Risk Factor for Incident ADL Disability in Community-Dwelling Medicare Beneficiaries With Low Muscle Strength

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#### Category: Epidemiology

**Keywords**: Social Isolation, Disability, Geriatrics, Older Adults

Introduction and Objective: Whether disability prevention, a major clinical and public health priority, could be enhanced by systematically targeting social isolation in clinical settings remains to be determined. In this context, an investigation seeking to advance limited knowledge on the relationship between social isolation and disability is warranted. Objective: To assess if social isolation was an independent risk factor for incident disability performing basic activities of daily living (ADL) in communitydwelling Medicare beneficiaries.

Methods: Prospective study using National Health and Aging Trends Study data from Medicare beneficiaries. Analytic sample (n=573) included at-risk adults 65+ with dynapenia. Disability is defined as ADL dependence. Social isolation categories – no isolation, lower and higher isolation levels – derived from: (a) participation in organized activities; (b) religious services; (c) current marital/partner status; (d) in-person-visits with friends/family; and (e) family/friends' availability to talk. Binary logistic modeling regressed incident ADL disability three years later on baseline social isolation status, with adjustment for demographics, living arrangement, comorbidities, depression, pain, short-physical-performance-battery, and self-rated health.

**Results**: Odds of incident ADL disability were significantly higher among those in lower (OR: 2.4; 95%CI: 1.3-4.6) and higher (OR: 2.6; 95%CI: 1.3-5.5) social isolation levels, compared to participants not isolated, even after comprehensive adjustment.

**Conclusions-Implications**: Social isolation, a common and potentially modifiable social determinant of health, was a strong risk factor – hypothetically causal – for incident ADL disability in Medicare beneficiaries with dynapenia. Research to determine whether integration of social isolation assessment into primary care delivery algorithms may enhance disability prevention in older adults is warranted.

#### P23

Peripheral inflammatory levels predict proliferation of culture EPCs of postmenopausal women living with and without Hypertension and HIV

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Category: Basic Science; Cardiology

**Keywords**: Human endothelial progenitor cells, Peripheral inflammatory levels, Human immunodeficiency virus, Hypertension, Postmenopausal women

Introduction and **Objective:** Human endothelial progenitor cells (EPCs) participate neovascularization and in vascular homeostasis. EPC dysregulation has been observed in hypertension (HTN), human immunodeficiency virus (HIV), and has been linked to atherosclerosis progression and the prediction of future cardiovascular events. Post-menopausal women reveal lower EPC levels as a function of older age. Systemic inflammatory processes have also demonstrated lower EPC count and proliferation. In vitro studies, report increased apoptosis, reduced capillary-like tube formation and migratory capacity of EPCs following exposure to Tumor Necrosis Factor- $\alpha$  (TNF- $\alpha$ ) and C-Reactive (CRP). We hypothesize Protein that peripheral inflammation and not chronic disease status will predict EPC proliferation in culture.

Methods: Blood samples drawn after fasting collected from were 15 HIV+ postmenopausal women (mean age = 56.40, SD = 5.77) and 21 HIV seronegative controls (mean age = 55.95, SD = 6.64) diagnosed with or without HTN. Peripheral blood mononuclear cells were isolated by density gradient centrifugation. Approximately 5 million cells were cultured using human fibronectin and complete EMG-2 medium at 37 °C. Non-adherent cells were removed after 48 hours, and medium was refreshed every 3 days for a total of 15 days. 30 images were taken per subject every 5 days, and 5 of those images were selected at random from each group for quantification (via openCFU<sup>™</sup>) of spindles, cells, and cell clusters.

**Results:** Repeated measures (RM) ANCOVA (SPSS Statistics<sup>™</sup>) after controlling for age, HIV, HTN, BMI, Interleukin-6 (IL-6) and CRP, revealed that analyzing data over 15 days showed a main effect for time F(1, 25) = 4.94; p = 0.036 and TNF- $\alpha$  F(1, 25) = 7.17; p = 0.013on cultured spindles. This analysis showed decreased EPC spindles over time as a function of increased TNF- $\alpha$  levels. Similarly, RM-ANCOVA after controlling for HIV, HTN, BMI, IL-6 and CRP, revealed a main effect for time F(1, 21) = 6.01; p = 0.023, age F(1, 21) =4.35; p = 0.049 and TNF- $\alpha$ , F(1, 21) = 6.82; p = 0.016 on cultured clusters. This analysis showed increased EPC clusters over time as a function of decreased TNF- $\alpha$  levels. Lastly, RM-ANCOVA after controlling for time, age, BMI, HIV, HTN, and CRP, revealed a main effect for TNF- $\alpha$  F(1, 25) = 9.58; p = 0.005 and IL-6 F(1, 25) = 7.84; p = 0.010 on cell count.

