

Session/Poster#

Presenter

A01

Yana Kryvokhyzha
Resident

Advisor(s): Dr. Rauno Joks, Allergy and Immunology

Adult food allergy association with obesity in the NHANES 2005-2006 database

Introduction: As food allergy and obesity are increasingly prevalent, investigation of their relationship is warranted. This study investigated obesity in relation to adult sensitizations to shrimp, peanut, egg, and milk.

Methods: The NHANES 2005-2006 database, (n=10,348, age >20 years), was used to determine the association between BMI ≥ 30 kg/m² and sensitization to shrimp, egg, peanut, and milk, with food specific IgE ≥ 0.35 kU/L. Covariates included age, sex, race/ethnicity, education and household income. Statistical analyses were conducted with logistic regression, chi-square and Mann-Whitney U tests. Sensitivity analysis excluded DM sensitization.

Results: In fully adjusted models, obesity increased odds of milk sensitization, IgE > 0.35 kU/L, (OR=1.396, 95% CI 1.021-1.910, p=0.037). Obesity didn't predict shrimp (OR=1.215, 95% CI 0.962-1.533, p=0.102), peanut (OR=1.136, 95% CI 0.911-1.416, p=0.258) and egg (OR=1.393, 95% CI 0.978-1.985, p=0.066) sensitization. A gender interaction effect was found. For women only, obesity increased odds of shrimp (OR=1.555, 95% CI 1.063-2.276, p=0.023), peanut (OR=1.563, 95% CI 1.102-2.217, p=0.012), and milk allergy (OR=1.724, 95% CI 1.063-2.793, p=0.027). Not having D. farinae or D. pteronyssinus sensitization increased odds (OR: 2.322, 95%CI 1.086-4.963, p<0.030; 2.009, 95% CI 1.105-3.363, p<0.02, respectively) of obesity leading to shrimp sensitization.

Conclusion: Using nationally representative data, sex modified the obesity - food allergy relationship. Obese women had higher odds of adult sensitizations to shrimp, peanut, and milk. Independent of pre-existing DM cross-reactivity, removing DM sensitization increases odds of shrimp sensitization in both genders, reinforcing a direct effect of obesity on shrimp allergy presence.

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Presenter

A02

Shawn Mathew

Allergy/Immunology Fellow

Advisor(s): Dr. Rauno Joks, Allergy and Immunology

Blood Albumin:Globulin Levels are Associated with Comorbidity Index and Predicted Survival in Coronavirus-19

Introduction: Studies of potential biomarkers for COVID-19 have shown increased duration of positive nasal PCR for COVID-19 patients and blood albumin:globulin ratio, suggesting low immunoglobulin levels allow for viral persistence. We investigated the relationship of blood albumin:globulin levels with co-morbidities, predicted long term survival, clinical severity on presentation, and length of stay (LOS) in hospitalized adults with COVID-19.

Methods: Total serum protein and albumin levels were measured in hospitalized adults (N=59) and albumin:globulin ratios determined. Vital sign derangement (NEWS2 score), co-morbidities (Charlson comorbidity index, CCI), estimated 10 year survival (C10YES), and LOS were calculated. Listed outcomes were characterized using Spearman correlation analysis and multivariate linear regression adjusted for sex (CCI, C10YES) and age and sex (NEWS2, LOS).

Results: Mean total protein, albumin and globulin levels were 7.02-0.84, 3.78-0.61 and 3.13-0.75 g/dL respectively. Mean albumin:globulin ratio was 1.19-0.23. Greater albumin:globulin ratios were associated with lower comorbidity (CCI) ($r = -0.278$, $p = 0.033$) and increased estimated survival ($r = 0.28$, $p = 0.03$), but not NEWS2 or LOS ($r = 0.016$, $p = 0.904$ and $r = -0.170$, $p = 0.203$). Albumin was associated with CCI, C10YES, LOS, both in correlation ($r = -0.302$, $p = 0.02$; $r = 0.303$, $p = 0.02$; $r = -0.402$, $p = 0.002$) and adjusted linear regression models ($B = -0.339$, $P = 0.01$; $B = 0.373$, $p = 0.004$, $B = -0.059$, $p < 0.0001$). Globulin was marginally significant with NEWS-2 in correlation ($r = -0.221$, $p = 0.08$), but not when controlling for age and sex ($B = -0.145$, $P = 0.292$) and did not correlate with CCI, C10YES, or LOS ($r = 0.098$, $p = 0.453$; $r = -0.95$, $p = 0.466$; $r = -0.162$, $p = 0.215$).

Conclusion: Greater albumin:globulin ratios and albumin levels are associated with decreased comorbidity, increased estimated survival, and decreased LOS in hospitalized COVID-19 patients.

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A03

Presenter

Wajiha Kazmi

College of Medicine Student

Advisor(s): Dr. Rauno Joks, Department of Medicine, Division of Allergy and Immunology

A Case of Non-Allergic Severe Persistent Eosinophilic Asthma and AERD Presenting with Hilar Lymphadenopathy

A 32-year-old male with adult-onset severe persistent asthma and bilateral hilar lymphadenopathy was referred for evaluation after experiencing over 10 asthma exacerbations per year requiring oral steroids. The asthma was exacerbated by aspirin and NSAIDs. Associated symptoms included nasal congestion, sinus pressure, and anosmia. Physical exam revealed no nasal polyps and no current wheeze. CBC showed elevated absolute eosinophils of 600/uL - 1000/uL over the past 6 months. Infectious and autoimmune labs were unremarkable. CT chest revealed hilar lymphadenopathy and RUL "tree-in-bud" infiltrate. Transbronchial biopsy of the right middle lobe revealed eosinophilia (75/hpf). Skin prick testing and serum IgE for environmental allergens was negative. Current medications include albuterol, budesonide/formoterol, and montelukast. The differential includes atypical chronic eosinophilic pneumonia, eosinophilic granulomatosis with polyangiitis, or sarcoidosis. Severe asthma affects 5-10% of the total asthma population and eosinophilia is a prominent feature [1]. The evaluation of adult-onset severe asthma with eosinophilia should consider the spectrum of eosinophilic airway diseases in the differential. Patients with severe asthma, chronic rhinosinusitis, and concomitant AERD experience a greater burden of illness [2]. With poorly controlled asthma despite multiple therapies, the role of anti-IL-5 biologic therapies must be considered.

References: 1. Buhl R, Humbert M, Bjermer L, Chanez P, Heaney LG, Pavord I, Quirce S, Virchow JC, Holgate S; expert group of the European Consensus Meeting for Severe Eosinophilic Asthma. Severe eosinophilic asthma: a roadmap to consensus. *Eur Respir J*. 2017 May 1;49(5):1700634. doi: 10.1183/13993003.00634-2017.

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Session/Poster#

Presenter

A04

Nutchaya Amornruk

Pediatrics Resident

Advisor(s): Dr. Maria-Anna Vastardi, Allergy and Immunology

Clinical Features Of Peanut And Tree Nut Allergy In An Urban Minority Pediatric Population

Rationale: Recent studies suggest that there is an increasing trend of peanut and tree nut allergies worldwide in the last decades. However, data regarding peanut and tree nut allergies among minority pediatric patients are limited.

Methods: A retrospective chart review was performed on patients who were diagnosed with food allergy at the pediatric allergy clinic of SUNY Downstate from 2018 to 2021. Patient's demographic data, food allergy history, skin prick test, and specific IgE levels were reviewed. **Results:** Among our 142 patients diagnosed with food allergies, 85.9% were African American. More than half of those with food allergies (94/142, 66.2%) had a tree nut/peanut allergy. Peanut was most commonly implicated in first time reactions (56/94, 59.6%) followed by pistachio (4/94, 4.3%) and cashew (3/94, 3.2%). Fifty-nine percent of patients with nut allergy have reactions to more than one type of nut. Many patients had underlying atopy: eczema (60/94, 63.8%), allergic rhinitis (44/94, 46.8%), and asthma (42/94, 44.7%). Skin was the most commonly involved organ system (80/94, 85.1%) while 14.9% (14/94) of patients had anaphylaxis. Average age of first nut reaction was 41.6 months while mean age of nut introduction was 24.9 months. Average wheal size for skin prick test was 10 mm and average level of specific IgE to nuts that caused a reaction was 40 kU/L. Average wheal size was larger in anaphylaxis group when compared to non-anaphylactic group (13.8 VS 9.4 mm, $p = 0.04$) **Discussion:** Peanut allergy was found to be the most common peanut/nut allergy among African American pediatric patients. More than half of the patients had multiple nut allergies. Patients with tree nut/peanut allergy were found to have a late nut introduction. Future interventions to increase implementation of early peanut/nut introduction may be crucial for the prevention of development of peanut/nut allergy.

Session/Poster#

Presenter

A05

Gulzhan Tologonova

School of Public Health Student

Advisor(s): Dr. Jason Lazar, Cardiology

Relationship Between Spinal Cord and Cerebral White Matter Hyperintensities

Purpose: Cerebral small vessel disease (SVD) is related to cardiovascular risk factors (CV) including hypertension, diabetes (DM), smoking, and advanced age which impact morbidity and mortality. Neuroimaging markers of SVD evident on MRI scans include white matter hyperintensities (WMH) of the periventricular (PWMH) and deep white matter (DWMH) regions and lacunar infarcts. While SVD evidenced by the presence of WMH is associated with cerebral atrophy, the relation between SVD and spinal cord (SC) atrophy has not been previously considered. The objectives of this study were to determine whether cross-sectional cervical SC area (SCA) on MRI is related to the presence of periventricular and deep WMH on brain imaging.

Methods: Patients age >30 years were identified who completed brain and cervical spine MRI studies within 3 months. Cervical SCA was measured from T2 weighted MRI images, the area of the SC measured at the middle of each vertebral body from C2-C6 and averaged. Brain MRI FLAIR images were assessed for the presence of PVWMH and DWMH and graded using the Fazekas scoring system. The bicaudate index is a measure of cerebral atrophy and is calculated as the intercaudate distance/skull distance.

Results: Demographic data was collected from 200 patients (age 60 -14 years; 67% female). On univariate analyses, mean SCA significantly correlated with age, DM, height, serum creatinine level, DWMH score, PVWMH score, and the bicaudate index. The PWMH score correlated with the DWMH. The bicaudate index correlated with both PVWMH and DWMH. On regression modeling using the univariant predictors, higher DWMH and PVWMH scores were independent predictors of lower mean SCA, as was the bicaudate index.

Conclusions: Lower SCA is associated with cerebral SVD evidenced by higher DWMH and PVWMH scores. SC atrophy is related to cerebral atrophy measured by the bicaudate index. The clinical implications of SC atrophy merit further study.

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Presenter

A06

Rebecca Varghese

College of Medicine Student

Advisor(s): Dr. Jason Lazar, Cardiology

Comparison of Korotkoff Sounds in Patients With and Without Cardiovascular Risk Factors and Cardiomyopathy

Purpose: Brachial artery Korotkoff sounds (KS) may be expected to vary depending on arterial properties and the transmitted impulse from cardiac contraction. We previously demonstrated that the timing of KS were related to arterial stiffness. KS characteristics may provide incremental information regarding arterial function and/or systolic cardiac function beyond blood pressure (BP) measurement.

The objectives of this study were to determine whether different levels of BP cuff inflation influence the sound characteristics of Korotkoff sounds and to compare sound characteristics in healthy and hypertensive subjects.

Methods: We prospectively studied 10 healthy males, age 48-13years, and recorded Korotkoff sounds with a commercially available electronic stethoscope. Analog signals were converted to digital signals and were decomposed using Fast Fourier Transformation frequency analysis. KS were recorded at 3 different BP cuff inflation levels in random sequence (diastolic +10, +20, +30mmHg). Repeated measures design was performed to determine potential differences. This was also performed in patients with diabetes/hypertension.

Results: Among the 10 normal subjects, there were no significant differences in the amplitude of the peak signal among the three increasing levels of inflation pressures (54.5-7.6 vs 57.8-6.4 vs 57.2-6.7dB, $p=0.38$), or in the peak frequency (75-24 vs 70-23 vs 70-29 MHz, $p=.93$).

The frequency spectra of normal subjects consistently showed a bimodal pattern, whereas a unimodal pattern was consistently observed in the hypertension/diabetes group.

Conclusion: These preliminary results suggest that KS characteristics are relatively independent of the level of inflation pressure and are unrelated to age. Patients with hypertension/diabetes may exhibit a different frequency pattern than normal subjects.

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Presenter

A07

Hall Zhang

College of Medicine Student

Advisor(s): Dr. Jason Lazar, Medicine

The Association of the Systemic Immune-Inflammation Index and Brain White Matter Hyperintensities

Purpose: The Systemic immune-inflammation index (SII) is calculated by $(N\ddot{A}-P)/L$ where N, P and L represent neutrophil counts, platelet counts and lymphocyte counts. This is associated with tumors such as metastatic renal cell and prostate cancer. Recently this index has been associated with cardiovascular disorders such as hypertension, stroke and peripheral vascular disease. Compared with other biomarkers of inflammation the SII may better reflect the balance between the immune and the inflammatory response. Atherosclerosis is a systemic inflammatory disease, with pathological mechanisms involving endothelial cells, platelets, and inflammatory cells. Cerebral small vessel disease (SVD) consists of cerebral small vascular atherosclerosis. Cerebral SVD is related to cardiovascular risk factors and disease states including hypertension, diabetes, age, and smoking. Neuroimaging markers of SVD evident on conventional MRI include white matter hyperintensities (WMH) of the periventricular (PWMH) and deep white matter (DWMH) regions. We sought to investigate the association of the SII index and the in a cohort of patients that had brain MRIs.

Methods: This retrospective chart review study consisted of 150 patients that had brain MRIs and bloodwork to calculate the SII. The extent of DWMH and PWMH was graded on the brain MRI using the Fazekas scoring system. Univariate and logistic regression was used to find associations between risk factors, the SII and WMHs.

Results: The mean age was 60 - 14; 67% female. The mean SII was 50.3 - 1243.0. On univariate analysis we found the both WMHs to correlate with age, sex, hypertension, diabetes, smoking, stroke, weight, creatinine level. On logistic regression the SII, in addition to age, sex and smoking history, was a predictor of the PWMH but not the DWMH.

Conclusion: The SII is associated with PWMH, but not with DWMH. This finding supports the differential involvement of inflammation in the development of periventricular and deep WMH.

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A08

Presenter

Tasmia Promi

College of Medicine Student

Advisor(s): Ms. Jason Lazar, Medicine and Cardiovascular Medicine

Relation Between Nocturia and Blood Pressure Elevation in Adolescents

Introduction: Nocturia, defined as waking to void during the hours of intended sleep, is a prevalent urologic complaint associated with non-urological conditions in both sexes. Hypertension (HTN) is a common associated condition in adults. Nocturia has been proposed as a useful method to screen for HTN. Although nocturia is common in children, the relationship between blood pressure (BP) and nocturia has not been studied in the pediatric population. The objectives of this study were to determine the relation between HTN and nocturia in adolescents and to compare self-reported frequency to nocturnal voiding-diary frequencies.

Methods: 100 patients aged 10-18 years were recruited. Demographic data and clinic BP measurements were collected. Patients completed nocturnal voiding-diaries. Nocturia was pre-defined as 1 or more voids recorded by voiding diary, and self-reported frequency was obtained. Univariate analyses and logistic regression with nocturia as dependent variable were performed.

Results: Thirty-four study participants had HTN, defined as elevated BP on 2 or more clinic readings. In patients with nocturia, 17 (37.8%) had normal BP and 28 (62.2%) had elevated BP. While 37% patients self-reported waking up to urinate, voiding diaries showed 45% had 1 or more nighttime void. On logistic regression, patients with HTN were 3.5 times more likely to have nocturia ($p=0.001$).

Conclusion: This data suggest nocturia is strongly related to BP elevation in adolescents. Since there is a lower prevalence of co-morbid conditions that may cause nocturia in adolescents as compared to adults, fewer confounding variables would strengthen the BP and nocturia link. In addition, this study suggests the prevalence of nocturia may be underestimated in adolescents based on self-report. Study findings also suggest that nocturia can be a simple method of identifying adolescents at risk of HTN.

Session/Poster#

A09

Presenter

Samuel Yim

College of Medicine Student

Advisor(s): Dr. Jason Lazar, Medicine and Cardiovascular Medicine

The Prevalence and Frequency of Nocturia Along the Heart Failure Continuum

Introduction: Although widely referenced as a symptom of heart failure (HF), nocturia has been poorly characterized across the HF stages.

Purpose: To determine nocturia parameters across the 4 HF stages.

Methods: Patients at Brooklyn VA Medical Center completed nocturnal voiding diaries and were retrospectively staged by 2 cardiologists (blinded) according to cardiology guidelines based on risk factors, clinical presentation, and available cardiac studies (EKG, echocardiogram, etc.). Stage 0 was determined as a lack of risk factors. Stage A required ≥ 1 HF risk factor without structural heart disease. Stage B required any risk factor and ≥ 1 cardiac structural/functional abnormality (chamber hypertrophy/dilation, etc.) without HF symptoms. Stages C and D were combined and included ≥ 1 cardiac structural/functional abnormality with HF symptoms. Nocturia parameters included nocturia frequency (Nf), nocturia index (Ni) defined as nocturnal urine volume (NUV)/maximum voided volume, and nocturnal polyuria index (NPi) defined as NUV/24-hour urine volume. On logistic regression, odds ratios (OR) were analyzed for HF stages and clinically significant nocturia (≥ 2 nightly voids) adjusting for age, prostate/bladder disease, CKD, sleep apnea, edema, and diuretic use.