Conclusions-Implications: This analysis showed increased EPC cell count as a function of increased TNF- $\alpha$  and IL-6 levels. These findings suggest the importance of addressing inflammatory levels in patients with chronic comorbidities. Resolving inflammatory-mediated endothelial dysfunction and angiogenesis may contribute to improved vascular endothelium health, decreased cardiac remodeling, and prevention of major cardiovascular events. We recommend additional studies to further investigate inflammatory mechanisms e.g., eNOS expression, that contribute to reduced endothelial function.

#### CD45: the immunologic enigma

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#### Category: Basic Science

Keywords: CD45, Glycoprotein, Immunology

Introduction and Objective: For 30 years the glycoprotein CD45 has perplexed the hematologic community as it is among the most abundant proteins on the surface of both malignant and nonmalignant white cells and despite intense and targeted attention, the highly evolutionarily conserved and ubiquitously expressed extracellular domain has never been assigned a canonical ligand or function. Further. definitive specific extracellular CD45 isoform display is exquisitely regulated and restricted across phenotypically distinct native and malignant cellular subsets, implying a human differential isoform function, which has authoritativelv never been ascribed. Alternative splicing of the extracellular domain of CD45 involves three distinct exons labeled A, B, or C, and creates isoforms denoted R ABC, AB, BC, B, or O (none) in humans. mAbs specific to only one of these exons are often utilized to probe for exon epitopes, conferring "positivity" status (i.e., RA positive). We therefore sought to explore heretofore undescribed CD45 modulation in the context of various cellular insults across many cellular subsets to identify expression correlates in phenotypic delineation, with hopes of ultimate insight into its regulation and function.

**Methods**: In this study, primary CD4+ T cells, and neutrophils, and the HL-60 cell line were placed in various conditions and assessed for changes to CD45 expression. T cells were activated and cultured for 11 days. Neutrophils were cultured with and without GM-CSF for 24 hours. HL-60 were cultured in hypoxic conditions for 72 hours. Shifts in CD45 expression were assessed using flow cytometry and/or western blotting before and after stimuli.

**Results**: Activation of T cells resulted in the expected isoform shift transitioning from majority RA to RO positivity, with a novel observation of nearly uniform, steady, RB reactivity throughout this transition. Neutrophils greatly upregulated surface expression of RO when exposed to GM-CSF. HL-60 cells substantially increased surface expression and de novo synthesis of RO in response to hypoxia.

Conclusions-Implications: The monocytic leukemia cell line HL-60 is thought to be neutrophil-like. The dramatic increase in CD45 expression and de novo synthesis thus implies that this molecule could be playing an important role in granulocytic function in hypoxia response to and/or in leukemogenesis in the BM hypoxic niche. Similarly, neutrophils markedly increase surface expression of total CD45 and RO in response to its major survival cytokine, GM-CSF, further suggesting that CD45 display is important for granulocytic function. Lastly, the observation of uniform, equivalent level of RB reactivity across the of CD4+ T cells, is novel and implies a distinct RB exon function/contribution to T cell biology. Further investigations must elaborate these data with mAb targeted against all three A, B, and C exons concurrently, attempting to

define a specific role/contribution for each exon and/or isoform.

#### P25

HIV-1 and Opiate Modulation of Extracellular Vesicle (EV) miRNA Content Establishes a Potential Biomarker Profile of HIV-infection and Opiate Use

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**Category**: Infectious Disease; Microbiology/Genetics

**Keywords**: Extracellular Vesicles, HIV, Opiate, Morphine, Biomarker

Introduction and Objective: Exosomes are a subset of EVs, of which exosomes are nonimmunogenic and capable of transporting viral or host content, such as miRNAs, across the BBB. Exosomes are integral for intercellular communication as they contain: host proteins, viral proteins, genomic DNA, and miRNAs, which are all reflective of cellular status. Studies propose that exosomal EVs (xEVs) may function as potential peripheral biomarkers of HIVassociated neurocognitive impairment (NCI). Nearby recipient cells uptake EVs, whose content may alter the function of the recipient cell, leading to immune dysregulation, inflammation, and viral pathogenicity. Thus, EV content is critical in regulating cellular function and survival. Opiate abuse and HIV-1 co-exposure exacerbates and hastens the onset of HIV encephalitis among other neurodegenerative conditions. Additionally, opiate abuse has

been shown to exacerbate HIV transmission and neuropathology. High HIV viral load within the central nervous system (CNS) is leads to HIV-associated neurocognitive disorders (HAND). Molecular mechanisms of HAND involve: neuroinflammation producing pro-inflammatory cytokines, dysregulating astrocytes and microglia, leading to neuronal dysfunction and cellular death. Exosomes critical to immune regulation may influence mechanisms. these molecular We hypothesize that HIV infection or morphine, the active metabolite of heroin, significantly alters miRNA cargo of PBMC-derived EVs, contributing to neuropathology. Here we investigated the impact of morphine, in the context of HIV infection, on peripheral blood mononuclear cells (PBMC)-derived EV miRNA cargo.