Results: 85 patients were staged (0 n=9, A n=42, B n=27, C/D n=7). There were differences in age, BMI, HTN, and CAD but not in race, DM, or diuretic use among stages. Ni differed ($p=.02$) with stage B having the highest Ni (2.8). Nf was highest in stages B and C/D (3 voids/night) and NPi was highest in Stage B (0.47) (trend, $p=.12$). Stage B was associated with clinically significant nocturia (OR 5.25, 95% CI 1.02-26.98), even more so when adjusting for age, prostate/bladder disease, and sleep apnea (OR 7.19, 95% CI 1.08-48.02).

Conclusions: Ni differed among HF stages. Stage B had the highest Ni and was predictive of clinically significant nocturia. Nocturia may be a harbinger of future congestive cardiac disease.

Session/Poster#

Presenter

A10

Christopher S. G. Murray
School of Public Health Student

Advisor(s): Dr. Jason Lazar, SUNY Downstate College of Medicine, Department of Medical Education

Home Blood Pressure Monitoring and Nocturia in Adults

Rationale: Although widely viewed as a urological condition, nocturia has been increasingly recognized to accompany various non-urological conditions such as hypertension and blood pressure (BP) elevation on office determination. Home BP monitoring (HBPM) has been shown superior to office-based readings and provides an opportunity to assess potential relationships between nocturia and novel indices derived from multiple BP recordings including BP load, BP variability, and arterial stiffness, which have prognostic significance. We sought to determine any relationship between systolic blood pressure (SBP) and frequency of Nocturia in Adults, and to elucidate any statistical differences between Mean Ambulatory SBP and Office SBP as they relate to Nocturia.

Methods: We retrospectively studied 103 home BP logs and nocturia frequencies provided by 61 stable cardiology patientsâ€™21 years without medication change.

Results: Nocturnal voids ranged from 0 to 5 voids per night, median: 1.5. Nocturia frequency was significantly correlated with home and office systolic BPs and with BP load, but not with diastolic BPs, BP variability or arterial stiffness. On Poisson regression analysis, the estimated prevalence ratio (PR) for home and office systolic BPs were 1.025 (CI: 1.01, 1.04; p<.001) and 1.01 (CI:1.00, 1.02; p=.019), indicating 2.5% and 1% increases in the risk of nocturia per mmHg increases in BP respectively.

Conclusion: Higher mean home and office systolic BPs are associated with self-reported nocturia frequency with stronger associations seen for home BP measurement. Nocturia frequency appears unrelated to mean home and office diastolic BPs. Nocturia may be related to BP load, (percentage of elevated BP values), but not to BP variability or arterial stiffness. Future prospective studies using HBPM are needed to confirm these findings and to contribute to the understanding of the elevated BP-nocturia link.

Session/Poster#

Presenter

A11

Wendy Zhao

College of Nursing Student

Advisor(s): Dr. Veronica Arikian, College of Nursing

A Proposed Study of the Effects of Front-Loading Phenobarbital to the Standard Benzodiazepine Therapy for Adult Alcohol Withdrawal Patients

Background: Annually, over 1.5 million individuals in the United States are admitted to a hospital or detox facility due to alcohol withdrawal (AW). In those accustomed to regular alcohol intake, the central nervous system continually compensates for alcohol's depressive effects on brain function and communication among nerve cells; thus, once the alcohol level is abruptly lowered, the brain remains hyperactive and causes a withdrawal syndrome. Patients in AW are typically placed on a benzodiazepine monotherapy protocol based on the Clinical Institute Withdrawal Assessment for Alcohol, Revised (CIWA-Ar). Oftentimes, patients require high doses that exceed 10 mg lorazepam equivalents in 1 hour, which provide little benefit and place patients at risk for increased morbidity and mortality, oversedation, respiratory depression, intensive care unit (ICU) delirium, and hyperosmolar metabolic acidosis.

Purpose: To investigate the effects of phenobarbital as an adjunctive pharmacological agent in the management of alcohol withdrawal syndrome (AWS) through measurable outcomes, primarily ICU admissions.

Methodology: A quantitative, quasi-experimental study will be conducted over the course of a year to examine if a reduction in ICU admissions has occurred. Adult patients at an acute care facility, ages 21 to 64 years old, who meet inclusion criteria will form a control group of 50 individuals and a treatment group of 50 individuals. Collection and analysis of other AWS metrics in the electronic health record include CIWA-Ar scores, episodes of delirium tremens, length of stay, mechanical ventilation, and 30-day readmission with AWS.

Data Analysis: Bivariate analysis with Pearson's r , two-tailed t -tests, and multiple regression.

Implications: This study can contribute to the body of evidence exploring alternative and adjunctive therapeutic agents to benzodiazepines for the effective management of patients with AWS in inpatient and outpatient settings.

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Presenter

A12

Kaitlynne Cunningham

College of Medicine Student

Advisor(s): Dr. David Rosmarin, Department of Dermatology, Indiana University School of Medicine

Apremilast 30 mg twice daily combined with dupilumab for the treatment of recalcitrant moderate-to-severe atopic dermatitis

Rationale: Atopic dermatitis (AD), primarily due to overactive type 2 inflammation, can also have Th1/Th17 activation. Many AD patients are not fully controlled on dupilumab, an interleukin (IL)-4 receptor alpha antagonist that blocks IL-4 and IL-13. Apremilast, an oral phosphodiesterase-4 inhibitor, can block TNF-alpha, interferon-gamma, IL-2, IL-12, IL-13, and IL-17. We investigated whether apremilast used in combination with dupilumab would give added benefit to patients.

Methods: Our open-label, prospective phase 2 study evaluated apremilast 30 mg twice daily for up to 24 weeks when added to dupilumab 300 mg for 10 patients with inadequately controlled moderate-to-severe AD. The primary endpoint was the proportion of patients who achieved an Investigator's Global Assessment (IGA) score of 0 (clear) or 1 (almost clear) at week 16. Body Surface Area (BSA), Dermatology Life Quality Index (DLQI), itch on Numerical Rating Scale (NRS), and Eczema Area and Severity Index (EASI) were also recorded.

Results: An intention to treat analysis was performed using last-observation-carried-forward, including all patients who received apremilast. 2 patients reached the primary endpoint by week 16, and by week 24, this increased to 3. At week 16, 4/10 patients achieved BSA 3% or less. BSA, DLQI, NRS pruritus, and EASI decreased by a mean of 4.5 +/- 5.2% (+/- SD), 3.9 +/- 3.1 points, 2.1 +/- 1.1 points, and 3.02 +/- 2.8, respectively. Mean % change from baseline BSA, DLQI, NRS pruritus, and EASI was -37.6 +/- 26.6%, -36.9 +/- 54.8%, -45.9 +/- 17.8%, and -32.6 +/- 42.6%, respectively, at week 16. 4 patients completed 16 study weeks, with no discontinuations due to lack of efficacy. 8 patients had mild adverse events, commonly nausea, diarrhea, or headache.

Discussion: Concomitant apremilast and dupilumab may be a promising combination for AD patients with an inadequate response to dupilumab. Larger, randomized studies must be conducted to confirm efficacy and safety.

Session/Poster#

Presenter

A13

Simran Patel

College of Medicine Student

Advisor(s): Dr. Raj Wadgaonkar, Medicine

The effect of sickle cell disease and sickle cell trait on COVID-19 infection outcomes

Introduction: COVID-19 infections have swiftly increased in the United States. The literature exploring the relationship between sickle cell and COVID-19 is sparse. We aim to describe the outcomes of sickle cell disease (SCD) and sickle cell trait (SCT) patients with COVID-19 at the University Hospital of Brooklyn (UHB).

Methods: A retrospective cohort chart review of patients at UHB between March 2020 to September 2022 was performed. We sampled patients over the age of 18 who tested positive for COVID-19 and had previously been diagnosed with SCD/SCT.

Results: 100 charts were reviewed of which 40 met the inclusion criteria. 15 (37.5%) were male, 25 (62.5%) were female and all were Black. 50% had SCT and 50% had SCD. The average age was 36.05 years for SCD and 48.6 for SCT patients ($p=0.01$). Pre-existing medical conditions included hypertension (15%), asthma (12.5%), type II diabetes mellitus (10%), end-stage renal disease (10%), splenic pathology (10%), avascular necrosis (7.5%), chronic obstructive lung disease (5%), hyperlipidemia (5%), HIV (5%), and miscellaneous conditions (20%). Patients presented with various symptoms, some overlapping. 42.5% presented with cough, 37.5% with fever, 35% with shortness of breath, 22.5% with acute pain, 12.5% with chills, 12.5% with fatigue, and 10% were asymptomatic. 40% of patients had no major complications; however, 22.5% developed COVID-19-related pneumonia, 17.5% had pain crisis, 12.5% had acute chest syndrome, 7.5% had acute kidney injury, and 20% had other complications including pulmonary embolism, hypertensive crisis, and altered mental status. The average length of hospital stay was 4.3 days. 5% of patients returned to the hospital due to COVID-19-related complications, with another 5% passing away due to respiratory sequelae.

Conclusions: The findings of this study show no significant difference in hospital stay length or level of medical acuity between patients diagnosed with SCD/SCT.

Session/Poster#

Presenter

A14

Juanita Gomez

College of Medicine Student

Advisor(s): Dr. Mariana Markell, Division of Renal Disease

Patterns of Engagement with Primary Care Services in Patients with ESKD

Patients with end-stage renal disease face many social, economic and physical challenges. Many patients require a multidisciplinary approach for care. Given their increased risk for cardiovascular diseases and other complications, this project aims to study patients' utilization patterns of PCP services and the challenges associated with obtaining care in an urban setting. It is not known how patients in underserved communities view the relationship between their nephrology team and their PCP and where impediments to care exist. A random convenience sample of inner-city dialysis (28), kidney transplant (39) and CKD (8) patients were interviewed face to face regarding understanding of nephrology vs PCP services, and usage of each. In our population, the majority of patients believe that a PCP is important and 21% have a long-term relationship. Almost half see their PCP at a different location from their nephrologist and most did not know whether their PCP and nephrologist worked together. Challenges in accessing care from their PCP included scheduling conflicts and transportation cost. Based on this study, patients with kidney disease should be encouraged to maintain a relationship with their PCP and communication between the nephrology team and the PCP should be emphasized in order to optimize and coordinate care.

Session/Poster#

A15

Presenter

Claire Peabody

College of Medicine Student

Advisor(s): Dr. Mariana Markell, Nephrology

Health Locus of Control and Vaccine Hesitancy in Inner-City Kidney Disease Patients

Introduction: Health locus of control may influence pts interaction with the medical system. Understanding pt beliefs in medicine and attitude toward the health system and professionals is important because these may play a role in vaccine hesitancy.

Methods: A random sample of 9 chronic kidney disease, 28 dialysis, and 38 transplant pts were surveyed regarding beliefs in medicine and vaccine hesitancy. The Multidimensional Health Locus of Control (MHLC) Scale was used to measure internal (IHLC) vs. powerful others (PHLC) vs. chance (CHLC) loci of control.

Results: Mean age was 59.6+/-14.6 yrs, 45.3% men (34), 64% identified as Black (48), 53.3% non-US born (40), 52% did not finish college (39). On a scale of 6-36 with higher scores indicating more alignment with that particular locus of control, our population's mean IHLC was 23.6, PHLC was 23.5, and CHLC was 18.1. Those with more alignment with CHLC were more likely to report that they use family and friends for health advice ($r=0.425$ $p=0.006$) and trust that advice ($r=0.366$ $p=0.017$). Of those that answered, 87.8% of pts reported receiving the COVID vaccine and 31.6% had received 3 doses as of 7/2022. 37.8% were hesitant at some point to receive the vaccine. Those that agree that seeing a doctor regularly prevents illness were more likely to have received more doses of the vaccine ($r=0.436$ $p=0.01$), and those that agree that "health professionals are my main source for medical information" are more likely to plan on getting the Booster ($r=0.581$ $p=0.047$).

Conclusions: In our population: 1. More people aligned with the PHLC and IHLC over the CHLC. 2. Those with a CHLC were more likely to rely on family and friends for health advice. 3. The majority of pts received the COVID vaccine, and over 30% were hesitant to receive it. 4. Those that are less vaccine hesitant have a more positive view of health professionals and report that they use them as their main source for medical information.

Session/Poster#

Presenter

A16

Alice Varghese

College of Medicine Student

Advisor(s): Dr. Mariana Markell, Renal Transplant

Whole Body Phase Angle, Body Composition and Relationship to Frailty in Kidney Transplant Recipients (KTRs)

Introduction: Frailty has been associated with poorer outcomes in KTRs, but patients can be frail with elevated BMI and few studies have examined bioimpedance whole body phase angle values as a measure of overall health in this population. Methods: A random convenience sample of 26 KTRs were administered a handgrip dynamometer test and frailty survey. Body composition was measured using the InBody S10 body composition analyzer with the patient in a seated position. Results: Mean age was 60-2.3yrs, there were 17 males (65%), 17 (65%) identified as Black. Mean post-transplant time was 34.1-10.4 mos. Mean BMI was 26.7-4.2, mean body fat was 21.7-2.6, visceral fat 17.4-4.9, skeletal muscle mass 68-4.3, whole body phase angle 5.8-0.47. 11(44%) met the definition of frailty by handgrip (<70 for males, <44 females) which correlated with ability to walk one block ($r=0.458$, $p=0.021$) but did not correlate with any measure of body composition. Whole body phase angle correlated with time since transplant ($r=0.43$, $p=0.033$) and absolute grip strength ($r=0.49$, $p=0.004$). There was no relationship between age, sex, or time since transplant and any body composition measurement. 10 (11%) pts reported feeling weaker since their transplant and 41% (12) pts reported being too tired to exercise but there was no objective difference in hand grip, phase angle or body composition between these groups and those who did not feel weak. Conclusion: In our population of older inner-city KTRs 1 Majority pts are overweight by BMI and elevated fat mass. 2 Over one third pts met definition for frailty by hand grip and were less able to walk one block. 3 Phase angle, understood as a measurement of overall health in other populations, correlated with hand grip and appeared to improve with increasing time since transplant in all but 2 pts. 4 Phase angle values may help assess overall improvement following transplantation, as pts perception of strength does not correlate well with physical findings.

Session/Poster#

Presenter

A17

Bethany Williams

College of Medicine Student

Advisor(s): Dr. Mariana Markell, Nephrology

Association Between Spirituality and Beliefs in Medicine in a Population of Inner-City Patients with CKD/ESKD

Spirituality plays an important role in many pts lives and may influence beliefs about allopathic medical care with potential implications for adherence.

A random sample of 28 dialysis, 39 kidney transplant, and 8 CKD pts in an inner-City community were surveyed regarding their spirituality.

Mean age was 59.6-14.6 yrs, with 58.6% males, 41.4% females, 80% identified as black, 67% foreign born. 74% of pts reported attending church or religious meetings a few times a month or more. 61% of pts sought out spiritual guidance in making daily decisions. 67% of pts stated that their spiritual views influenced their life. Pts who sought spiritual guidance when making decisions were more likely to have a negative view of medicines ($r=0.440$, $p=0.022$) Pts who spent more time in private religious activities were less likely to believe that medicine protected them (-0.497 , $p=0.004$), or that their health depended on medicines ($r=-0.505$, $p=0.005$). Pts who sought spiritual guidance believed doctors used too many medicines ($r=0.409$, $p=0.12$), natural remedies were safer than medications ($r=0.372$, $p=0.028$), and medicines did more harm than good ($r=0.460$, $p=0.005$). Dialysis pts who reported spirituality having an influence on their life were more likely to believe that dialysis is harmful ($r=0.424$, $p=0.031$). There was no significant correlation between spirituality and reported medication adherence or foreign birth.

In our Inner-City population: The majority of pts reported frequent attendance at religious meetings and felt that spiritual views influenced their daily lives. Pts who were more spiritual were more likely to have a negative view of medications, to be less likely to believe that they were helpful, that their health depended on them and more likely to believe they did more harm than good and that natural remedies were safer. Partnering with local spiritual leaders may be helpful in promoting understanding and adherence to medical therapies in similar populations.

Session/Poster#

Presenter

A18

Joya Ahmad

College of Medicine Student

Advisor(s): Dr. Mariana Markell, Nephrology

Ob-Gyn Care, Reproductive Health Education and Lack of Knowledge in Inner- City Patients with Kidney Disease

Introduction: Medications for kidney disease significantly impact reproductive health (pregnancy, fertility, menstruation, and menopause), and it is crucial that patients are aware of the potential effects. Methods: A random convenience sample of 12 female patients with kidney disease (5 with CKD, 4 on hemodialysis, 2 post-transplant) took surveys on perceived and objective knowledge about the impact of kidney disease on reproductive health, rating their perceived knowledge about the impact of kidney disease on different aspects of reproductive health on a Likert scale and answering 7 true/false statements about kidney disease's impact on reproductive health as well as medications contraindicated in pregnancy. Patients were also asked if they had an obstetrician-gynecologist. Results: Mean age was 56-14, 100% (12) female, 75% (9) identified as Black. The average ratings for perceived knowledge about kidney disease and kidney disease medication impact on reproductive health were between 1.25 and 1.75. 9/12 (75%) rated their perceived knowledge as 1 (‘‘I do not know anything’’) for 100% of the questions. The average number of correct answers on the objective questionnaire was 1.08, with 4/12 (33%) patients stating that they guessed on all questions. 9/12 (58%) patients scored in the 0-1 range and 3/12 (25%) patients scored in the 2-5 range. 0 patients scored over 50% correct. 6 (50%) patients had an obgyn. There was no significant association between patients having an obgyn and objective knowledge scores ($r = 0.144$, $p = 0.214$). Discussion: In our population 1.The majority of patients did not know about the impacts of kidney disease and associated medications on reproductive health. 2.The majority of patients were aware of their lack of knowledge. 3.Having access to an obstetrician-gynecologist did not increase objective knowledge scores about kidney disease impact on reproductive health, and further investigation into patient education about this topic is warranted.