Methods: HIV-infected and/or morphine treated PBMC-derived EVs were isolated via differential centrifugation and characterized via DLS and TEM imaging. xEV miRNA was isolated using an miRNA isolation kit (QIAGEN). The miRNA expression was assessed via a NanoString miRNA expression panel. miRNA profiles for each treatment group was analyzed using WEB-based Gene SeT AnaLysis Toolkit (WebGestalt), to determine pathways potentially affected by xEV-derived miRNA. Statistical significance, where applicable, is determined by ANOVA and Dunnett's multiple comparison test. \*\*p<0.01, \*p&lt;.05.

**Results**: Findings demonstrate that pathways affected by exosomal miRNA content include: the neuronal system, membrane-trafficking, autophagy, and apoptosis, among others, suggesting a role for xEVs in HIV neuropathology.

**Conclusions-Implications**: Understanding how both HIV and chronic opiate abuse alters xEV cargo will allow discovery of biomarkers for HIV-related neuropathology.

#### **P26**

Association Between Preoperative Blood Transfusion and Postoperative Pulmonary Embolism

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Category: Surgery; Internal Medicine

**Keywords**: Pulmonary embolism, blood, transfusion

Introduction and Objective: Approximately 0.85% of patients requiring non-elective surgery in the U.S. receive preoperative transfusion of packed red blood cells (PRBCs). In addition, approximately 0.32% of patients requiring non-elective surgery are subsequently found to have a Pulmonary Embolism (PE), an outcome with an untreated mortality of greater than 30%. We investigated the association between preoperative PRBC transfusion and postoperative PE.

Methods: We conducted a retrospective cohort study utilizing data from the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) database on 30-day outcomes of U.S. adults (>18 years) undergoing any surgical procedure during January 1 through December 31, 2016 (n=1,000,393). Unadjusted and adjusted logistic regression analyses were used to calculates odds ratios (OR) and 95% confidence intervals (CI).

Results: After adjusting for age, sex, race, body mass index, smoking status, ASA classification, hypertension, congestive heart failure, diabetes, disseminated cancer, ascites, operation time, anesthesia type, and status, patients receiving emergency preoperative PRBCs were found to have a 1.54-fold increased risk of postoperative PE (OR 1.54; CI 1.21-1.96). Additional variables found to be independently associated with postoperative PE were male sex (OR 1.18; CI 1.09-1.28), African American ancestry (OR 1.30; CI 1.16-1.46), disseminated cancer (OR 2.87; CI 2.50-3.30), presence of ascites (OR 2.07; CI 1.48-2.90), emergent status (OR 2.02, CI 1.85-2.22), and procedure type classified as general surgery (OR 1.75; CI 1.30-2.37).

**Conclusions-Implications**: Preoperative transfusion of PRBCs was found to be associated with an increased risk of postoperative PE. Because the occurrence of PE is often missed in the clinical setting, physicians caring for these patients should maintain a high index of clinical suspicion for postoperative PE in patients who have received preoperative transfusion of PRBCs.

#### **P27**

#### Postoperative Outcomes of Total Knee Arthroplasty across Varying Levels of Multimodal Pain Management Protocol Adherence

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#### Category: Orthopedics; Surgery

**Keywords**: Total Knee Arthroplasty, Pain Management, Multimodal, Opioid

Introduction and Objective: Multimodal Pain Management Protocols (MMPM) are increasingly being used for controlling postoperative pain following Total Knee Arthroplasty (TKA). The objective of the study was to examine the effect of varying MMPM combinations on oral morphine milligram equivalents (OMME) and length of stay (LOS) after total knee arthroplasty (TKA).

**Methods**: A single health system's database was used to perform a retrospective cohort study of a consecutive series of 1,648 elective primary unilateral TKAs between January 1, 2019 and June 30, 2020. Preoperative MMPM protocols included oral acetaminophen, pregabalin or gabapentin, and celecoxib. Patients were grouped into 5 cohorts based on the combination of medications received. Primary endpoints were hospital LOS  $\geq$  2 days and OMME  $\geq$  75th percentile. Multivariate logistic regression analysis was performed to calculate odds ratios and 95% confidence intervals.

Results: Our study included 1,546 adult unilateral TKA patients after exclusion of 78 patients who were either discharged to SNFs or were not captured by the 5 MMPM study categories. After risk adjustment, all multimodal groups demonstrated decreased odds of OMME  $\geq$  75th percentile in comparison to patients not receiving multimodal analgesia, apart from group 4 (group 2 OR: 0.558, p = 0.010; group 3 OR: 0.375, p < 0.001; group 4 OR: 0.524, p = 0.053; group 5 OR: 0.351, p < 0.001). After risk adjustment, when comparing each partial multimodal group to the full multimodal protocol group (group 5) no significant differences were observed in odds of hospital LOS  $\geq$  2 days. Within the multimodal population, no differences in odds of OMME  $\geq$  75th percentile were observed, except for group 2, who was at significantly increased risk of high narcotic consumption when compared to group 5 (OR: 1.602, p = 0.038).