Session/Poster#

Presenter

A19

Patrick Nian

College of Medicine Student

Advisor(s): Dr. Ishaq Ibrahim, Orthopaedic Surgery and Rehabilitation Medicine

Shots Fired: Socioeconomic and Treatment Pathway Evaluation of Civilian Gun Shot Orthopaedic Fractures Presenting at Two New York City Level 1 Trauma Centers

Introduction/Purpose: To evaluate the complete management trajectory of patients presenting to two NYC level-1 trauma centers from 2019 to 2021 with orthopaedic fractures secondary to gunshot wounds (GSWs), with regards to (1) patient demographics; (2) hospital course; and (3) postoperative follow-up compliance.

Methods: A retrospective chart review from July 2019 to September 2021 was performed to identify all GSW patients presenting to two NYC Level-1 trauma centers. Patient demographics and details of injury, hospital course, and follow-up were noted. Univariable and multivariable logistic regressions identified independent predictors of compliance to the initial follow-up visit. Statistical significance was set at $p < 0.05$.

Results: Among 478 total GSW patients identified, 92 patients sustained 128 unique orthopaedic fractures. 94.6%, 73.9%, and 88.0% were male, Black, and with either emergency Medicaid or uninsured, respectively. The mean 2015 Social Deprivation Index was 91.2/100. Of these patients, 65 patients (70.7%) suffered a fracture to the lower extremity, most commonly at the femur (19.6%). 32 patients (34.8%) suffered a concomitant non-orthopaedic injury. Mean orthopaedic surgeries per patient was 2.1. In-hospital mortality rate among orthopaedic fracture patients was 3.3% vs. 9.2% among all GSW patients. Only 33 patients (35.9%) complied with their initial post-operative clinic visit.

Multivariable logistic regression demonstrated the greatest predictors for follow-up compliance to be a hip (OR: 51.6; $p = 0.013$) and femur fracture (OR: 22.2; $p = 0.011$).

Conclusion: The orthopaedic health burden of gun violence disproportionately affects certain demographic groups associated with high levels of socioeconomic deprivation. Surgical intervention is often necessary for these fractures; however, mortality is generally low. Follow-up compliance is inadequate and future studies should aim to elucidate the determinants of poor follow-up compliance in these patients.

Session/Poster#

Presenter

A20

Andrew Voigt

College of Medicine Student

Advisor(s): Dr. Nira Goldstein, Otolaryngology

Outcomes of In-office versus operating room insertion of tympanostomy tubes in children

Introduction: Tympanostomy tube insertion in children is commonly performed under general anesthesia but concerns over the potential harmful effects of anesthesia have sparked interest in office-based alternatives. Although initial research comparing in-office versus operating room (OR) insertion of tubes looks promising, there are scant data available on long-term outcomes. The objective of this study is to compare long-term outcomes of tympanostomy tubes placed in-office versus the OR, with emphasis on the time to tube occlusion (occ) or extrusion (ext).

Methods: We reviewed electronic medical records in an academic pediatric otolaryngology practice of children under age 13 years who had tubes placed in-office or the OR. Differences in time to unilateral and bilateral tube occ/ext were compared by Kaplan-Meier (K-M) survival analysis with log rank comparison.

Results: 817 children were included (473 office tubes, 344 OR tubes). Tube placement was equally successful for both groups: 98.3% for office and 98.9% for OR. Comparison of K-M plots for time to occ/ext by location showed no meaningful difference ($P=.84$ for unilateral and $P=.71$ for bilateral). Regression analysis indicated a strong interaction of location with operator status. Median time to unilateral occ/ext and bilateral occ/ext was shorter for OR residents compared to OR attendings (457 vs 593 days, $P=.002$, and 672 vs 974 days, $P=.03$, respectively). There was no difference in the time to unilateral or bilateral tube occ/ext between office attendings and OR attendings. There was no significant difference between groups in the need for tube removal, repeat tubes, tube medialization, or post-extrusion tympanic membrane perforation.

Conclusion: The comparable long-term outcomes found for tubes inserted in-office versus the OR, including time to occ/ext, suggest that both settings are acceptable for the procedure, with choice based primarily on parental preference and clinician experience.

Session/Poster#

A21

Presenter

Molly Schneider

College of Medicine Student

Advisor(s): Dr. Lawrence Fordjour, Pediatrics

Adverse Neonatal Outcomes of Large for Gestational Age Neonates in a Predominantly African- and Caribbean-American population in Central Brooklyn

Background: Large for Gestational Age (LGA) births are associated with increased neonatal and childhood complications including obesity. Understanding the risk factors for and consequences of LGA birth is key to addressing the 22-23% prevalence of childhood obesity in East Flatbush.

Objective: To study the maternal, perinatal, and neonatal factors associated with LGA term births as well as LGA outcomes in a Black, predominantly Afro-Caribbean population in Brooklyn.

Design/Methods: A retrospective chart review of term LGA and Appropriate for Gestational Age (AGA) neonates born at University Hospital from 2018-2021 was conducted. Birthweight (BW) percentiles were corrected for sex and GA using an interactive web application (Aris et al). BW of LGA babies was categorized into 3 groups: 90-95, 95-97 and >97 percentiles. Neonatal and peripartum outcomes were analyzed using one-way ANOVA and Chi square tests.

Results: Of 3991 live births, 2.95% were LGA. LGA neonates were 37% male with a median GA of 39 weeks, median BW of 4178 g, and mean length of hospital stay of 3.3 days. The median maternal weight gain in the last 2 trimesters was 15.39 kg and median BMI at delivery was 36.1. Over 88% of LGA neonates were born to mothers with excessive pregnancy weight gain (> 1 lb/week in last 2 trimesters). Pregnancy complications included gestational diabetes mellitus (11%) and preeclampsia (4.2%). C-section rate was 60% (vs. 30% in AGA babies). Significant neonatal morbidities included respiratory distress (21.2%), hypoglycemia (7.6%), jaundice (10.2%), shoulder dystocia (2.5%). Babies with BW > 97th percentile had higher C-section rate, increased incidence of hypoglycemia requiring IV fluids, and longer hospital stay compared to those in the 90th-97th percentile.

Conclusion(s): This study suggests that LGA babies are at higher risk for complications, and thus necessitates close monitoring of antenatal and pregnancy factors to improve care for at risk population.

Session/Poster#

Presenter

B39

Sheetal Sriraman
Pediatrics Resident

Advisor(s): Dr. Lawrence Fordjour, Pediatrics

Incidence of Sepsis and the Outcomes of Antibiotic use in VLBW Infants at a High-risk, Inner City, Level III Neonatal Intensive Care Unit

Background: Neonatal sepsis is associated with increased morbidity and mortality. Antibiotic use is center-dependent and is most influenced by the incidence of sepsis and risk factors for sepsis in the population.

Objective: To determine the incidence of neonatal sepsis and to analyze the outcomes of antibiotic use in very low birth weight (VLBW) infants with negative cultures at a high-risk inner-city level III NICU.

Methods: This study was a cross-sectional retrospective chart review from 2016 to 2022 in a level III NICU that included all VLBW infants (less than 1500 g at birth). The composite outcome was defined as the incidence of necrotizing enterocolitis (NEC), retinopathy of prematurity (ROP), intraventricular hemorrhage (IVH), or oxygen (O₂) requirement at 36 weeks postmenstrual age (PMA). Logistic regression was used to analyze the association between antibiotic use and outcome, after correcting for confounders such as gestational age (GA), SNAPPE II score, and birth weight (BW). The adjusted odds ratios (OR) with a 95% confidence interval (CI) were described.

Results: A total of 198 infants were identified out of which incidence of EOS, LOS, and fungemia were 1.5% (3/198), 9.6% (19/198), and 3% (6/198) respectively. The mean duration of antibiotics was 4 days for EOS and 17 days for the entire NICU admission. Mean GA was 28.1 weeks (75% CI: 27.8-28.3). Mean BW was 1048 g (75% CI: 1021-1074). Intra-amniotic infection was seen in 31% (56/177). We found an association between the duration of antibiotic use and the composite outcome, NEC, ROP, and O₂ requirements at 36 weeks PMA with an adjusted OR of 1.11 (95% CI 1.06-1.16), 1.07, (95% CI 1.03-1.11), 1.05. (95% CI 1.005-1.11), and 1.11, (95% CI 1.05-1.16) respectively.

Conclusion: Duration of antibiotic use was associated with the incidence of the composite outcome, NEC, ROP, and O₂ requirement at 36 weeks. Further studies including a larger sample size are needed to increase the power of the study.

Session/Poster#

Presenter

A23

Sheetal Sriraman
Pediatrics Resident

Advisor(s): Dr. Saema Khandakar, Department of Pediatrics, New York City Health and Hospitals, Kings County, SUNY Downstate Health Sciences University.

Patient Portal Use After Activation during the Birth Hospitalization

Background: Studies show patient portal access increases medication adherence and improves primary care follow-up. At our institution, a quality improvement (QI) initiative to standardize patient portal activation in the nursery improved activation rates to almost 90%.

Aim: To describe the facilitators and barriers to patient portal use by mothers of infants discharged from an urban safety net hospital well-baby nursery.

Methods: As part of ongoing QI efforts to improve patient portal activation and use, the study team conducted phone interviews with a convenience sample of mothers of infants discharged from the nursery between August 2021 and January 2022. Participants with active patient portals were randomly selected through a shuffle system and were administered an open-ended phone interview. Mothers were categorized as “users” if they reported using the portal at least once and “non-users” if they never accessed the portal. Sociodemographic and patient outcome (emergency department (ED) visits, hospitalizations, appointment no-shows) variables were compared between the two groups.

Results: Of the 482 mothers with active patient portals at nursery discharge, 127 (26.3%) were interviewed.

Sociodemographic variables did not differ between portal users and non-users. Most mothers (70%, 89/127) reported using the portal at least once and 85.4% (76/89) of users found it useful. The most common reasons for portal use were to check appointments and test results. Among non-users, the most common reason for not using the portal was a lack of knowledge (42.1%). Portal users were less likely to have a no-show compared to non-users (44.9% vs. 78.9%, $P < 0.001$). Hospitalizations and ED visits did not differ between the two groups.

Conclusion: Most mothers reported accessing the portal and finding it useful. To address the lack of knowledge as a barrier to portal use, future interventions will focus on improving how mothers are taught about the portals in the nursery.

Session/Poster#

A24

Presenter

J. Roscoe Wasserburg
College of Medicine Student

Advisor(s): Dr. Kevin Tehrani, Plastic and Reconstructive Surgery

The Suture Suspension Brow Lift

Purpose: While surgical intervention for forehead rejuvenation has declined, non-surgical alternatives including Botulinum toxin and soft tissue fillers have become predominant. While non-surgical alternatives are plenty, they often are limited in their extent of lift and duration of effect. This case series illustrates a novel, minimally invasive technique for brow lift that seeks to increase extent and duration of rejuvenation.

Methods: Eleven patients underwent novel suture brow suspension for non-surgical brow lift between August 2021 and April 2022. The technique utilized a 3-0 or 4-0 barbed glycolic acid and trimethylene carbonate copolymer suture on a straight 60mm needle. The suture is introduced superior to the lateral aspect of the brow in line with the lateral orbital rim and tunneled superolateral to beyond the hairline to lift and tighten the superficial musculoaponeurotic system.

Outcomes data and complications were collected during office follow-up office visits (mean 8.9 mo., range 4.9 - 12.7).

Results: Patients had an average age of 49.7 years (range, 33 - 67) and included ten females and one male. Ten patients underwent this brow suspension concurrently with other procedures of which, four of whom underwent other brow shaping procedures. Five patients reported complications including recurrent ptosis (2), pain (1), suture tear (1), and exposure of suture (1). Pain resolved with Kenalog/Marcaine injection and two patients required repeat procedures.

Conclusion: The suture brow suspension technique is a novel and minimally invasive procedure for brow lift that provides an aesthetically beneficial outcome. Advantages of this approach include the low cost and high degree of control for the surgeon as multiple vectors can be shaped during a single operation. Further research should be conducted to compare outcomes of this approach against both traditional surgical brow lifts and non-surgical alternatives.

Session/Poster#

A25

Presenter

Daniel Brereton

College of Medicine Student

Advisor(s): Dr. Peter Taub, Department of Surgery, Icahn School of Medicine at Mount Sinai

Use Of Intrathoracic Tissue Flaps For Repair Of Airway Fistulas: A Systematic Review

Purpose: Airway fistulas are challenging surgical problems that can be managed with a spectrum of invasive procedures ranging from local muscle flaps to regional flaps to free tissue transfer. The present study investigates the outcomes of patients who underwent local versus regional flaps to repair airway fistulas in the thorax. Methods: A systematic review was performed using Embase, Medline, Scopus, and WebOfScience utilizing PRISMA guidelines. 2243 articles were collected, screened, and reviewed. Ten articles, comprising 119 patients in seven countries, met inclusion criteria and were included in the analysis. Flaps were grouped based on extent of mobilization of flap harvest. Intercostal, serratus anterior, and latissimus dorsi muscle flaps were considered local flaps, while trapezius, pectus, rectus abdominis, and omentum were considered regional flaps. Results: There was no difference in number of co-morbidities per patient between those that underwent local flaps or regional flaps (2.40 - 0.59 vs 2.72 - 1.42). The overall complication rate was higher when more regional flaps were utilized (10.42% - 13.07% vs 18.25% - 18.30%) and had higher variance (1.33% vs 4.36%). While the average 30-day mortality was equal (2.15% - 2.13% vs 2.22% - 4.36%), the variance was similarly greater in the more regional group (0.02% vs 0.20%). This variance may be due to the more precarious nature of flaps higher on the reconstructive ladder. Conclusion: Flap selection for reconstruction of airway fistulas is of paramount importance since these patients often have multiple co-morbidities. There is scant literature on the use of local and regional tissue flaps for repair of airway defects and thus this abstract seeks to come to a consensus on their use. Local flaps appear to deliver more consistently successful reconstruction of airway fistulas compared to regional flaps.

Session/Poster#

Presenter

A26

Matthew Chung

College of Medicine Student

Advisor(s): Dr. Zorica Buser, Director of Research and Regenerative Medicine (Spine Restoration) at Gerling Institute and Research Assistant Professor Department of Orthopedic Surgery NYU Grossman School of Medicine

Incidence and Risk Factors for Post Operative Dysphagia in Anterior Cervical Discectomy and Fusion

Anterior cervical discectomy and fusion (ACDF) is a commonly performed procedure for patients with cervical degenerative disc disorder. Despite many studies analyzing post-operative dysphagia, there exists a highly variable range in incidence of dysphagia, some literature reporting as high as 71%. The aim of the current retrospective, single center cohort study was to determine if dysphagia is still a common post-operative complication.

Patients undergoing single or multi-level ACDF seen at Gerling Institute between 2020 and 2022 were identified. Patient demographics including age, gender, ASA grade, Body Mass Index (BMI) and smoking status were collected. Risk factors measured included, number of levels performed, primary/revision surgery, insurance type, smoking status, epidural steroid injection (ESI) use, plate type, and intraoperative steroid use. Rates of dysphagia were obtained postoperatively at 2 weeks and again at an interval between 3 weeks to 3 months. Regression models and analyses were used to determine whether risk factors were independent predictors of dysphagia.

A total of 640 patients undergoing ACDF were identified. At the two weeks postoperative mark, new onset dysphagia was observed in 1.1% of the sample, and new onset dysphagia occurring up to 3 months post operatively was seen in 1% of patients. One patient had persistent dysphagia over these two time periods. There were no statistically significant differences in patients who presented with new onset dysphagia compared to those who did not in risk factors that were assessed, at both 2 weeks and 3 weeks to 3 months' time points. When controlling for age and gender, there were no statistically significant associations between risk factors and postoperative dysphagia.

This analysis delineated low incidence rates of new onset dysphagia following ACDF, with no common risk factors showing an increased risk of complication.

Session/Poster#

Presenter

A27

Kulsajan Bhatia

Pediatrics Resident

Advisor(s): Dr. Sukhvinder Ranu, Division of Neonatology: Kings county Hospital

Performance Evaluation of Neonatal Extubation Readiness Calculator in Preterm Neonates: A Retrospective Analysis in an Inner-City Level 3 NICU

Objective: Assess the feasibility of a known extubation readiness estimator (ERE) in ELBW infants, compare it to the success of extubation based on clinical judgment, understand the significance of additional parameters that potentially impact successful extubation and study associated morbidities with failed extubation.

Methods: We conducted a retrospective chart review for all the intubated preterm neonates with birth weight \geq 1500 grams and gestational age less than 30 weeks between January 2016-December 2020. Demographic variable including maternal and neonatal characteristics were recorded. A total of 105 premature neonates were intubated during the study period. 41 intubated neonates were excluded from the study because of death and the non-availability of data. The remaining 64 neonates were assessed for the probability of successful extubation and divided into two groups with extubation readiness probability scores of more than 80% or less than 80%. A probability of more than 80% was considered significant for successful extubation. The association between risk factors and extubation failure was reported as an odds ratio (OR) and compared using the Chi-square test.

Results: Fifty-three neonates were extubated successfully, and 11 neonates required reintubation within 5 days of the first attempt. Gestational age and BW were significantly lower in the re-intubation group, with a probability score of less than 80%. The incidence of CLD, ROP stage 2 and higher was significantly higher in the re-intubation group in the ERE score $>80\%$ category. Most babies in the low probability group were extubated to NIMV and remained successfully extubated. Sensitivity, and specificity for the score $>80\%$ were 35.8% and 54.5 %, respectively, which were lower than the model used to develop the estimator (54% and 81%).

Conclusion(s): In our study neonates were successfully extubated based on clinical judgment, even at lower probability scores.

Session/Poster#

A28

Presenter

Binyamin Simkhaev
College of Medicine Student

Advisor(s): Dr. Edward Allen, Family Medicine

The Patient's Understanding of Colonoscopy: A Clinical Research Survey

Intro: The purpose of the study was to gauge different patients understanding of the value of colonoscopies from three different clinics. The researchers then sought to measure adherence to current screening guidelines and, if patients did not adhere to current guidelines, assess what factors influenced their decision to not get a colonoscopy.