**Conclusions-Implications**: Pain after TKA can be managed using multimodal methods. While our results demonstrate the overall effectiveness of these medications in managing acute pain, we are unable to recommend an ideal MMPM combination for patients undergoing TKA. Future studies should assess optimal MMPM protocols for TKA to maximize patient recovery.

#### Anterior "W" Tongue Reduction for Macroglossia in Beckwith-Wiedemann Syndrome

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#### Category: Surgery; Pediatrics

**Keywords**: Beckwith-Wiedemann syndrome, glossectomy, macroglossia,

Introduction and Objective: Macroglossia occurs in 80% to 99% of patients with Beckwith-Wiedemann syndrome (BWS) and a variety of surgical techniques for tongue reduction are offered by surgeons. The purpose of this study is to evaluate the postoperative outcomes of the anterior "W" tongue reduction technique in patients with BWS.

Methods: A retrospective review was conducted of all patients diagnosed with BWS that underwent an anterior "W" tongue reduction for macroglossia in the past 7 years, performed by 2 surgeons. Demographics, procedural characteristics, perioperative outcomes, and complications were assessed.

**Results**: A total of 19 patients met inclusion criteria consisting of 8 male and 11 female

patients. The mean age at the time of surgery was 405 days, mean surgeon operating time was 1.06 h, and mean length of follow-up was 467 days. Postoperative oral competence was observed in 100% of patients. There was no reported history of sleep apnea or airway compromise. Speech delay was seen in 4 patients pre- and postoperatively. Feeding issues decreased from 7 patients preoperatively to 1 patient postoperatively. Preoperative prevalence of class malocclusion (53%) and isolated anterior open bite (26%) decreased postoperatively to 37% and 16%, respectively. The only reported complications were superficial tip wound dehiscence in 3 patients treated with nystatin antifungal therapy. None of the patients required revisional surgery.

**Conclusions-Implications**: Patients treated with the anterior "W" tongue reduction technique had low rates of perioperative complications and significant improvements in oral competence. Anterior "W" tongue reduction is safe and effective for the correction of macroglossia in patients with BWS.

#### P29

#### The Association between Insulin-Dependent Diabetes Mellitus and Risk of Postoperative Mechanical Ventilation after Elective Surgery

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**Category**: Surgery; Diabetes

**Keywords**: Diabetes Mellitus, insulin, mechanical ventilation, elective surgery

Introduction and Objective: Over 460 million people around the world are living with diabetes mellitus (DM). While previous studies have shown that DM is a risk factor for postoperative mechanical ventilation, little is known about the relative importance of insulin dependence as a risk factor for postoperative mechanical ventilation. The objective of our study was to investigate the association between insulin dependence and the risk of mechanical ventilation after elective surgery in adults with diabetes mellitus.

Methods: This non-concurrent cohort study used data from the 2014-2016 NSQIP, which surveyed participating hospitals in the U.S. Study participants included patients 18 years and older with DM who underwent elective surgery. After excluding those who were immunocompromised, dialysis-dependent, receiving steroids for chronic conditions, and those with disseminated cancer (n=25,957), we analyzed data from 286,476 subjects. We examined the risk of postoperative mechanical ventilation at 48 hours in patients with insulin-dependent DM compared with those using oral agents alone. Covariates examined included age, sex, smoking status, and comorbidities such as hypertension and chronic obstructive pulmonary disease (COPD). Unadjusted and adjusted logistic regression analyses were used to calculate odds ratios (OR) and corresponding 95% confidence intervals (CI).

**Results**: Patients with insulin-dependent DM were found to be 1.67 times more likely (OR 1.67; 95% CI 1.48-1.89) to require mechanical ventilation 48 hours after elective surgery than patients with non-

insulin dependent DM. Variables found to be independently associated with an increased risk for mechanical ventilation included COPD (OR 2.87; 95% CI 2.44-3.37), age greater than 80 years (OR 1.54; 95% CI 1.18-2.01), and male sex (OR 1.44; 95% CI 1.27-1.63). Current smoking or smoking cessation within the last year was found to be protective (OR 0.68; 95% CI 0.59-0.79).

**Conclusions-Implications**: Insulin-dependent DM is a risk factor for mechanical ventilation after elective surgery. Providers should account for this risk when formulating recommendations and treatment plans for patients with DM. Further research should explore the relationship between glycemic control and postoperative mechanical ventilation in this patient population.

#### P30

Using Geospatial Mapping and Area Deprivation Indices to Determine Risks of Emergency Department Utilization within NeighborhoodHELP

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**Category**: Public Health; Emergency Medicine

**Keywords**: Social determinants of health, Area Deprivation Index, Emergency department, NeighborhoodHELP

**Introduction and Objective**: Although the nature of frequent and preventable

emergency department (ED) utilization is multifactorial, the association between ED utilization and social determinants of health been well established. (SDOH) has Composite, area-based indices such as the Area Deprivation Index (ADI) can help capture the impacts of SDOH in a geographic area. The ADI is a weighted score of 17 measures including employment, housing, and poverty with a score of 0 being the least deprived and 100 being the most. The objective of this study is to evaluate the association between ADI scores and ED utilization in household members enrolled in the Green Family Foundation Neighborhood Health Education and Learning Program (NeighborhoodHELP).

**Methods**: ADI scores and GeoIDs were generated for each enrolled NeighborhoodHELP household. Using selfreported annual ED utilization data obtained from these households, Poisson logistic regression analyses were conducted to look for associations between ADI scores, ADI quintiles, and GeoIDs with self-reported ED utilization per calendar year for 2018 and 2019.

**Results**: A total of 851 households were included in the study, with mean ADI scores of 58.23 and 54.91 in 2018 and 2019, respectively. Of the households included, 491 (57.7%) recorded a response to the ED utilization question in 2018 with 63 selfreported ED visits. In 2019, 788 (92.6%) households recorded a response with 58 selfreported ED visits. Analysis of the two-year data from our study population showed a statistically significant correlation between ED utilization and 2018 ADI quintiles for the 2018 data (z value = -1.961, p = 0.0499) and GeoID for the 2019 data (z value = 3.547, p = 0.00039). **Conclusions-Implications**: Our results suggest that ADI scores by quintile and GeoID may have utility for identifying households at risk for higher ED utilization. Our team plans to refine our logistic regression model and to redo the analyses looking at ADI deciles as well. Other researchers have shown stronger associations among ADI deciles and ED utilization. Our non-significant values may suggest NHELP serves as a mitigating factor on this at-risk population, though higher risk households may still benefit from additional interventions.

#### P31

Differences in Stage of Cervical Cancer at the Time of Diagnosis between Black & Latina Women Versus White Women Naromy Aristil, Suzette Desty, Fariha Hasham, Juan M. Acuña, Juan M. Lozano

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Category: Health Disparities; Oncology

**Keywords**: race, ethnicity, cervical cancer, stage at diagnosis, disparity

Introduction and Objective: Advanced stage at diagnosis is the primary cause of mortality among patients with cervical cancer. Early preventative measures such as Papanicolau (Pap) smear testing have significantly reduced mortality rates. However, racial disparities influence the ability of certain populations to access these services. Our study aimed to determine whether there was an association between race/ethnicity and stage at diagnosis for women with cervical cancer. Methods: This cross-sectional study utilized the SEER Database to select for 2,321 women ages 30-45 who were diagnosed with cervical cancer between the years 2007 to 2016. The independent variable was race/ethnicity, defined as White Non-Hispanic, Black Non-Hispanic, or Hispanic. The dependent variable was stage at diagnosis, defined as localized or regional/distant. Our statistical analysis measured associations between exposures and outcome using odds ratios and 95% confidence intervals through bivariate and multivariate analyses with logistic regression.

Results: The adjusted odds ratio showed that Black Non-Hispanic women were 1.7 times more likely to be diagnosed in the regional/distant stage when compared to White Non-Hispanic women (95% CI: 1.3 to 2.2; p-value= <0.0001). Hispanic women were 1.1 times more likely than White Non-Hispanics to be diagnosed at a later stage; however, this result was not statistically significant (95% CI: 0.8 to 1.4; p-value= 0.645). Women ages 36-45 were diagnosed at a later stage 1.6 times more often than women ages 30-35 (95% CI: 1.3 to 2.0; pvalue= <0.0001). Women who were uninsured or enrolled in Medicaid were diagnosed in a more advanced stage at diagnosis 2.3 times more often than those with private insurance or Medicare (95% CI: 2.0 to 2.8; p-value= <0.0001).

Conclusions-Implications: These results reinforce the racial disparity that exists in diagnosing women with cervical cancer, especially among Black Non-Hispanic women. The increased mortality due to cervical cancer in this population necessitates further research to identify barriers to screening and ways to improve outcomes, specifically for those who are

uninsured or on Medicaid and thus at an even higher risk for advanced stage diagnosis.

#### P32

#### 5-year survival of African American Children with ALL Compared to White Children with ALL

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Category: Pediatrics; Oncology

**Keywords**: Acute Lymphoblastic Leukemia (ALL), Cancer, Race, Survival

Introduction and Objective: Acute lymphoblastic leukemia (ALL) is the most common childhood cancer. Many studies have looked at the differences in the 5-year survival of Black and White children with ALL; however, confounding variables such as social determinants of health and access to care are important factors that many studies have failed to assess. The goal of this study was to investigate if there is a significant difference in the 5-year survival between Black and White children with ALL.