Method: An oral or written open-ended survey was created to be filled out by patients older than 18 years coming to Brighton, Family Health Services (FHS) Lefferts, and LaSante clinics during January 2023. The survey included demographic questions such as sex, age, race, and questions on colonoscopy assessing if the patient ever had one, at what age the patients think colonoscopies are first recommended, what patients think colonoscopies are used for, and if the patients never had a colonoscopy done why that was the case.

Result: 40 patients with 19 males and 21 females had 27.5% patients between 18-40 years old, 22.5% patients between 41-60, 47.5% patients between 61-80. 52.5% of patients have had a colonoscopy. 75% of patients identified as black. Most patient surveys came from FHS. Most responses for when to start colonoscopy screening given was 45 years old, with no specific age recommended as the second most common choice, and 55 years as the third. 78% of patients answered cancer detection for reason to get colonoscopy. 12.5% of patients indicated they were unsure how it relates to health. 61% patients, despite knowing why colonoscopy is important to their health, believe it's not recommended for them.

Conclusion: Most patients understood that colonoscopies identify cancer that can be treated early. However, majority of patients in our study that did not get a colonoscopy said that they did not believe it was recommended to get one for them. Interestingly, no patients mentioned the preparation beforehand as a reason to not undergo the test. Patient education on screening recommendations can be of major benefit.

Session/Poster#

A29

Presenter

Sanya Goswami

Internal Medicine Resident

Advisor(s): Dr. Qi Yu, Gastroenterology

Spindle Cell Carcinoma: An Exceedingly Rare Liver Biopsy Proven Case

Spindle Cell Carcinoma: An Exceedingly Rare Liver Biopsy Proven Case. Spindle cell neoplasms also known as sarcomatoid carcinoma, are typically biphasic tumors, composed of conventional squamous cell carcinoma and malignant spindle cells. Due to its rarity and lack of diagnostic schema in the literature, it is often an overlooked, and missed diagnosis. Here we highlight a case of a 57-year-old female with known history of liver lesions, who presented to the ED with a 1-2 week history of abdominal pain and distension, localized to the right lower quadrant, associated with generalized itching, but no identifiable rash. Vitals on presentation were largely unremarkable. Physical examination was remarkable for scleral icterus, excoriations on the abdomen, markedly distended, non-tender abdomen with a positive fluid wave and shifting dullness. Labs were remarkable for elevated white count, electrolyte abnormalities, hepatic dysfunction with an elevated alkaline phosphatase and hyperbilirubinemia. After further imaging there was suspicion for metastatic disease, CT liver triple phase revealed multiple haptic masses with heterogenous enhancement, enlarged surround lymph nodes. Pathology report of the liver biopsy revealed neoplastic spindle cell proliferation involving liver parenchyma and extensive necrosis. Spindle cell tumor arising from the liver is exceedingly rare and the proportion of hepatocellular carcinoma (HCC) with spindle cells is estimated to be 1.8% of all resected HCCs. Although the WHO has officially classified spindle cell tumors as soft tissue neoplasms, there is no subclassification of spindle cell tumors among liver tumors. Next would be to complete a generalized investigation using the Surveillance, Epidemiology, and End Results (SEER) database within the last 20 years. This may help further evaluate trends, demographics, and basic clinical and pathologic features of this disease.

Session/Poster#

Presenter

A30

Armaan Shah

College of Medicine Student

Advisor(s): Dr. Yaacov Anziska, Neurology

Awareness of medical cannabis use as a pain relief agent for chronic pain patients who attend the pain clinic at Kings County Hospital in East Flatbush

Objective: The objective of this study is to gauge the awareness and interest for medical cannabis as an alternative pain managing modality in chronic pain patients. Methods: Patients attending the Kings County Hospital Pain Clinic were asked to fill out a ten- question survey in the waiting room via their cellular device or electronic tablet. To analyze the relationship between the survey responses, a standard chi-square test and Kruskal-Wallis test was used. All data were analyzed using SPSS software. Results: From 209 participants, 157 expressed a willingness to try CBD as an alternative pain management therapy. Of these, 180 were above the age of 44 and suffered from various types of pain. There was no significant difference in willingness to try CBD for pain management by age group, by type of pain, by area of pain experienced in the body, or by length of time being seen by the pain management clinic. Conclusion: This study elucidates current attitudes of chronic pain patients in an urban and underserved community towards medical cannabis for pain management. Findings of this study can aid clinicians in exploring alternative pain management modalities with their patients.

Session/Poster#

A31

Presenter

James Hiana

Neurology Resident

Advisor(s): Dr. Yaacov Anziska, Neurology

Neuroradiologic Features in Acute Ethylene Glycol Toxicity

Objective: Describe unique neuroradiological features of Ethylene Glycol poisoning.

Background: Ethylene Glycol (EG) is a sweet tasting, industrial compound that is ubiquitously found in various consumer products (antifreeze, paints, solvents, and cosmetics). Ingestion of EG results in toxicity with characteristic metabolic, pathological, and imaging findings.

Design/Methods: N/A

Results: A 64-year-old man with acute onset nausea, recurrent vomiting, and ataxic gait. In a few hours, he became progressively confused, lethargic, and eventually obtunded requiring intubation for airway protection. He was unresponsive but with preserved brainstem reflexes. Laboratory tests showed high anion gap metabolic acidosis (HAGMA) with pH of 7.23, bicarbonate of 13 mmol/L, anion gap of 38 mmol/L, and lactic acid of 2.2 mmol/L. Ethanol, salicylates, acetaminophen, and ketones were undetectable. Further tests revealed methemoglobin level of 1%, increased serum osmolality 328 mOsm/kg, and osmolal gap 71 mOsm/kg. CT head was normal. Due to the HAGMA with hyperosmolality suggesting a toxic alcohol ingestion, he was empirically treated with fomepizole 15 mg/kg. EEG showed severe diffuse cerebral dysfunction. He soon developed progressive renal failure requiring hemodialysis. MRI of the brain without contrast revealed bilateral symmetric enlargement of the basal ganglia and thalami with T2-weighted hyperintensities, as well as T2-weighted hyperintensities involving the brainstem and scattered cortical areas. EG concentration from blood drawn on admission resulted at 1962 mg/dL confirming EG poisoning.

Conclusion: This case highlights MRI brain findings of T2-weighted hyperintensities in deep gray matter structures in EG toxicity. Current scientific literature infrequently reports any neuroradiologic findings. Clinicians should be cognizant of these neuroradiologic features and use MRI as a supportive diagnostic tool in the proper clinical context while awaiting a definitive EG level.

Session/Poster#

Presenter

A32

Ranjitha Vasa

OB/GYN Resident

Advisor(s): Dr. Ozgul Muneyyirci-Delale, OB/GYN

Polycystic Ovarian Syndrome and Obstetric Morbidity

Polycystic ovarian syndrome (PCOS) is a multisystem disorder impacting 5-20% of reproductive aged women with significant associations with infertility and adverse maternal outcomes. In this study we investigate the link between PCOS and gestational hypertensive disorders, gestational diabetes, neonatal mortality, rate of cesarean section (C/S), and preterm premature rupture of membranes (PPROM). We applied to access CDC Pregnancy Risk Assessment of Monitoring System data. We analyzed Standard Core and Phase 8 responses as well as data from Marijuana and Prescription Drug Use Survey with SPSS 28 software. Two variables assessed PCOS status in respondents: history of PCOS and PCOS during pregnancy. When history of PCOS is a risk factor, there were significantly increased odds of diabetes (OR 1.665; 95% CI 1.487 - 1.864) and hypertensive disorders (OR 1.589; 95% CI 1.430 to 1.766) during pregnancy. There were significantly higher odds of neonatal mortality (OR 1.550 95% CI 1.029 to 2.335), C/S (OR 1.489; 95% CI 1.269 - 1.747), and PPRM (OR 2.081; 95% 1.335 - 3.242). Using PCOS during pregnancy as a risk factor, there was a significantly greater odds of diabetes (OR 3.278; 95% 2.222 - 4.836) and hypertensive disorders (OR 2.935; 95% 2.003 - 4.302) during pregnancy. Association with C/S (OR 1.378; 95% 0.981 - 1.937) was not significant. Hypotheses between PCOS and preeclampsia is the deranged metabolic environment leading to altered placentation and endovascular changes, with possible DNA damage. Low-grade inflammation in PCOS increases PPRM risk. Elevated BMI is an independent risk factor for labor dystocia, leading to C/S. As progesterone levels increase in pregnancy, glucose uptake is reduced- risk of gestational diabetes increases. PCOS already increases risk for an insulin resistance state, which increases risk of neonatal mortality. PCOS patients should be counseled on these risks and more studies should be done to clarify how PCOS is related to these outcomes.

Session/Poster#

Presenter

A33

Kelly Gorman

College of Medicine Student

Advisor(s): Dr. Ozgul Muneyyirci-delale, Department of Obstetrics and Gynecology

Long-Term Medical Treatment of Endometriosis-Associated Ascites, A Case Report and Review of the Literature

Ascites is an exceedingly rare presentation of endometriosis with fewer than 200 documented cases worldwide. As endometriosis-associated ascites may mimic pelvic malignancies, especially ovarian carcinoma, it is imperative that clinicians are aware of this rare disease entity, especially in the case of a reproductive-aged patient who presents with ascites of unknown etiology. Accurate and expedient diagnosis of endometriosis-associated ascites may save a patient from unwanted and unnecessary surgical intervention and potential loss of reproductive function.

While endometriosis-associated ascites remain a rare condition, its prevalence and rate of documentation in the literature are increasing. A literature search was conducted on EMBASE using the keywords 'endometriosis' AND 'ascites' which resulted in 536 publications, of which 145 were included for analysis and yielded a total of 159 patients who presented with endometriosis-associated ascites worldwide. We collected data and identified trends in patient demographics, initial presentation, treatments and interventions, and disease course. Most (62%) patients received a combination of surgical and medical management, 21% received surgery alone, and 15% received only medical treatment. Of the patients included, 89% presented with abdominal distention, 49% had dysmenorrhea, and 31% had weight loss.

The diagnosis and treatment of extra-pelvic endometriosis and its various effects including ascites is difficult due to a paucity of published data and the spectrum of clinical presentations involved. Herein, we present two cases of endometriosis-associated ascites both effectively treated with long-term use of norethindrone acetate. Our patients have been symptom-free without recurrence of their ascites for over 13 years and 3 years, respectively, the longest documented resolution of endometriosis-associated ascites in the literature to date.

Session/Poster#

Presenter

A34

Alice Yau

College of Medicine Student

Advisor(s): Dr. Jennifer Chao, Pediatric Emergency Medicine

Current Average Body Temperatures by Pediatric Age Groups

Background: Evidence shows the average adult human body temperature has decreased by 0.03°C per decade since the 19th Century. We seek in the pediatric population to determine the current normal body temperature by age group.

Methods: In this cross-sectional study, temperature measurements by age groupings were obtained via Epic® chart review across eleven hospitals of New York City Health & Hospitals from January 2018-January 2023. Age groupings were defined by: Neonate (1-28 days), Infants (29 days-12 months), Toddlers (13 months-3 years), Children (4-10 years), and Adolescents (11-18 years). Inclusion criteria, clinic visits (<18 years) with a diagnosis of Well Child/Health Supervision Visit (ICD-10 Z00, Z76). Exclusion criteria: missing temperatures or routes of measurements and concurrent infectious diagnoses. Data were reported as percentages or medians with interquartile ranges (25%, 75%). Kruskal-Wallis test was used to compare groups with alpha set at 0.05, 2-tailed.

Results: Of 257,159 visits from 253,305 individual patients, infants (26.8%) made up the majority, followed by children (21.1%), adolescents (20.4%), toddlers (19.6%), and neonates (12.1%). Males were slightly more common than females (50.7% vs. 49.3%). Racially, most were Not Specified (47.6%), followed by African American (43.4%), Asian (4.9%), White (3.1%), and American Indian (0.95%). Neonates 98.6‰ (98.2‰, 99.0‰) were found to have significantly ($p<0.001$) higher temperatures than Infants 98.6‰ (98.1‰, 99.0‰), Toddlers 98.3‰ (97.9‰, 98.8‰), Children 98.2‰ (97.9‰, 98.6‰) and Adolescents 98.2‰ (97.9‰, 98.6‰).

Conclusions: None of the age groups had a clinically important difference in temperatures, while neonates had statistically higher temperatures than other age groups less than 18 years old.

Session/Poster#

Presenter

A35

Shuan Chen

Pediatrics Resident

Advisor(s): Dr. Paridhi Anand, Pediatrics

Do We Really Know Our Child?----A Survey on Attitude towards Social Media Use in Children and Their Parents.

Background: Social media websites and applications are among the most common engagements for children. While they offer a source of entertainment and communication, they are also associated with problems like cyberbullying and exposure to inappropriate material. Hence, it is important that parents become aware of the risks and benefits of social media. A lot was said about the effect of social media use on mental and physical health in adolescents. However, there isn't enough data on the use of social media in younger children in relation to degree and supervision of use. We aimed to study the attitudes of and perceptions towards social media use in children ages 8-12 years and their parents. Objective: To study the attitudes of and perceptions towards social media use in children ages 8-12 years and their parents at a primary care clinic in an urban inner-city hospital. Design/Methods: Questionnaires were administered to children 8-12 years and their parents. Demographic information was collected. Categorical data were analyzed using the Pearson Chi-square test, numerical data using the Mann-Whitney U test. SAS was used for statistical analysis. Results: 102 questionnaires were administered during the study period. 53% children were male, 84% were Black/African American, 96% parents reported their child has a device while 99% children reported having a device. Children were more likely to report unsupervised use $p < 0.01$. Children were more likely to report having a social media account $p < 0.01$. Children were more likely to report playing online video games $p < 0.01$. Children were more likely to report using their device past bedtime $p < 0.01$. Hours of use reported by children and parents were significantly different. 55% of parents reported "no effect" of social media on their children. Conclusion(s): Our findings demonstrate a significant difference in parents' perception of social media usage and usage reported by their children in relation to duration and supervision.

Session/Poster#

A36

Presenter

Priscila Villalba-Davila
Pediatrics Resident

Advisor(s): Dr. Thomas Wallach, Pediatric Gastroenterology

Relationship between fecal calprotectin and H. pylori infection in children

Rationale: Fecal calprotectin (FC) is a non-invasive inflammatory marker used in the diagnosis and follow-up of inflammatory bowel diseases (IBD). It is unclear as to the potential of other chronic diseases to cause FC elevation. One possible contributor could be H. pylori infection, which can drive a neutrophilic response leading to elevated FC. Some international studies have suggested a linkage, but there is no data in the United States. In this study we sought to assess for any association between FC levels and H. pylori infection in children.

Methods: A single-center retrospective study was conducted in patients who underwent esophagogastroduodenoscopy (EGD) between Jan 2017 and Oct 2022. Patients aged 6-18 years old who had a FC level within 6 months prior to the EGD and who were tested for H. Pylori were included. Patients with known IBD, celiac disease, and other intestinal conditions were excluded. Categorical data were analyzed using chi-square tests. Student's t-test was performed for normally distributed data, and Mann-Whitney U test for non-normally distributed data.

Results: 46 patients were captured. 16 (34.8%) patients tested positive for H. pylori and 30 (65.2%) tested negative. There were no statistically significant differences between the two groups with regards to age, sex, race, or BMI. The main initial complaint was abdominal pain (80.4%) followed by weight loss/poor weight gain (45.7%). Mean FC level was significantly elevated in patients with H. pylori infection (95.1-80.2) when compared to patients without the infection (56.3-40.6) ($p=0.049$). The rest of the laboratory findings were not statistically significant between both groups.

Conclusions: FC was significantly increased in pediatric patients (>5 years old) with H. pylori infection. In patients with mildly elevated FC, H. pylori infection may be considered an adequate explanation if no other markers concerning for IBD are present. A larger study is indicated for conclusive support.

Session/Poster#

Presenter

A37

Ahmed Soliman

Pediatrics Resident

Advisor(s): Dr. Thomas Wallach, Pediatrics

Identification of Persistent Sars-Ncov-2 Viral Presence in the Intestines of Multiple Pediatric Patients Suggests Possible Common Etiology of GI Long Covid.

Long Covid,(LC) defined as the continuation of symptoms 3 months after the initial infection. Variations of LC may impact over 80% of patients, with unclear pathogenesis, although many speculate that persistent viral presence in end-organ tissue may drive local changes. We have sought to expand that finding by assessing patients who have undergone endoscopic evaluation for presence of SARS-nCoV-2 nucleocapsid to expand our understanding of the clinical effects of persistent infection.

We identified 7 patients with onset of symptoms in the post COVID window, who had undergone EGD/colonoscopy without histopathological diagnosis. New slides were cut, sent for staining at Histowiz inc (Brooklyn, NY), with rabbit monoclonal SARS-CoV-2 nucleocapsid antibody. Resulting slides underwent blinded pathology review to identify positives identifying 5 female patients ages 11-16 to date.

Patients presented with different symptoms including chronic abdominal pain, nausea, vomiting, loss of appetite, tenesmus, hematochezia and weight loss. Red flag symptoms such as nighttime awakening with pain, weight loss, and elevated inflammatory markers or calprotectin were evident with some. Of the 5 patients identified, 2 had a known history of confirmed COVID infection. Endoscopic findings in the intestine were normal with the exception of edema noted in the cecum of two patients. Mucosal biopsies were also positive for notable lymphoid aggregates in the Colon and in the Terminal Ileum.

Overall Symptoms improved overtime with only measures targeted at IBS. Therefore, we identified a tendency for persistent infection to occur, potentially explaining at least a subset of persistent IBS-like symptoms associated with GI LC.

Our results and relatively frequent positivity of this IHC assay suggest that persistent viral activity may play a role in gastrointestinal long Covid. Initial clinical series suggests course similar to other post-viral syndromes, with clinical resolution over time.

Session/Poster#

Presenter

A38

Kurt Moskovitz

College of Medicine Student

Advisor(s): Dr. Kevin Tehrani, SUNY Downstate Department of Plastic and Reconstructive Surgery

Comparative Outcomes Of The Transareolar Approach: Systematic Review And Case Series

Purpose: Breast implant exchange is a common procedure that can be performed utilizing several techniques. This systematic review and case series investigates the outcomes of patients who underwent transareolar breast implant exchange. **Methods:** A systematic review was conducted using PRISMA guidelines. Eight articles comprising 1,194 patients were identified and reviewed. These patients had an average implant size of 256cc with placement in either the subfascial or submuscular planes. Seven patients from a single surgeon's office who underwent breast implant exchange with linear transareolar approach were identified for comparison. Patients from the clinic had an average implant size of 255cc with placement in the submuscular plane. All patients had an areolar diameter of greater than 2cm, smaller than the patients identified in the systematic review with an areolar diameter of greater than 2.5cm. **Results:** Clinic patients reported 100% satisfaction with their scars, maintenance of nipple-areolar-complex sensation, and preserved vascularity at an average follow-up of 12 months, which was comparable to that found in the literature (95%, 100%, 100%, respectively). One patient (14%) in our cohort had Baker III/IV capsular contracture and one (14%) experienced hypertrophic scarring, above the incidence found in literature (1%, 3%, respectively). The hypertrophic scarring resolved with triamcinolone injection. While percentage of capsular contracture and hypertrophic scarring differed greatly, it is likely due to small sample size. There were no reports of implant failure, hematoma, seroma, infection, malposition, or reoperations in our cohort, comparable to literature (0-1%). **Conclusion:** The transareolar approach conceals scars in a naturally striated, irregular, and pigmented tissue. This technique is safe and provides aesthetically beneficial outcomes through minimizing scar formation while preserving sensation and vascularity of the nipple-areolar-complex.

Session/Poster#

Presenter

A39

Benjamin de Leon

College of Medicine Student

Advisor(s): Dr. Wellman Cheung, Urology

Administration of a Voiding Diary and Validated Lower Urinary Tract Symptom Questionnaire to Pregnant Patients Throughout all Three Trimesters of Pregnancy and the Postpartum Period

It has been widely observed that throughout the course of pregnancy there is an increase in the prevalence of lower urinary tract symptoms (LUTS). These include urinary frequency, urgency, incontinence, overactivity, straining, genital pain, and discomfort. One of the more common symptoms, stress incontinence, can range from asymptomatic to majorly affecting quality of life. Because of the ubiquitous nature of these conditions in “normal” pregnancies, various questionnaires have been created and validated to accurately diagnose and stratify the severity of these symptoms. In spite of these tools, many studies suggest that more data should be obtained due to the relative dearth of information in this common demographic. In this study a validated questionnaire, Lower Urinary Tract Symptom Score 14, LUTSS14, three additional stress incontinence questions, and a voiding diary were used to assess the severity of symptoms throughout the three trimesters of pregnancy and postpartum period in a standard manner. The voiding diary was used to contextualize scores received on the questionnaire with the volume of urine produced, the number of voids, as well as other symptoms relating to urination that a participant experienced. Preliminary data shows that there are 10 first, 16 second, and 38 third trimester participants recruited. Of these participants, the median questionnaire score out of a possible 66 was 35, 34.5, and 35 for the first, second, and third trimester respectively, with frequency of urgency symptoms coinciding with incontinence ranging from never coinciding to always coinciding. These data are similar to those reported previously in questionnaire-based studies by Dutch and Turkish investigators in which the incidence of LUTS increased as pregnancy progressed (illustrated in this case by the amount of eligible participants) with no statistical difference between the trimesters. However, a larger sample size is necessary in order to further draw conclusions.

Session/Poster#

Presenter

A40

Joseph Boroda

College of Medicine Student

Advisor(s): Dr. Jeffrey Weiss, Urology

Phenotyping Nocturia in Hypertensives According to 24-hour Urine Composition

Hypertension is among the most clinically significant comorbidities correlated with nocturia. The mechanism by which elevated BP leads to nocturnal polyuria is believed to be multifactorial, including blunting of the normal nocturnal dip in BP which can drive pressure-natriuresis, and change in the circadian release of natriuretic peptides and anti-diuretic peptide. The aim of this study is to assess the impact of non-dipping orthostatic BP in hypertensives on 24-hour urine production.

Participants with a diagnosis of essential HTN had in-office orthostatic BP recordings and completed 24-hour urine collection and voiding diaries. Urine was collected in 3 containers; one for the first nighttime void, a second for all subsequent nighttime voids and first morning void, and a third for all daytime voids. Participants whose systolic BP decreased with supine positioning were placed in the dipping group, and those whose systolic BP increased or was unchanged upon supine positioning were placed in the non-dipping group.

There were 12 individuals in the dipping group and 19 in the non-dipping group. The non-dipping group tended to produce greater volumes of urine both day and night and had greater 24-hour urine sodium excretion. The sodium concentration of the first nighttime void was higher in the non-dipping group (median: 102; IQR: 76-105 mEq/L) than the dipping group (median: 51; IQR: 32.5 - 65 mEq/L) ($p = .024$). The urine sodium concentration for the remainder of the night was higher in the non-dipping group (median: 92; IQR: 62 - 117 mEq/L) than the dipping group (median: 59.5; IQR: 48-77.25 mEq/L) ($p = .012$). Participants in the non-dipping group were 79% more likely to experience 2 or more nighttime voids than the dipping group (RR: 1.79; 95% CI: 1 - 3.2; $p = .052$).

In-office BP measurements that do not dip with supine positioning are associated with more frequent nighttime voiding as well as higher urine concentrations of sodium in both early and late night voids.

Session/Poster#

Presenter

A41

Jacob Bamberger

College of Medicine Student

Advisor(s): Dr. Andrew Winer, Urology

Evaluation of Artificial Intelligence Algorithm For Automated Prostate Lesion Detection and Classification on Biparametric-MRI Using African American Patient Cohort

Objective: To evaluate the accuracy and efficacy of an automated artificial intelligence algorithm in detecting prostate cancer in African American men and compare its performance to a trained radiologist.

Methods and Materials: Sixty-eight AA men who underwent prostate biopsy within nine months of MRI were retrospectively included in our study from a community hospital in Brooklyn, NY from March 2017-April 2021. The sample was split into two test cohorts. Patient age, prostate specific antigen levels, MRI, and biopsy were analyzed using the automated algorithm. The results were compared to a trained radiologist's impression. The algorithm and the radiologist performance in correctly detecting prostate cancer was determined using biopsy data as the "gold standard" classifier. Accuracy was statistically evaluated using Area Under Curve. Secondary endpoints included sensitivity, specificity, positive predictive value, negative predictive value for radiologist and algorithm performance across both testing cohorts.

Results: In test cohort 1, the algorithm and radiologist Area Under Curve was 0.591 vs. 0.648, respectively ($p=0.716$). In test cohort 2, the algorithm and radiologist Area Under Curve was 0.586 vs. 0.548, respectively ($p=0.624$). Limitations included small sample size and no lesion location analysis.

Conclusions: There was no statistical difference in the Area Under Curve between the algorithm and radiologist in either cohort, however, the overall performance for both the radiologist and the algorithm was markedly lower in African American men compared to published literature on non-African American men.

Session/Poster#

Presenter

A42

Irina Gavryutina

Pediatric Endocrinology Fellow

Advisor(s): Dr. Vivian Chin,

Endothelial Dysfunction is Associated with Adiponectin and Leptin in Adolescents with PCOS

Endothelial dysfunction (ED) was found to be prevalent in women with polycystic ovarian syndrome (PCOS) and was associated with increased leptin and decreased adiponectin levels but has not been studied in children. We performed a cross-sectional study of non-smoking adolescents aged 12-19 years old with PCOS by NIH-criteria (n=20) and controls (n=7) to study the differences in ghrelin, endothelin, anti-mullerian hormone (AMH), leptin, adiponectin and reactive-hyperemia index (RHI) a non-invasive single measure of ED using EndoPAT[®]. Between PCOS and control groups, there was no difference (mean-SD) in age (16.5-1.8 vs 17.1-2.3 years, p=0.31), BMI (35.7-9.7 vs 30.9-10.3 kg/m², p=0.15) and A1C levels (5.45-0.4 vs 5.37-0.15%, p=0.22). Total and free testosterone was higher in PCOS group (60.7-21.8 vs 34.6-12.8 ng/dl, p=0.00063; 8.51 vs 3.76, p=0.0019, respectively). PCOS group had worse (lower) RHI (1.26-0.43 vs 1.72-0.40, p=0.015, normal RHI >1.67). PCOS group had higher leptin (1085.5-116.9 vs 896.4-176 pg/ml, p=0.014) and lower adiponectin (2.02-0.19 vs 2.27-0.13 Åµg/ml, p=0.001). There were no differences in endothelin-1 (10.9-1.2 vs 34.3-3.1 pg/ml, p=0.11), ghrelin (6060.1-13057.2 vs 5495.7-5474 pg/dl, p=0.44) and AMH levels (11.86-27 vs 3.8-10.1, p=0.14). HOMA-IR or insulin resistance was not significantly different between the PCOS and control groups (2.05 vs 3.48, p=0.26). Leptin is a proinflammatory product of adipose tissue and via its receptor on the endothelium, likely promotes platelet aggregation, thrombosis and stimulation of free radical production contributing to ED. Adiponectin on the other hand, is known to reduce levels of TNF α and suppress its inflammatory effects on endothelial cells. Our adolescents with PCOS had lower RHI, higher leptin and lower adiponectin levels. These findings suggest increased risk of cardiovascular disease in adolescents which has not been previously reported in children before.

Session/Poster#

A43

Presenter

Shirley Huang

College of Medicine Student

Literature Review of Presentation of Monkeypox Virus Infection

Vulvar lesions, including the mention of vaginal and cervical ulcers, have rarely been described in literature in the setting of a Monkeypox infection. Furthermore, most cases documented primarily studied men, with little to no mention of Monkeypox presentation in female genitalia.

The PubMed database was used for a literature search on Monkeypox and genital lesions, as well as case reports of patients with Monkeypox. Searches included but were not limited to Monkeypox, vulvar lesions, genital ulcers, and sexually transmitted infections. Through a literature search, 8 case reports and a case series of 197 patients were identified. Of the 8 case reports and the case series, all 206 patients mentioned were male. The case reports from 2022 all reported unprotected sexual encounters with other men in the past thirty days. Across patients, prodromal symptoms described included fever, sore throat, lymphadenopathy, fatigue, night sweats, and anorexia. Lesions reported in the case studies were typically found within the genital and perianal regions and described as ulcerative in nature. This new outbreak of Monkeypox has yet to be thoroughly studied. There must be more research done to better understand the risk factors, presentation, methods of transmission, clinical disease progression, outcomes, and fatality rates. This can help us not only better understand the disease progression, but also help clinicians to identify, diagnose, and properly treat patients. Furthermore, there has been little literature of Monkeypox presentation in women even though there have been hundreds of cases reported in women in the US in 2022 alone. More research should be done to better understand the long term sequelae of Monkeypox and whether it may have further implications on issues such as pelvic inflammatory disorder, infertility, and cancer like with other sexually transmitted illnesses.

Session/Poster#

Presenter

A44

Jodan Pathinathan

Allergy and Immunology Resident

Assessment of Suppression of Cutaneous Allergic Responses and Pruritus by Topical Minocycline

Rationale: Minocycline has pleiotropic anti-inflammatory effects. We report preliminary results from evaluation of topical minocycline application on allergic skin responses and associated itch.

Methods: Adults with allergic rhinitis and/or asthma, (n=8, 7 women, 1 man, 55.8 yrs - 11.8) underwent baseline allergen skin prick testing (SPT)(Dermapik method) with two previously identified personal allergens, histamine, and saline controls at four test sites: bilateral upper and lower arms. Verbal itch rating scores (0:none, 1:low, 2:moderate, 3:severe) and clear adhesive tape tracings of induration were performed by a blinded researcher at: 1. baseline (20 min after SPT), 2. after randomized 30 min placement of thin layer of minocycline cream in emollient (0%, 1%, 2%, or 3%) over each site, and 3. at 60 min (30 minutes after removal of topical cream). Mean wheal diameters (mm) were determined. Student's T tests were used to analyze data.

Results: 30 min. of minocycline 2% decreased 1. histamine induced swelling (2%: 60.1 mm - 6.8 vs. 0%: 62.6 mm -6.2, p=0.02) and itch scores (2% - 1.0 - 1.07 vs. Baseline 2.25 - 0.71, P=0.002; 0% - 1.11 - 0.99 vs. Baseline 1.88 - 0.83, P=0.05). 30 min minocycline 1% and 3% also decreased itch (P=0.015, P=0.011, respectively). At 60 min. there was a decrease in allergen-induced induration with minocycline 2% (60.3 mm - 9.7) vs. minocycline 0% (65.3 mm -7.3)(P=0.014) and minocycline 3% (63.2 mm- 11.4) vs. minocycline 0% (65.3 mm -7.3)(P=0.06)

Conclusion: Topical minocycline may inhibit histamine and allergen-induced cutaneous skin responses including associated itch.

Session/Poster#

A45

Presenter

Adam Daniels

College of Medicine Student

Advisor(s): Dr. Vadim Bronshtein, Department of Pediatrics, Division of Neonatology

Management of Malignant Hyperthermia in a Five Day Old Girl: A Case Report

Background: Malignant hyperthermia (MH) is a rare genetic disorder of skeletal muscle characterized by muscle rigidity, hyperthermia, tachycardia, hypertension, and muscle breakdown after exposure to inhaled, volatile anesthetics. Left untreated, MH can progress to cardiac arrest and death. Previous literature has sparsely demonstrated cases of MH in infants as young as 8 days to 13 months. The following is the case of the youngest reported patient diagnosed with MH at 5 days old. The authors aim to discuss the safety profile for inhaled anesthetics and non-depolarizing muscle relaxants in this age group and add to existing literature describing sevoflurane as a trigger of MH in neonates.

Presentation: We present the case of a 5-day-old female, who underwent surgical repair of a type C tracheoesophageal fistula (TEF) with no family history of adverse reactions to anesthesia. She was administered sevoflurane, rocuronium, and fentanyl in the OR for pain control and sedation. The surgery was performed without complications. 1.5 hours postoperatively, she developed ventricular tachycardia to 200 beats per minute, fever to 39C, and low tidal volumes on ventilator with diffusely increased muscle rigidity. The NICU team recognized signs of MH and administered one dose of dantrolene 2.5mg/kg to successfully reverse the symptoms.

Discussion: This is the youngest documented case of symptomatic MH. Providers should be cognizant of the potential for adverse reactions, such as MH, to anesthesia even in absence of family history and irrespective of age. There are at least 6 genetic loci documented to cause some variation of MH symptoms with RYR1 being the most common mutation, suggesting that genetic workup and counseling are important parts of MH management. The threshold for clinical suspicion of MH should be low and treatment should be promptly provided, especially in young patients. In so doing, providers may be better prepared to provide emergent, life-saving treatment.

Session/Poster#

Presenter

A46

Harsha Vardhan Taluru

Internal Medicine Resident

Advisor(s): Dr. Daniel Buchnea, Kings County Hospital, Pulmonary and Critical Care Medicine

Cardiac Tamponade after Thrombectomy

Pulmonary embolism (PE) is the third leading cause of cardiovascular mortality which require prompt diagnosis and management. Percutaneous mechanical thrombectomy has a success rate of over 80% and is indicated in patients with contraindications to thrombolysis. However, there are potential complications such as risk of bleeding, atrial or ventricular perforation causing tamponade. We attempt to describe one such case of pericardial tamponade in an elderly woman who underwent thrombectomy for acute saddle PE. Description: 88 year old elderly woman with hypertension presented with acute shortness of breath and chest discomfort. Vitals significant for heart rate of 108 bpm and O₂ saturation 80% on room air and blood pressure of 95/57 mmHg. Bedside ultrasound showed a dilated right ventricle with D sign. Labs with elevated troponin of 0.135 ng/mL and pro-BNP 59256 pg/mL and EKG with S1, Q3, T3. Chest CT angiogram revealed saddle PE extending into main pulmonary arteries with right heart strain. Given patient's hemodynamic instability, advanced therapy with tPA or thrombectomy was warranted; however, tPA was deferred given patient's age. Patient was started on anticoagulation and Interventional radiology was consulted. Patient then underwent a pulmonary arteriogram with successful percutaneous thrombectomy using a FlowTreiver device. But two hours post-procedure, she complained of severe back pain and was hypotensive to 88/63mmHg with a substantial drop in hemoglobin from 13.7g/dL to 8.8g/dL. Emergent CT angiogram was performed which showed dense pericardial effusion, likely hemopericardium, with mass effect on the heart. Bedside pericardiocentesis was attempted as a temporizing maneuver before proceeding to the operating room, which was then converted to pericardial window given sustained hypotension but patient went into cardiac arrest. .

Session/Poster#

Presenter

A47

Ilham Farhat

Pediatric Resident

Advisor(s): Dr. Vivian Chin, Pediatric

Screening for Rare Genetic Diseases of Obesity in Children

Background: Genetic screening for variants in the MC4R pathway which regulates central control over hunger and in obesity syndromes is recommended for individuals with early onset severe obesity. We identified genetic variants in our cohort of pediatric patients with early onset obesity.

Design/Methods: We report results and features for 20 patients with severe obesity (BMI >97%) screened using Rhythm® Genetics Test panel, a clinically approved free buccal test targeting 79 genes and 1 chromosomal region.