**Methods**: A retrospective cohort study of children diagnosed with ALL between 1975 and 2016 was carried out using the Surveillance, Epidemiology, and End Results Program (SEER) database. All Black and White children ages 0-19 with survival data were included in the study. Children were separated into Black or White, and then survival analysis was used to compare their 5year survival. A multivariate Cox regression analysis was carried out to determine the association while controlling for potential confounders.

**Results**: Our sample included 16,238 (91.9%) White and 1,425 (8.1%) Black children. There was no significant difference in sex distribution or year of diagnosis between the two groups. There was a significant difference in the distribution of age, with slightly more children aged 1-4 years among Whites than in Blacks (47.7% vs 41.5%, respectively; p<.001). Black children had a significantly increased in 5-year mortality when compared to Black children (crude HR 1.52, 95% CI 1.34-1.73, p<0.0001). In addition, there were statistically significant differences (p<0.001) in survival according to sex, age, and year of diagnosis. Upon using multivariate Сох regression analysis, adjusted models showed a significantly higher risk of death in Black children when compared to White children (adjusted HR 1.45, 95% CI 1.28-1.66, p<0.001).

**Conclusions-Implications**: Our study found that there is a significant difference in the 5year survival between Black and White children diagnosed with ALL. The difference in survival persists even when controlling for sex, age at diagnosis, year of diagnosis, and histology. Future studies should be carried out to control for more confounders that the SEER database is unable to control for, such as access to care.

#### P33

Impact of Insurance Status on Diagnostic stage in Hodgkin's Lymphoma in the United States: Implications for Detection and Outcomes

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Category: Oncology; Public Health

**Keywords**: Hodgkin's Lymphoma, Health insurance, Stage of diagnosis, National cancer database and SEER analyses, social determinants of health

Introduction and Objective: Hodgkin's lymphoma (HL) is a form of cancer originating from white blood cells that presents upon diagnosis with well-characterized symptoms (palpable lymph nodes, fever, night sweats, weight loss). HL is currently one of the most treatable cancers, with a successful treatment rate of 75 percent worldwide. The objective of this study is to evaluate the association between insurance status and the stage of diagnosis of Hodgkin's lymphoma (HL) in the United States from the years 2007 to 2016.

Methods: A cross sectional study using secondary data from the Surveillance, Epidemiology, and End Results (SEER) program database was used. Insurance status of each patient was defined as uninsured (not insured or self-pay), any Medicaid (includes Indian/public health service), insured (private insurance, managed care, HMO, PPO, or Medicare) and insured not specified. Staging was dictated via the SEER combined/AJCC cancer staging guidelines. We divided the stages into early stage (localized) and late stage (regional by direct extension, involving distant sites/nodes). A univariate descriptive analysis was used to determine baseline characteristics, a bivariate analysis was used to evaluate associations, and a multivariate analysis was used to control for potential confounders.

**Results**: Approximately 77% of insured individuals presented with a late-stage diagnosis, compared with 78.1% for insured not specified, 82% for any Medicaid, and 84.9% for uninsured. After adjusting for age, sex, race and marital status, insurance status had a significant impact on the stage of diagnosis of Hodgkin's lymphoma. The odds ratio (OR) for advanced stage diagnosis of HD in uninsured patients compared to insured patients was 1.72 (95% CI 1.03-2.86, p=0.037); for any Medicaid, the OR was 1.37(95% CI 1.02-1.83, p=0.036), and for insured not specified, 1.09 (95% CI 0.83-1.44, p=0.522).

**Conclusions-Implications**: Uninsured patients are significantly more likely to have later stage diagnosis of HL compared to insured. The findings of this study coincide with the associations found in past studies on other cancers and insurance status.

#### P34

# Effect of comorbidities on post-surgical complications in adults that underwent esophagectomy

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#### Category: Surgery; Oncology

**Keywords**: Esophagectomy, Comorbidities, Post-operative complications, Esophageal carcinoma, National Surgical Quality Improvement Project (NSQIP)

Introduction and Objective: Esophagectomy is the surgical resection of part or all the esophagus; it is associated with complications such as an anastomotic leak, infection. and bleeding. Various comorbidities, such as diabetes mellitus, smoking, and congestive heart failure have been described in individuals who have undergone esophagectomy. This study investigates the association of baseline characteristics and comorbidities with postoperative complications in adult patients undergoing esophagectomy.

Methods: A retrospective cohort study based on secondary data from the NSQIP database was conducted, evaluating 2,544 patients that underwent esophagectomy between January 2016 and December 2018. Our data included baseline characteristics, established comorbidities. and postoperative complications within 30 days of the procedure. Binary logistic regression was used to assess the unadjusted and adjusted odds ratios corresponding 95% and confidence intervals of postoperative complications according baseline to characteristics and comorbidities.