Results: Thirteen (65%) of the 20 patients, including 7 females and 6 males, tested positive for genetic variants, mostly variants of uncertain significance (VUS). Six (46%) had only one genetic mutation found, while 7 (53%) had two or more. All reports were VUS due to the lack of solid functional and genetic evidence, with the exception of MC4R likely pathogenic. The most frequently noted clinical feature was autistic spectrum disorder with learning disability in 5 (38%), followed by extreme hyperphagia in 3 (23%). PCNT is the most common variant found in 4 (30%), followed by SEMA3 in 3 (23%), MC4R in 2 (15%), BBS in 2 (15%), SDCCAG8 in 2 (15%) and PLXNA1 in 2 (15%). Pathogenic PCNT is found in microcephalic osteodysplastic dwarfism type 2, short stature and insulin resistance, while MC4R variants are associated with severe early-onset obesity with hyperphagia. SDCCAG8 variants are associated with Bardet-Biedl syndrome. PLXNA1 is associated with developmental delay, and brain/eye anomaly.

Conclusion(s): Targeted genetic screening for children with early onset obesity is easy, free, and clinically important in detecting variants in early onset obesity. Since introduction into our clinical practice, we were able to identify several variants and a likely pathogenic variant in MC4R. Identification of variants can guide further therapy. A majority of patients had one or more VUS which warrants further investigation.

Session/Poster#

Presenter

A48

Myoung Choi

Pediatric Resident

Advisor(s): Dr. Sergio Golombek, Pediatrics/Neonatology

Congenital Lead Poisoning in a Preterm Infant

Introduction: Lead poisoning remains a significant public health concern despite efforts to mitigate the risk. While management guidelines are available for pediatric patients, there is a lack of treatment protocol especially among preterm infants. We report a case of congenital lead poisoning in a preterm infant born at 32+1 weeks due to maternal pica.

Case description: During a routine prenatal visit at 30 weeks of gestation, a 35 year-old, G5 P2113 mother reported regularly ingesting soil. She explained it was a traditional norm for expectant mothers in her country to eat clay, but she also developed cravings to consume soil. Her blood lead level (BLL) was elevated at 36.9 $\mu\text{g}/\text{dL}$ two weeks before delivery which did not warrant chelation. She gave birth to a female infant at 32+1 weeks of gestation via vaginal delivery with a birthweight of 1735g (58th percentile). The infant's BLL on day 1 of life was 45.5 $\mu\text{g}/\text{dL}$. Chelation with succimer was initiated at 1050 mg/m²/day in three divided doses, rounded to the nearest 100 mg/day for four days. Repeat BLL the next day was 3.0 $\mu\text{g}/\text{dL}$, and no side effects were observed. Throughout her NICU stay, she remained asymptomatic and was discharged on day 21 of life. Subsequent BLL levels on day 16, 27, 48 and 60 of life were 15.5, 27.2, 16.3 and 18.9 $\mu\text{g}/\text{dL}$ respectively, rebounding initially and then reaching a steady level.

Discussion: It is imperative to identify mothers at risk of lead poisoning early in the prenatal period to reduce congenital toxicity. To our knowledge, there have been few reported cases of lead poisoning in preterm infants which underscores the need for standardized treatment in this population. Although this infant's neonatal course was uneventful, close follow-up is necessary to assess neurodevelopmental outcomes. This case report adds to the current knowledge of lead poisoning in preterm infants and emphasizes the need for continued efforts to prevent lead exposure.

Session/Poster#

Presenter

A49

Sophie Eldred

College of Medicine Student

Advisor(s): Dr. Suzette Graham-Hill, Department of Cardiology

A Complicated Clinical Diagnosis of Hepatopulmonary Syndrome with Concomitant Hepatic Hydrothorax

Introduction: Hepatopulmonary syndrome (HPS) occurs in approximately 5-32% of patients with chronic liver disease, resulting in pulmonary vascular dilation and ventilation-perfusion mismatch. To our knowledge, there are no documented cases of HPS and hepatic hydrothorax (HH) occurring simultaneously. The following is the case of a patient diagnosed with HPS obscured by bilateral HH.

Patient Presentation: A 66-year-old African-American woman with a past medical history of untreated hepatitis C virus infection, hypertension, and diabetes mellitus underwent multiple orthopedic surgeries. Subsequent concern for sepsis resolved several days after. The patient developed subjective dyspnea with a respiratory rate of 20 and SpO₂ 94%. Concern for pulmonary embolism (PE) prompted a chest x-ray (CXR) with no significant findings. Her dyspnea persisted over several days, warranting computed tomography with angiography (CTA) that ruled out PE, but demonstrated thoracic anasarca and bilateral pleural effusions which, in tandem with a cirrhotic liver and significant ascites, was identified as hepatic hydrothorax (HH). Arterial blood gas (ABG) obtained on day 1 of subjective dyspnea, along with platypnea and orthodeoxia, significantly supported a diagnosis of HPS.

Discussion: HPS is a relatively uncommon diagnosis with insidious onset in liver disease. It occurs in Whites more than other ethnicities. HH is a potential complication in patients with chronic liver disease with lower incidence than HPS. Both pathologies occurring simultaneously is exceptionally rare. Healthcare providers should recognize a simultaneous occurrence is possible. Clinical and diagnostic distinction may be made between the two to determine the cause of a patient's dyspnea. Without properly identifying the root cause of dyspnea in a patient such as this, dire morbid or mortal outcomes may ensue.

Session/Poster#

Presenter

A50

Hua (Hannah) Yep

College of Medicine Student

Advisor(s): Dr. Rovie Mesola, Medicine

A Case Report on Monkeypox, HIV, and Neurosyphilis

Background: Monkeypox is a zoonotic virus with a presentation similar to smallpox and endemic to Central and Western Africa that had a global outbreak in May 2022, impacting non-endemic areas in numbers never seen before. Those affected in this upsurge are mainly men who have sex with men, similar to those most affected by HIV and the current syphilis epidemic. The authors seek to provide insight into the clinical course of monkeypox and associated sexually transmitted infections in the immunocompromised and discuss potential complications that may arise as they pertain to a male-to-female transgender patient. This case report is unique because literature on monkeypox in transgender patients, especially in one with concurrent HIV and syphilis infection, is limited at best.

Presentation: We present the case of a 46-year-old Caucasian transgender woman with a history of HIV and syphilis from New York City who was diagnosed with monkeypox at Downstate University Hospital. The patient presented with 2 weeks of pustular skin rash on the face, arms, and legs, fatigue, and decreased appetite. The monkeypox infection was confirmed by PCR of samples that were collected from lesions found on the face and legs. The patient's labs demonstrated positive RPR of 1:32, HIV viral load of 166,000, CD4 of 60 cells/mm³. Lumbar puncture resulted in CSR VDRL positive, suggesting neurosyphilis. The patient was administered IV penicillin treatment for neurosyphilis, BIKTARVY for HIV antiretroviral therapy, and started on oral tecovirimat. The patient's symptoms resolved in crusted-over lesions by day 7.

Conclusion: This case report illustrates the hospital course of a transgender patient with syphilis, uncontrolled HIV infection, and concurrent monkeypox infection. Current literature suggests that people with HIV/AIDS have more severe disease courses than the general population when infected with monkeypox and highlights the importance of HIV screening in all suspected cases of monkeypox.

Session/Poster#

Presenter

A51

Brian Rhee

College of Medicine Student

Advisor(s): Dr. Renata Sanders, SUNY Downstate Department of Psychiatry

Oculogyric Crisis in a Patient with Schizophrenia, DiGeorge and Fahr's Syndrome

Background: Oculogyric crisis (OGC) is characterized by involuntary spasticity of the eye. OGC can occur as a side effect of antipsychotic medications and some hereditary disorders, including DiGeorge syndrome and Fahr's syndrome. This case demonstrates the complex interrelationship between genetic predisposition and medication use in a patient who has schizophrenia, DiGeorge syndrome, and Fahr's syndrome.

Presentation: We present the case of a 25-year-old woman with a history of schizophrenia, DiGeorge syndrome, and Fahr's syndrome who was diagnosed with OGC. She presented with 2 weeks of progressive upward "eye rolling" and non-command auditory hallucinations (AH). She has experienced eye rolling since 2021 at least three times a week. Her schizophrenia medications consisted of paliperidone palmitate IM 117mg monthly, fluphenazine decanoate IM 12.5mg biweekly, and oral benztropine 1mg twice daily (BID) for extrapyramidal symptoms (EPS). She reported taking benztropine only when experiencing symptoms instead of BID, but was adherent to all other medications. The eye rolling improved after consistent administration of benztropine BID in the hospital, and she was discharged with instructions to continue taking all of her schizophrenia medications as prescribed.

Conclusion: The triad of conditions has been documented in the literature only once in the same patient. A possible explanation for stronger responses to antipsychotic medications in DiGeorge syndrome patients may be a consequence of Comt gene modification involved in degrading catecholamines. In patients with multiple risk factors for EPS, medications with a high risk profile for EPS should be avoided, particularly high potency first-generation antipsychotics. With discussing this unique patient presentation, providers are encouraged to take a thorough history, perform an adequate chart review, and develop a broad differential diagnosis when encountering similarly complex cases.

Session/Poster#

Presenter

A52

Saad Ahmed

College of Medicine Student

Advisor(s): Dr. Regina Tarkovsky, Internal Medicine

Navigating Language Barriers in a Case of Viral Induced Pancytopenia

Epstein-Barr virus and Cytomegalovirus are prevalent in 80-90% of the world's population. These viruses can manifest in a variety of ways, ranging from an asymptomatic presentation to fatigue, fever, splenomegaly, pharyngitis, and many other symptoms. A rarely reported presentation, however, is pancytopenia, due to a malfunction in bone marrow production. Our patient was a 69 year old male who was complaining of fatigue, sweats, and fever for 2 weeks, and yellowing of the skin for 1 week. His labs were significant for pancytopenia. Additional history and results revealed that our patient was positive for IgM antibodies for both EBV and CMV. He was treated supportively with fluids, antipyretics, and blood transfusions. He was discharged once his cell counts improved and monitored with outpatient follow-up. In addition, patient care was complicated by a language barrier; our patient was Fuzhounese speaking and translating services were not always available. Language barriers can hinder patient care and lead to worse outcomes. To navigate this barrier and communicate with the patient, we worked with his daughter, who was Mandarin and Fuzhounese speaking, and a Mandarin-English interpreter. We found working together with the family allowed us to ensure proper care for our patient. Ultimately, we describe an interesting case of virally induced pancytopenia with an additional layer of complexity brought on by a language barrier.

Session/Poster#

Presenter

A53

Martin Caha

Allergy and Immunology Resident

Vancomycin as a Likely Culprit of Linear IgA Bullous Dermatitis Among a Long List of Antibiotics

Case description:

We report the case of a 59-year-old female diagnosed with linear IgA bullous dermatosis. She had initially been admitted for pyelonephritis and septic shock following mastoplasty 3 days prior. She was treated with empiric meropenem, piperacillin/tazobactam, and a full course of vancomycin for staphylococcus haemolyticus bacteremia. On day 3 (HD#3), she developed a new-onset, blistering rash over the right flank and right buttocks. Skin biopsy showed intraepidermal vesicular dermatitis with necrosis, not consistent with Stevens-Johnson Syndrome. Hydrostatic bullae were suspected. Subsequently, she developed multiple complications, and was treated with additional courses of piperacillin/tazobactam, vancomycin, meropenem, doxycycline, and ceftazidime/avibactam. A new-onset blistering rash over < 10% of the total body surface area was noted on HD#46. It was most prominent on the upper extremities and neck, its distribution resembling a "string of pearls". Direct immunofluorescence microscopy (DIF) indicated linear deposits of IgA along the epidermal basal lamina. Upon the cessation of vancomycin, her skin lesions healed spontaneously. She was labeled allergic to vancomycin and discharged home on HD#53.

Discussion: The incidence of LABD is estimated at approximately one per million per year. The pathogenesis of IgA-mediated inflammation in LABD entails the activation of neutrophils at the epidermal basal membrane. The suggested mechanism is two-pronged. First, it is a direct mechanism mediated via IgA immune complexes, which induce crosslinking of Fc γ RI receptors, leading to direct activation and chemoattraction of neutrophils. Second, it is a complement-dependent mechanism, based on the C3 deposition, which can be visualized in approximately 30 % of cases. Since IgA lacks a C1q-binding site, it cannot activate the classical complement pathway. However, it can activate both the alternative and lectin pathways, which fuel the inflammation.

Session/Poster#

A54

Presenter

Jaahnavee Trivedi
Neurology Resident

A rare case of Statin induced Autoimmune Necrotising Myopathy

Inflammatory myopathies' prevalence ranges from 2.4 to 3.8 per 100,000 population. Statin induced autoimmune myopathy is a very rare condition with a prevalence of 0.9 to 1.4 cases per 100,000 people. Here, we discuss a case of one of three subtypes of Immune mediated necrotising myopathy. Our patient in late 60s with diabetes mellitus type II, hyperlipidemia presented to the ambulatory clinic with a six month history of progressively worsening proximal muscle weakness. Initial labs including ESR, CRP was normal, although CK was elevated >8000. Patient remained symptomatic after discontinuation of statins, and was later started on steroids followed by mycophenolate mofetil and azathioprine with good effect. Diagnosis was confirmed with muscle biopsy consistent with necrotizing myopathy and anti HMGCR (anti HMG CoA-reductase) antibodies. As per European Neuromuscular Center, Immune mediated necrotising myopathy has the following subtypes: anti-signal recognition particle (anti-SRP) myopathy, anti-HMGCR myopathy (statin-exposed and non statin exposed), and antibody-negative IMNM. Pathogenesis is postulated to be caused by myocyte necrosis mediated by activation of classical complement pathway by statins. Certain HLA subtypes can genetically predispose to production of autoantibodies. It can also present in patients previously treated with statins who have not taken them for several years and in those not exposed to statins at all. Anti-HMGCR antibody remains gold standard test with 99% sensitivity and 94% specificity. CK levels are found elevated invariably in all cases. Early diagnosis and treatment with immunosuppressive agents usually cause the resolution of symptoms.

Session/Poster#

Presenter

B01

Victoria Sook Keng Tung

School of Graduate Studies Student

Advisor(s): Dr. Oleg Evgrafov, Department of Cell Biology

Cellular Composition of Middle Turbinate and Development of Biological Models for Schizophrenia

Schizophrenia is a complex neurodevelopmental disease with a multifactorial etiology. To better elucidate the underlying molecular mechanisms, appropriate biological models are essential. Previously, our lab suggested using for that purpose cell cultures with neural progenitor properties developed from the olfactory neuroepithelium, where neurodevelopment is ongoing all life. Later the same cell cultures were also developed from the middle turbinate. In this study, we used single-cell transcriptomics to annotate all cell types in the middle turbinate and olfactory neuroepithelium and identified the cell type that served as an ancestor to neural progenitor cell lines. By comparing the scRNA-seq data of neural progenitor cell lines derived from patients with schizophrenia and control groups with biopsy samples from middle turbinate and olfactory neuroepithelium, we identified 14 unique cell types in the middle turbinate, including cells with neural progenitor properties. Our findings suggest that neural progenitor cell lines derived from the middle turbinate are a suitable biological model for studying schizophrenia etiology, as they closely matched one of the cell types in the embryonic brain. In summary, our study provides a novel insight into the cellular composition of the middle turbinate, which can be a useful source of biological models for schizophrenia. As such, identifying the cellular makeup of the middle turbinate, as well as the neural progenitor cell lines derived from it, will allow us to create a more relevant disease model to study schizophrenia's etiology.

Session/Poster#

B02

Presenter

Benjamin Tessler

School of Graduate Studies Student

Advisor(s): Dr. Steven Fox, Physiology and Pharmacology

Minimally-invasive electric stimulation techniques to target hippocampal theta in the urethane-anesthetized rat

Electrical brain stimulation shows significant potential for studying normal and treating abnormal brain function, owing to the electrical nature of the brain. Non-invasive techniques, while attractive due to their affordability, ease of use, and low-risk nature, have limited effectiveness and mechanisms that are not well understood. Moreover, their ability to target deep brain regions is restricted, often affecting only surface areas. A novel technique, Temporal Interference (TI), has emerged as a promising method for reaching deeper targets. In this study, we used a virtual rat head model to optimize the locations for skull-mounted electrodes to stimulate the hippocampus. The hippocampus is a deep brain region that spontaneously generates theta, which is the brain's largest amplitude rhythm, associated with learning, memory, and has possible antiepileptic effects. We employed a range of stimulation techniques and observed their effects on brain rhythms. Our results indicated that all stimulation methods, in a stimulus intensity-dependent manner, increased the likelihood of spontaneous theta, as well as the frequency and power of theta at the onset of the stimulus, which persisted after the stimulus. TI and amplitude-modulated (AM) stimulation generated phase-locked theta to the wave envelope of the stimulation. This study is significant in advancing our understanding of electrical stimulation techniques for deep brain modulation, potentially leading to safe, low-cost, non-invasive treatments or experimental tools that can target previously inaccessible brain structures.

Session/Poster#

B03

Presenter

Dativo Sanchez Gonzalez
Research Support Specialist

Advisor(s): Dr. Itsaso Garcia-Arcos, Cell Biology and Medicine

Use of extracellular substrates by alveolar type 2 pneumocytes for surfactant lipid synthesis.

Pulmonary surfactant is a lipoprotein complex essential for lung function. It reduces surface tension during inspiration and avoids alveolar collapse during expiration. It is synthesized by alveolar type 2 pneumocytes (T2C) and it is composed of phospholipids (~90%), mainly phosphatidylcholine (PC), and specific proteins. Decreased surfactant and altered composition are associated with multiple adult lung diseases. However, T2C lipid metabolism and their use of extracellular glucose and lipid for surfactant synthesis has not been studied. Our prior results showed that the low density lipoprotein receptor related 1 (LRP1) is needed for surfactant synthesis.