**Results**: Most of our patients were white (78.2%), male (80.8%), and had a mean age of 63.5 years (SD 10.3). More than half of the

patients were overweight or obese, and a minority had a smoking history, weight loss, diabetes mellitus, COPD, or CHF. The most frequent postoperative complications were return to the OR (15.7%), anastomotic leak (12.9%), pneumonia (12.7%), bleeding / transfusions (11.8%), readmission (11.4%) and unplanned intubation (10.5%). Factors significantly associated with 30-day postoperative complications were age (aOR 1.02, 95% CI 1.01-1.03, p<0.001), operation time (aOR 1.002, 95% CI 1.001-1.003, p<0.001), race (not white - aOR 1.76, 95% CI 1.26-2.47, p=0.001), BMI (underweight - aOR 2.18, 95% CI 1.36-3.50, p=0.001), smoking (aOR 1.42, 95% CI 1.14-1.76, p=0.001), chemotherapy (aOR 0.82, 95% 0.68-0.99, p=0.038), CI and chemotherapy and/or radiation (aOR 0.82, 95% CI 0.68-0.99, p=0.038).

Conclusions-Implications: Our study found that operation time, age, non-white race, underweight BMI, and smoking were independently associated with an increased risk of developing postoperative а complication following esophagectomy. Additionally, neoadjuvant chemotherapy and/or radiation were protective. Knowing how baseline characteristics and comorbidities affect of can rates postoperative complications will help to counsel patients in both preand postoperative settings. Investigation into individual comorbidities and their association with postoperative complications is planned for future research.

#### INPP4B prevents prostate epithelial neoplasia by stabilizing EZH2 and p53 signaling

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#### Category: Basic Science; Oncology

#### Keywords: INPP4B, p53, EZH2, PIN

Introduction Objective: and Inositol Polyphosphate 4-Phosphatase Type-II B (INPP4B) is a dual specificity phosphatase that inhibits Akt and PKC signaling by dephosphorylating inositol polyphosphates that activate these pathways. In prostate cancer, Akt and PKC pathways regulate androgen receptor (AR) signaling and therefore cancer progression. In normal physiology, Akt and PKC mediate insulin sensitivity, and these pathways are overactivated in patients with insulin resistance. We have previously shown that Inpp4b-/male mice develop insulin resistance, type 2 diabetes, obesity, and prostatic intraepithelial neoplasia (PIN) when placed on a high fat diet (HFD). In this report, we investigated how INPP4B loss and HFD affect AR activity and cause neoplastic transformation of the prostate epithelium.

Methods: Wild-type (WT) or Inpp4b-/- mice were fed with a low fat diet (LFD) or a HFD. Prostates of three-month-old WT and Inpp4b-/- mice on LFD or HFD were collected and used for histopathological analysis using H&E. Cellular proliferation was evaluated by immunohistochemical staining with proliferation marker Ki67 (n>3). Gene expression, protein levels, and transcriptional activity of known prostate cancer drivers, AR, TP53, and EZH2 were compared in prostates of WT and Inpp4b-/males fed LFD and HFD (n>5). Observed changes in INPP4B, AR, TP53, and EZH2 levels were compared in normal prostates and prostate cancers using publicly available human expression data sets.

**Results**: Three-month-old Inpp4b-/- males developed prostatic intraepithelial neoplasia (PIN) when fed HFD. While the AR protein levels were not altered, the transcriptional activity of AR was reduced in the prostates of Inpp4b-/- males. Furthermore, the prostates of HFD Inpp4b-/- males exhibited increased expression of pro-inflammatory cytokines and macrophage infiltration. lt was previously reported that indolent nature of the prostate neoplasia in prostate specific Pten knockout mice, is due to the compensatory increase in tumor suppressor proteins, such as p53, SMAD4, and PML. Similarly, p53 levels increased in Inpp4b-/males fed a LFD. Unlike males fed LFD, p53 protein levels decreased in HFD fed Inpp4b-/- mice, consistent with the development of PIN in this group. EZH2 levels as well as the levels of its targets, H3K27me3 and H3K9me2, decreased in ventral prostates of the Inpp4b-/- males and that decrease was exacerbated by the HFD. Consistent with our mouse model, we observed significant positive correlation between the INPP4B and

EZH2 expression in the prostates of healthy men and prostate cancer patients.

**Conclusions-Implications**: The loss of INPP4B synergizes with the HFD in reprogramming AR activity, reduction of EZH2 levels, and increases inflammation. Importantly, HFD reverses compensatory increase in p53 protein levels in prostates of Inpp4b-/- males. These alterations contribute to the development of PIN in the prostates of HFDfed Inpp4b-/- males.