We hypothesized that nutritional conditions and LRP1 function impact the pathways used by T2C to synthesize surfactant. Control and LRP1 knockdown T2C-derived A549 cells were cultured in DMEM with 10% FBS and maintained at the air-liquid. Then, cells were cultured in DMEM with delipidated FBS and BSA-complexed palmitic acid (PA) at different concentrations (0-0.25 mM) for 2 hours and mRNA of surfactant synthetic enzymes was analyzed.

mRNA expression of Fatty acid synthase (FASN) and Choline kinase (CK) decreased and respectively when at least 0.05 mM PA was present. FASN and CK expression was downregulated in the absence of LRP1. mRNA expression of genes involved in cholesterol metabolism were assessed too. HMG-CoA reductase decreased only at the highest concentration of PA, while expression of HMG-CoA synthase and lipid exporters ABCA1 and ABCG1 was not affected. ABCG1 expression was compromised in LRP1 knockdown cells.

Extracellular availability of glucose and fatty acids affects mRNA expression of genes involved in surfactant lipid synthesis in T2C, suggesting metabolic pathway flexibility during different nutritional conditions. In the absence of extracellular lipid sources, glucose can be used by T2C for fatty acid synthesis. Furthermore, LRP1 expression affects the metabolic pathways used by T2C.

Session/Poster#

Presenter

B04

Huma Ahmed

Internal Medicine Fellow

Advisor(s): Dr. Patrick Geraghty, Pulmonary

Chemical Activation of Protein Phosphatase 2A Slows Progression of Alpha-1 Antitrypsin Deficiency associated Loss of Lung Function

Introduction/rationale to the study: We previously reported that the activity of protein phosphatase 2A (PP2A), a serine threonine phosphatase, is reduced in cells from alpha-1 antitrypsin (AAT) deficient patients. Our group recently demonstrated that chemical activation of PP2A reduces loss of lung function in smoke-exposed mice. Here we hypothesize that treatment with a PP2A activator would reduce loss of lung function decline in aged AAT deficient mice. Methods used: Male and female age-matched *Serpina1a-e* knockout mice daily received 5 mg/kg of an improved small molecule activator of PP2A, ATUX-792, by oral administration for 4 months. Forced oscillation and expiratory measurements were recorded in each animal using the Scireq Flexivent System. Airspace enlargements were quantified by mean linear intercept measurements. The PP2A activator utilized here, ATUX-792, is a tricyclic-sulfonamide compound with improved metabolic stability and oral bioavailability compared to the prototype PP2A activator used in our previous study.

Results of the study: Long-term ATUX-792 administration resulted in no notable toxicity in mice, with external appearance, behavior, and body weight similar to vehicle groups. As expected, aged AAT deficient animals receiving a placebo had changes in pressure volume loops, airway inflammation, lung compliance, inspiratory capacity and FEV_{0.05}/FVC compared to wild type age matched controls. Importantly, treatment with ATUX-792 reduced progression of these disease parameters in AAT deficient mice. ATUX-792 treated animals had enhanced PP2A activity within their lungs and reduced phosphorylation of MAP kinases.

Conclusions of the study: Our study indicates that the decrease in PP2A activity that occurs in AAT deficiency could be restored by PP2A activators, such as ATUX-792, to slow the rate of lung function decline.

Session/Poster#

Presenter

B05

Bakr Jundi

Internal Medicine Resident

Advisor(s): Dr. Patrick Geraghty, Department of Internal Medicine - Division of Pulmonary and Critical Care Medicine

Targeting S100A9 signaling reduces lung cell death and inflammation in alpha-1 antitrypsin deficiency

We previously reported that S100 calcium-binding protein A9 (S100A9), a damage-associated molecular pattern protein, is increased in lungs and plasma of COPD and alpha-1 antitrypsin (AAT) deficient patients, and inhibition of S100A9 signaling preserves lung function in animal models of cigarette smoke-induced COPD and AAT deficiency. We also observed higher inflammation in primary human bronchial epithelial (HBE) cells treated with S100A9. Here, we hypothesize that targeting S100A9 signaling could alter inflammation and cell fate in AAT-deficient animals and HBE cells. Male and female age-matched *Serpina1a-e* knockout mice were orally administered the S100A9 inhibitor, paquinimod, daily for 4 months. Inflammation responses were examined using Luminex assays. Lung apoptosis was quantified in the lungs of the animals by quantifying the positivity of TUNEL staining. Primary human bronchial epithelial (HBE) cells were treated with AAT protein before S100A9 stimulation. Downstream TLR4 and RAGE signaling and Annexin V staining were recorded. We previously presented that paquinimod treatment reduced airspace enlargements, and loss of lung function in the *Serpina1a-e* knockout mice. Here, we observed that inhibition of S100A9 signaling is accompanied by reduced immune cell infiltration, reduced inflammatory markers (CCL2, CXCL1, IL6, and TNF α), reduced ERK and c-RAF phosphorylation, and decreased lung cell death. HBE cells exposed to AAT had reduced TLR4 and RAGE-associated signaling following stimulation with S100A9; with AAT impacting ERK phosphorylation, IRAK1 and I κ B degradation, NF κ B activation, and inflammation (CCL2, CXCL1, IL6, and TNF α). AAT also reduced S100A9-induced apoptosis determined by Annexin V staining using flow cytometry. In conclusion, inhibition of S100A9 reduced AAT deficiency-associated inflammation and lung cell death. Therefore, S100A9 signaling plays a major role in several mechanisms associated with AAT deficiency emphysema.

Session/Poster#

Presenter

B06

Pascale Lafortune

Internal Medicine Resident

Advisor(s): Dr. Patrick Geraghty, Pulmonary

Phospholipid Transfer Protein Deficiency Enhances Lung Inflammation In Mice

Phospholipid transfer protein (PLTP) facilitates the transfer of phospholipids from triglyceride-rich lipoproteins into HDL. PLTP activity is subdued in the lungs of emphysema patients which results in elevated inflammation responses.

Alpha-1 antitrypsin (AAT) protein can protect extracellular PLTP from proteolytic degradation. Serine proteases (cathepsin G and neutrophil elastase) degrade PLTP protein in the airways.

Both AAT and PLTP reduced neutrophil degranulation and superoxide production, partially through their inhibition of the Src tyrosine kinase, Hck.

Deficiency of AAT could contribute to reduced lung PLTP activity and elevated neutrophil signaling associated with lung disease.

Here we present data on Pltp deficient mice administered LPS and AAT and look at several key inflammatory responses. Equally, we look at PLTP activity in AAT deficient mice during LPS-associated inflammation.

Session/Poster#

B07

Presenter

Meshach Pillai

Internal Medicine Resident

Advisor(s): Dr. Patrick Geraghty, Medicine

Protein Phosphatase 2A Reactivation Prevents Bleomycin-Induced Fibrosis in Mice

The activity of protein phosphatase 2A (PP2A), a serine-threonine phosphatase, is reduced in the lung fibroblasts of idiopathic pulmonary fibrosis (IPF) patients. Our group recently demonstrated that chemical activation of PP2A reduces loss of lung function in a cigarette smoke model of chronic obstructive pulmonary disease (COPD). Here we present data on a new PP2A activator, a diarylmethyl-pyran-sulfonamide compound (ATUX-1215). ATUX-1215 has improved metabolic stability and bioavailability versus earlier types used in our COPD models. The objective was to determine whether reactivation of PP2A could counter TGF β -signaling and preserve pulmonary function.

Primary human lung fibroblasts were exposed to ATUX-1215 in combination with TGF β . C57BL/6J mice were administered 5mg/kg ATUX-1215 daily following intratracheal delivery of bleomycin. 3-weeks later, forced oscillation and expiratory measurements were recorded in each animal using the Scireq Flexivent System.

PP2A activity was enhanced with ATUX-1215 in vitro and in vivo. Cells treated with ATUX-1215 had reduced phosphorylation of ERK and JNK; kinases that are sensitive to PP2A activity. Pre-treatment of fibroblasts with ATUX-1215 reduced TGF β -induced expression of ACTA2, FN1, COL1A1, and COL3A1. In vivo, ATUX-1215 prevented bleomycin-induced PV loop changes, compliance, tissue elastance, and forced vital capacity. Early ATUX-1215 treatment prevented establishment of collagen deposition with reduced trichrome positive lung tissues observed in these mice. ATUX-1215 also prevented bleomycin-induction of Acta2, Ccn2, Col1a1, and Fn1. Finally, treatment with ATUX-1215 reduced phosphorylation of ERK, p38, JNK, and Akt in bleomycin treated animals.

Our study indicates that the decrease in PP2A activity, which occurs in fibroblasts from the lungs of IPF subjects, could be restored with ATUX-1215 administration. Restoration of lung PP2A activity represents a feasible therapeutic approach to counter fibrotic diseases.

Session/Poster#

B08

Presenter

Matthew Rubin

Researcher at SUNY Downstate

Advisor(s): Dr. Sabina Hrabetova, Cell Biology

Extracellular Diffusion of Dextran Macromolecule is Slower in Somatosensory Cortex than Visual Cortex in Healthy Mouse Brain

The brain's extracellular space (ECS) is a fluid microenvironment in which molecules are constantly diffusing. In this environment, cells release metabolic waste products routinely, which need to be cleared away to maintain the health of the tissue. One such waste product is an amino acid peptide called amyloid beta ($A\beta$) - the main component of amyloid plaques found in the brains of people with Alzheimer's disease. $A\beta$ builds up over time, and improper diffusional clearance can exacerbate this buildup. Interestingly, differences were found in the density of these plaques in somatosensory and visual cortices in an Alzheimer's mouse model (Beker et al, 2012). Our hypothesis is that these differences in plaque density could be explained by differences in the diffusion rates in these cortical regions. Until this point, diffusion rate differences have not been studied systematically in the different regions of the neocortex. This preliminary study investigates the differences in diffusion rates of an inert fluorescently tagged 3 kDa dextran (dex3, with size similar to $A\beta$ monomer) in the ECS between the somatosensory and visual cortices of a healthy tissue. Using Integrative Optical Imaging technique, dex3 was injected deep in the mouse slices, and its diffusion was recorded by taking fluorescence images over time. The diffusion data was then fitted with a diffusion equation to quantify the rate of diffusion. The study showed that dex3 diffuses significantly slower, by about 20%, in the somatosensory cortex than in the visual cortex. This result supports our hypothesis, and could explain the differences seen in the $A\beta$ plaque density in the two regions. Thus, this study has opened doors to understanding and solving medical disorders related to the clearance of waste molecules, such as Alzheimer's disease.

Session/Poster#

B09

Presenter

Sailee Chavan

School of Graduate Studies Student

Advisor(s): Mr. Chongmin Huan, Molecular and Cellular Biology

Effects of Hydroxychloroquine on B cell tolerance in the germinal center

Rationale: Systemic lupus erythematosus is an autoimmune disease mediated by antinuclear antibodies.

Hydroxychloroquine (HCQ) has been used for nearly 60 years as the first-line lupus treatment. HCQ prevents flares by suppressing lupus autoimmunity but sparing normal immune functions. However, HCQ's mechanism remains unclear. We hypothesize that HCQ enhances the protective B cell tolerance regulated by sphingomyelin synthase 2 (SMS2) in the germinal center (GC). We reported that SMS2 prevents lupus in mice by activating pro-apoptotic activity of PKC δ in autoreactive GC B cells. An antitumor drug 2OHOA can alleviate lupus pathogenesis in NZBWF1 mice, a preclinical lupus model, by activating the SMS2/PKC δ pathway. As HCQ has been reported to increase SM synthesis, it is reasonable to test whether HCQ works via activating SMS2/PKC δ tolerance pathway in GC B cells.

Methods: Proteinuria and serum anti-dsDNA IgGs in mice were assessed by Bradford Assay and ELISA respectively.

NZBWF1 mice received HCQ (16mg/kg/day) or 2OHOA (400mg/kg/day) by oral gavage for 4 weeks when their serum anti-dsDNA IgG level reached 3ug/ml. Control mice were treated with an empty vehicle. Splenocytes were isolated for flow cytometry and mass spectrometer analysis.

Results: 2OHOA and HCQ treatments both reduced GC B cells and similarly changed GC B cells' lipidomic profile.

Although HCQ treatment can reduce proteinurea, serum anti-dsDNA IgG levels was not significantly reduced. Thus, HCQ seems capable of activating SMS2-regulated tolerance in GC B cells. This conclusion, however, needs to be confirmed by further studies.

Significance: The build-up of HCQ in the body causes adverse effects, forcing patients to discontinue the drug, resulting in flares. Understanding the mechanism of HCQ will help develop a new strategy to inhibit lupus autoimmunity with reduced HCQ usage. Therefore, this project has the potential to reduce the disease burden and disparities associated with lupus.

Session/Poster#

Presenter

B10

Jessica Mineroff

College of Medicine Student

Advisor(s): Dr. Jared Jagdeo, Department of Dermatology

Small Molecule Inhibitors of Human Dermal Fibroblast Proliferation

Fibrosis and scarring are conditions that can significantly impact patients' quality of life. Many etiologies for these conditions disproportionately affect women and persons of color. These conditions arise from over-proliferation of human dermal fibroblasts (HDFs). There is no cure for these conditions and current treatments, including steroids, often produce unwanted side effects. Our current research investigates the impact of drug inhibitors at various doses on HDFs to elucidate potentially new treatments for skin fibrosis. Previous work in our lab showed that LED red light phototherapy inhibited HDF and collagen production. Subsequent whole genomic transcriptomic gene analysis revealed genes and pathways that were involved in the matrix metalloproteinases and extracellular matrix remodeling that were targeted with treatment. Bioinformatic analysis also revealed existing drug inhibitors that were found to have similar perturbations in gene transcription in HDFs.

Various HDF cell lines (CRL-2617 and AG-13145) are seeded at 5,000 cells per well in 24-well plates. After a 24-hour incubation, cells are treated with drug inhibitors at doses ranging from 1 μ M - 200 μ M for 6 hours. For each drug, there is also a control with DMSO of the same concentration. After an additional 48-hour incubation, cells are fixed with formaldehyde, stained with crystal violet, eluted with acetic acid, and loaded into a 96-well microplate for spectrophotometric analysis at wavelength of 595 nm. The drug inhibitor for each dose is compared to control to determine if there are statistically significant differences in fibroblast proliferation. The goal is to identify drug inhibitors that may lead to the development of new therapeutic modalities for skin fibrosis by impacting fibroblast proliferation. The team initially started with 10 potential inhibitors and has identified 4 potential drugs with significant results, including ML-210, SCH-79797, IMD-0354, and CPG-71683.

Session/Poster#

Presenter

B11

Quiana Jones

School of Graduate Studies Student

Advisor(s): Dr. Xian Cheng Jiang, Cell Biology

Structural investigation of sphingomyelin synthase related protein via catalytic domain engineering

Sphingomyelin (SM), one important lipid on the cell membrane, is synthesized by SM synthases (SMS). The SMS family has three members: SMS1, SMS2, and SMS synthase-related protein (SMSr). Although all three enzymes share four identically conserved regions (D1-D4) with a catalytic domain (Histidine-Histidine-Aspartate) in D3 and D4, SMS1 and SMS2 but not SMSr have SM synthase activity. Thus, there must be certain amino acids surrounding the catalytic domain or within the D1-D4 regions that determine the specificity of the three enzymes. The aim of my work has been to use site-directed mutagenesis to alter amino acids within the SMSr sequence to match those of the SMS1, resulting in an SMSr-mutant isoform with the ability to synthesize SM. Thus far, I have discovered two amino acids within the D3 region that resulted in the partial ability of the SMSr-mutant to produce SM. I have also identified other amino acids within D2-D4 which could be important determinants in enzyme specificity. This work gives clarity into the specific aspects of the enzymes needed to produce SM, which are involved in many metabolic diseases.

Session/Poster#

Presenter

B12

Elana Cohen

College of Medicine Student

Advisor(s): Dr. Richard Kollmar, Cell Biology, Otolaryngology

Controlling Vibrissae Movement with Electrical Stimulation in a Rat Model of Facial Nerve Reanimation

Unilateral facial paralysis due to CN VII damage interferes with social interactions, affecting patients' emotional and physical health. Purely surgical approaches suffer from variable and unpredictable success. Our current research uses vibrissae (whisker) movements in rats, controlled by CN VII, as an animal model for facial movements in humans. Specifically, we sought to test whether appropriate combinations of electrical stimulus parameters in the rat's exposed facial nerve could produce predictably different whisking responses.

After rats were anesthetized with urethane, the buccal branch of their right facial nerve was exposed and pierced with the steel needles of a bipolar electrode. Amplitudes and durations of constant-current pulses were varied with an isolated pulse stimulator, while videos of whisker movements were recorded at 240 fps. Whisker movements were scored visually post-acquisition to denote patterns graded on amplitude and number of whisks per single pulse.

We observed that pulses <1 ms and <1 mA did not elicit whisking. Pulses immediately above these thresholds elicited a single vibrissae movement. Pulse durations >10 ms, resulting in short trains of nerve action potentials, elicited multiple vibrissae movements regardless of pulse amplitude. Longer durations increased the number of whisks per pulse, while greater amplitudes produced greater movements. The responses were reproducible and did not fatigue.

Our results demonstrate that even with whole-nerve stimulation, different whisking patterns can be elicited by systematically varying pulse amplitude and duration. Our animal model suggests that controlled facial reanimation to overcome unilateral facial paralysis in humans might be achievable by appropriately parameterized electrical stimulation of a regenerated CN VII.

Session/Poster#

B13

Presenter

Frederick Okoye

Urology Research Fellow

Advisor(s): Dr. Richard Kollmar, Cellular Biology

Techniques Used to Identify Vasopressin Receptors in Bat: A Potential Novel Animal Model for Nocturia

The cause of nocturia is not fully understood. Two observations together suggest an involvement of the water-regulatory hormone arginine vasopressin (AVP). First, the prevalence of nocturia in humans increases with age. Second, in rats AVP receptor (AVPR) concentrations in the kidney and bladder increase with age, suggesting that AVP levels may decrease with age. The fruit bat *Carollia perspicillata* can be kept in captivity for ~13 years and has a physiology very similar to humans, making *C. perspicillata* an attractive translational model to study aging, including nocturia. Our overall objective is to determine whether expression levels of AVPR change with age in *C. perspicillata*. Our first aim is identifying antibodies that recognize AVPR in this novel animal model.