#### **P36**

### Clinical efficacy of trastuzumab deruxtecan in breast cancer brain metastases (BCBM)

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#### Category: Oncology; Neurology

**Keywords**: Breast cancer brain metastases, Antibody drug conjugate, Trastuzumab deruxtecan Introduction and Objective: Up to half of patients (patients) with HER2+ metastatic breast cancer (MBC) will develop BCBM. Trastuzumab deruxtecan (T-DXd) is an antibody-drug conjugate (ADC) with demonstrated efficacy in previously treated patients with HER2+ MBC. However, few patients with stable/treated brain metastases, and no patients with active brain metastases, were included in completed clinical trials of T-DXd. Thus, central nervous system (CNS) efficacy of T-DXd is not wellcharacterized.

Methods: To further validate T-DXd single agent CNS activity, we described clinical outcomes of T-DXd in a multi-institutional retrospective cohort of 16 patients with BCBM. Consecutive patients who initiated T-DXd between 1 Jan 2020 - 1 Nov 2020 (Duke) or 1 Jan 2020 - 15 June 2020 (Dana-Farber Cancer Institute) were included. Date of data cut-off was 31 Dec 2020. CNS response was measured by central radiology review at each participating institution. Up to 5 CNS target lesions were included. CNS partial response (PR) required >30% reduction in sum of CNS target lesions.

**Results**: In the retrospective cohort, median age was 44 (33-69 years). 15/16 patients had confirmed HER2 IHC 3+ or FISH-positive primary or metastatic tissue. 9/16 (56%) patients had either progressive or untreated HER2+ BCBMs on initiation of T-DXd. Median number of prior metastatic therapies was 4 (0-10). 14/16 (88%) had received previous T-DM1; 11/16 (69%) had received previous HER2-targeted tyrosine kinase inhibitor. Median time from previous CNS radiation was 15.1 months (1.3 - 45.2). At the time of data cutoff, 7 patients remained on T-DXd. Median number of cycles was 7 (2-17+). The overall clinical benefit rate (CR/PR or stable disease) was 75%, including 89% (8/9) of

those with progressive or untreated BCBM at baseline.

Conclusions-Implications: In а multiinstitution cohort of 16 patients with HER2+ BCBMs treated with T-DXd, we find preliminary evidence of CNS efficacy, including in patients with progressive or untreated BCBMs. The median number of T-DXd cycles was 12 (2-24) with 42% remaining on treatment at time of data cutoff. Early results have shown that among 15 participants with measurable BCBM at baseline, CNS objective response rate was 73%, and in the subset of participates with untreated or progressive BCBM at bassline, CNS objective response rate was 70%. These data suggest that T-DXd has intracranial efficacy against HER2+ BCBMs. Prospective clinical trials in this patient population are warranted.

#### P37

### Guideline-Based Treatment and Disparities in Hispanic Breast Cancer Patients

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Category: Health Disparities; Oncology

**Keywords**: Breast Cancer, Ethnicity, Race, Treatment, Disparity

**Introduction and Objective**: Breast cancer impacts Hispanic women across multiple aspects of care including treatment type and survival. Treatment disparities among Hispanic females have not been adequately studied. Moreover, there is limited literature that attempts to discuss why these disparities exist. With breast cancer being the most common type of cancer in Hispanic women, guideline-recommended treatment is of paramount importance. Our objective is to examine if there is a difference in the receipt of breast cancer guidelinerecommended treatment in Hispanic white female patients vs. non-Hispanic white female patients in Miami-Dade County (MDC).

Methods: We conducted a historical cohort study utilizing data from the Florida Cancer Data System. Our study population includes females age 75 and younger with stage I-III breast cancer between the years of 2007referenced 2017. We the National Comprehensive Cancer Network's guidelines to define guideline-based treatment. We estimated the association between race/ethnicity and adequacy of treatment, while controlling for potential confounders by means of multiple binary logistic regression.

**Results**: The unadjusted model suggests a statistically significant difference in treatment, with lower receipt of guideline recommended therapy among Hispanic Whites in comparison to Non-Hispanic Whites ([OR] 0.79, 95% [CI], p<0.001).

Following adjustment for the variables, the differences were no longer statistically significant (OR 0.97, 95% CI, p-value 0.645). There was a significantly significant effect of stage at diagnosis on treatment and insurance status in the adjusted models. All tumors with regional spread had a lower OR of receiving appropriate treatment (regional direct extension 0.42, regional lymph node involvement 0.45, regional direct extension and lymph node involvement 0.24, 95% [CI], p<0.001) and uninsured patients and patients using Medicaid had significantly lower ORs as well (not insured 0.52, Medicaid 0.62, 95% [CI], p&lt;0.001).

Conclusions-Implications: Our study revealed that there was no statistically significant difference in treatment between Hispanic white and Non-Hispanic white women in MDC. While the difference was significant in an unadjusted analysis, adjusting for confounding variables rendered this difference non-statistically significant. Factors that did impact guideline-based treatment included stage of diagnosis and insurance status. Looking at insurance status as a social determinant of health may indicate a relationship between Hispanic and Non-Hispanic women receiving guidelinebased treatment that would be of interest to explore in future studies.