Total protein was extracted from bat and mouse tissues, separated by size via denaturing protein gel electrophoresis and transferred to membranes by electroblotting. Membranes were incubated with commercial antibodies against human or rodent AVPR1A and AVPR2. Fluorophore-conjugated secondary antibodies were bound and then detected with a fluorescence imager.

The anti-AVPR1A antibody bound to a single band in bat brain and mouse liver at molecular masses of ~42 kDa and ~47 kDa, respectively. Mouse liver was a positive anti-AVPR1A control. Our anti-AVPR2 antibodies bound to a single band in the bat brain and testes at ~50 kDa and ~45 kDa, respectively. Doublets were seen in the mouse kidney and liver at ~43 kDa.

Our results show that commercial antibodies against human or rodent AVPR1A or AVPR2 can recognize *C. perspicillata* proteins, making this bat a tractable model for molecular studies of AVP's role in nocturia. Literature on AVPR1A shows a molecular mass of ~47 kDa, but the molecular masses reported for AVPR2 receptors range from 20-100 kDa. These values are consistent with the values we observed in the bat. Upon further confirmation, we will proceed to compare AVPR levels in young and old bats.

Session/Poster#

Presenter

B14

Alexandra Seidenstein

School of Graduate Studies Student

Advisor(s): Dr. Bradley Aouizerat, NYU Dentistry Translational Research Center

Differential gene expression changes in response to PTSD: a multi-cohort approach to understanding the biological impact of PTSD and exploration of its relationship to HIV

It is widely accepted that post-traumatic stress disorder (PTSD) causes many long-term health impacts on individuals. However, the underlying molecular and physiological mechanisms that drive these dysfunctions are not understood. Our objective is to identify genes, pathways, and networks that may serve as biomarkers of PTSD that may provide targets for intervention.

Gene expression profiling of blood samples from individuals with and without PTSD was performed. Gene expression profiling was also performed on individuals with human immunodeficiency virus (HIV) who were or were not taking antiretroviral medications.

These genes were also compared to patients with human immunodeficiency virus (HIV). These results were then compared to the results of the PTSD profiling. PTSD studies (n=734) and HIV (n=155) cohorts were analyzed. Similar genes effected between the PTSD group and HIV non-retroviral medication group include C1QB, GNL3, RPS29, and ENHO. Pathway analysis of perturbed genes in both HIV and PTSD cohorts were related to changes in gene expression related to with genetic repair, inflammation, immune regulation, and cellular function. The results highlight the complex clinical comorbidity seen in individuals with PTSD. Future investigations are required to delineate the efficacy of targeting these pathways for intervention.

Session/Poster#

Presenter

B15

Siobhan Lawless

School of Graduate Studies Student

Advisor(s): Dr. Peter Bergold, Physiology and Pharmacology

Analysis of markerless limb tracking reveals chronic and progressive motor deficits and atrophy after a single closed head injury in mice

Acute injury following brain trauma may evolve into a chronic and progressive disorder. The chronic consequences of TBI have been understudied due to the lack of robust behavioral changes that are delayed in onset and chronic or progressive. Any assessment of the chronic consequences of TBI must distinguish changes that arise due to age vs from injury. Motor deficits were assessed on open field, beam walk, simple-complex wheel in C57BL/6 mice that received a single closed head injury (CHI) and analyzed 7days post injury (DPI), 14DPI or 180DPI. T2 MRI assessed atrophy. Atrophy occurs subacutely in the injured corpus callosum (CC), progressing into the injured internal capsule, substantia nigra, contralesional CC, and caudate/putamen. In open field center, CHI180 mice have a turn bias not present 7DPI. On beam walk 180DPI, both groups more slowly traverse 2cm and 1cm beams than 7DPI. Foot-faults show no effect of age or injury. On simple wheel, injury affects speed at 14DPI with no effect on distance travelled. Motor behavior was then assessed using DeeplabcutTM markerless tracking. Custom Python scripts were developed to compute beam walk absition (foot fault severity) on beam walk; and to measure step frequency and quadrupedal limb coordination in simple-complex wheel. On 2cm beam, age increased absition in CHI and sham mice. On 1cm beam both forelimbs and the left hindlimb of CHI180 mice have larger absition than 7DPI or sham180 mice. On simple wheel, CHI180 mice developed a compensatory running strategy by increasing step frequency variability to reach sham-level quadrupedal limb coordination improving running speed compared to 14DPI. On complex wheel, CHI180 mice do not use this compensation resulting in impaired limb coordination. These data suggest a single impact produces chronic and progressive motor deficits and motor related atrophy in CHI180 mice. Quantitative motor analysis using DeepLabCutTM tracking reveals deficits not seen using standard outcomes.

Session/Poster#

Presenter

B16

James Chen

Physiology/Pharmacology Fellow

Advisor(s): Dr. Salvador Dura-Bernal, Physiology/Pharmacology

Bridging the In Silico-Clinical Gap: co-simulation of biophysical circuit and whole-brain network models.

While promising in-silico models of brain activity have been published, the integration between in-silico modeling and clinical science remains sparse. A persistent dilemma is that clinical data tends to observe the activity and structure of the complete brain, rather than isolated slices of individual structures. For instance, we recently developed biophysically-detailed models of auditory, motor and somatosensory cortical circuits in NetPyNE (a multiscale brain circuit modeling tool) which can reproduce local phenomena with accurate detail. However, these in-silico reproductions of single sub-millimeter brain structures necessitate detailed neuronal properties plus connectomic and synaptic definitions. These computationally expensive models are necessary to understand molecular interactions but represent a small fraction of total brain activity. This complexity cannot feasibly scale to whole brain representations. Because of this, many clinical tools and data signals (e.g. EEG, MRI) cannot be easily correlated to in-silico models. The Virtual Brain (TVB) is a popular reference tool for simulating macroscale whole-brain network models derived from multimodal MRI and EEG data. Currently, TVB parcellates simulations of cortical columns and subcortical nuclei to more detailed simulation tools, which are then integrated as mean-field activity to mesoscopic and macroscopic interactions -- bridging the gap from current detailed in-silico models to clinically observed signal data. We developed a new co-simulation interface between NetPyNE/NEURON and TVB which will allow researchers to link molecular chemical signaling to whole-brain network dynamics for the first time. This will enable scientists to study the effect that occurrences at the molecular scale - for example, drug interactions - have on whole-brain activity, and vice versa. These complex multiscale interactions are essential to understanding and treating brain diseases such as schizophrenia and Alzheimer's.

Session/Poster#

Presenter

B17

Salvador Dura-Bernal

Physiology/Pharmacology Faculty

Advisor(s): Dr. Salvador Dura-Bernal, Physiology and Pharmacology

Multiscale Models of Motor and Somatosensory Thalamocortical Circuits to Study Brain Function and Disease

Primary motor cortex (M1) and primary somatosensory cortex (S1), together with their corresponding thalamic circuits, play a critical role in sensorimotor behavior. However, the biophysical cellular and circuit mechanisms underlying this function are not yet well understood. Understanding cortical function requires studying its components and interactions at different scales: molecular, cellular, circuit, system and behavior. Biophysically detailed modeling provides a tool to integrate, organize and interpret experimental data at multiple scales and translate isolated knowledge into an understanding of brain function. We developed detailed biophysical models of rodent M1 and S1 thalamocortical circuits, each with approximately ~15k detailed neurons and ~30M synapses. The model neuronal densities, classes, morphology, biophysics, and connectivity were derived from experimental data. The models were validated against in vivo firing rate and local field potential data under different behaviors and experimental conditions. The M1 model generated predictions about the long-range and neuromodulatory inputs underlying behavioral changes, and their multiscale effects across specific layers and cell types. The S1 model predicted how thalamocortical interactions generate different oscillatory patterns. These detailed models also provided insights into the biophysical underpinnings of different brain diseases and disorders, including Parkinson's, dystonia, schizophrenia and epilepsy. Our models integrate previously isolated experimental data at multiple scales into a unified simulation that can be progressively extended as new data become available. This provides a quantitative theoretical framework for researchers to evaluate hypotheses, make predictions and guide the design of new experiments. Unraveling the non-intuitive multiscale interactions in thalamocortical circuits can help us understand disease mechanisms and develop new treatments for brain disorders.

Session/Poster#

Presenter

B18

Scott McElroy

School of Graduate Studies Student

Advisor(s): Dr. Salvador Dura-Bernal, Physiology and Pharmacology

Investigating the role of CB1 and GABA receptors in human EEG biomarkers associated with schizophrenia using a multiscale model of auditory thalamocortical circuits

GABA receptor deficits and increased CB1 receptor availability have both been related to changes in EEG waveforms observed in Schizophrenic patients. Abnormalities in auditory cortex oscillations have been observed in pathologies that include auditory processing deficits, such as schizophrenia. We will therefore use a previously developed model of auditory (A1) thalamocortical circuits to reproduce an experimental dataset measuring the effects of CB1 and GABA on human EEG data. The A1 model simulates a cortical column with a depth of 2000 μm and 200 μm diameter, containing over 12k neurons and 30M synapses. Neuron densities, laminar locations, classes, morphology and biophysics, and connectivity at the long-range, local and dendritic scale were derived from published experimental data. Auditory stimulus-related inputs to the MGB were simulated using phenomenological models of the cochlear/auditory nerve and the inferior colliculus. The model reproduced in vivo cell type and layer-specific firing rates, and accurately simulated the corresponding local field potentials (LFPs) and electroencephalogram (EEG) signals. The experimental dataset comes from experimental collaborators at Yale and consists of human EEG recordings under different conditions, including placebo, THC (CB1 agonist), lomazenil (GABA deficit) and THC plus lomazenil. This dataset includes cognitive and behavioral measures. We will also employ PET imaging data on CB1 receptor availability (n=58) and synaptic density (n=90) in healthy individuals. We will first simulate the baseline EEG in the A1 model and validate it against the human EEG data in the control condition. We will then simulate the stimulus-specific adaptation (SSA) paradigm in the model and systematically explore the effects of CB1 and GABA alterations in order to reproduce the experimental EEG data. We will use the model to gain insights into the underlying cellular and circuit biophysical mechanisms associated with schizophrenia.

Session/Poster#

B19

Presenter

Joao Moreira

School of Graduate Studies Student

Advisor(s): Dr. Salvador Dura-Bernal, Department of Physiology and Pharmacology

Computational Model of the Ventral Posteromedial Thalamic Circuit

Studies on the thalamus have long hypothesized its role in the preprocessing of information, acting as a gateway that regulates the information relayed to the cortex. Recent experimental studies provided new insights about the thalamic connectivity and how the network changes during different perturbations (Lam et al, 2010-11; Hirai et al, 2018); and detailed reconstructions of the neuronal projections allowed us to uncover new pathways of information flow and integration between different brain regions and cell classes (Shepherd & Yamawaki, 2021). This led to many new questions and opened an avenue for computational models, which can investigate cellular and network mechanisms not accessible via experiments. Here, our goal is to test if these alternative pathways are capable of explaining the mechanism behind experimental observations that are not yet fully explained in the literature. This includes the effect of modulatory corticothalamic projections from layer 6 of the cortex (L6 CT), which have an inhibitory effect on thalamic relay cells at lower frequencies (0.1 Hz) and excitatory at higher frequencies (10 Hz) (Crandall et al, 2015), and the influence of direct cortico-thalamic feedback in the regulation of network excitability (Hirai et al, 2018). For that, we will build a biophysically detailed model of the mouse whisker-related thalamocortical circuitry, including neurons from the Ventral Posteromedial (VPM) and Reticular (TRN) nuclei of the thalamus, and L6 CT neurons of the barrel cortex. We will constrain circuit connectivity based on the latest scientific data available for these cell classes. The goal is to achieve a model that reproduces the network dynamics mentioned above and identify their key mechanisms. We expect this study will provide insights into the mechanisms involved in the regulation of thalamocortical excitability and how the interactions between L6 CT neurons and thalamus can shape the sensory information arriving at the cortex.

Session/Poster#

Presenter

B20

Anthony Fringuello

School of Graduate Studies Student

Advisor(s): Dr. Sabina Hrabetova, Cell Biology

NBCe1 Dependent Rapid Volume Pulsations of the Extracellular Space Perpetuate Seizure Activity in Post Traumatic Epilepsy

Post traumatic epilepsy (PTE) is a debilitating sequela of traumatic brain injury (TBI) resistant to standard anti-seizure medications. PTE develops after TBI-induced changes in neural circuits increase excitability and lower seizure threshold. Volumetric control of the extracellular space (ECS) is a poorly understood regulator of excitability. Shrinkage of ECS volume increases concentrations of contained neuroactive agents and enhances ephaptic interactions of active neurons. In acute, chemo-convulsant models of epilepsy, the sodium-bicarbonate cotransporter NBCe1 facilitates rapid volume pulsation (RVP) of the ECS, enhancing seizure activity. If this mechanism exists in a chronic model for PTE, it could be a novel therapeutic target.

This study utilized probe transients quantification to measure fast relative changes of ECS volume to investigate if RVPs occur after controlled cortical impact (CCI) – a chronic in-vivo model of PTE. In CCI injured rat neocortex, RVPs and epileptiform activity occurred concurrently, both spontaneously and with a low concentration chemoconvulsant (5-10 μ M 4-AP). At \approx 3 weeks after CCI, shrinkages of the ECS averaged 7% (SD - 5%, 20 slices, 12 rats). Sham injured rats showed no spontaneous epileptiform activity, and a low concentration of chemoconvulsant induced activity only in 18% of slices (2/11, 5 rats). In slices from CCI injured rats, application of the NBCe1 blocker DIDS (4,4'-Diisothiocyanato-2,2'-stilbenedisulfonic acid, 300 μ M) stopped RVPs and epileptiform discharges within 20 minutes (5 slices, 4 rats). In conclusion, this is the first study to show RVPs in a chronic model for PTE. These results reveal RVPs as a mechanism that increases hyperexcitability and hypersynchrony within neurocircuits through ECS volume shrinkage. Disabling the generation of RVPs by blocking NBCe1 may limit hyperexcitability and reduce volume transmission of neuroactive agents that promote neuronal synchrony, allowing seizure activity to resolve.

Session/Poster#

Presenter

B21

Samir Samadov

Brooklyn College BP-ENDURE

Advisor(s): Dr. Richard Kollmar, Cell Biology & Otolaryngology

Whisking in Rats as a Function of Body Temperature Measured with a Machine-Learning Approach

Whisker (vibrissae) movement in rodents is controlled by the facial nerve and easy to observe. The rat thus provides an excellent animal model for developing treatments of unilateral facial paralysis in humans. To be scalable, however, rat studies of facial-nerve regeneration after injury and repair require methods to monitor whisking repeatedly and efficiently. We explored heat as a non-invasive stimulus to elicit whisking under anesthesia and used machine learning as a high-throughput approach to measure the resulting whisker movements.

Rats were anesthetized with urethane (1.5 g/kg ip). After anesthesia, microtubes (approximately 1 cm length) were threaded onto three whiskers on each side to enhance their visibility. The rat was then warmed gently over 10 min to normal body temperature with a desk lamp while internal body temperature was recorded with a rectal thermometer. Vibrissae movements were captured on video at 240 fps. The videos were analyzed by locating the six whiskers frame-by-frame with machine-learning software (DeepLabCut). Whisker trajectories were correlated with body temperature by using custom R scripts.

Machine learning accelerated whisker detection and localization by almost two orders of magnitude over manual processing and with comparable accuracy. The mean of the maximum whisking amplitude increased almost two-fold as the rat was warmed from $\sim 32^{\circ}\text{C}$ to $\sim 38^{\circ}\text{C}$. After removing the heat source, the whisking amplitude rapidly returned to baseline levels even though the internal body temperature remained normal.

Our results demonstrate first that whisking can be stimulated non-invasively in anesthetized rats with gentle warming. Second, detailed whisking trajectories can be extracted efficiently from large amounts of high-speed video with machine-learning software. The combination of these two approaches will allow us to track functional recovery after facial-nerve injury and repair and test novel treatments for unilateral facial paralysis.

Session/Poster#

Presenter

B22

Ana Mejia-Bautista

School of Graduate Studies Student

Advisor(s): Dr. Douglas Ling, Physiology and Pharmacology

Anti-epileptogenic effects of early administration of brivaracetam in rats after severe traumatic brain injury

Posttraumatic epilepsy (PTE) can occur in up to 40% of patients who sustain a severe traumatic brain injury (TBI). Despite decades of research, there are no therapeutic interventions to prevent PTE. Moreover, in many cases of PTE, seizures cannot be controlled with standard antiseizure medications (ASMs). Early intervention with ASMs may be one strategy to prevent PTE by interdicting the posttraumatic epileptogenic cascade. Using the controlled cortical impact (CCI) injury model of severe TBI, we have assessed the efficacy of brivaracetam (BRV) to prevent PTE. BRV is an FDA approved ASM that targets the synaptic vesicle protein 2A (SV2A) and appears to exert its anti-seizure actions by modulating synaptic glutamate release. We predict that BRV can prevent or mitigate the TBI-induced epileptogenic process and consequent cortical hyperexcitation. Sprague Dawley rats (P26-30) were subjected to a severe CCI injury (2mm depth, 4m/s) in the somatosensory cortex and given a single BRV dose (21 mg/kg, i.p.) immediately after injury. Due to the low incidence of spontaneous seizure activity in rodent TBI models, chemical-challenge with a low dose of the pro-convulsant drug, 4-aminopyridine (4-AP), was used to assess seizure susceptibility as a metric for post-traumatic epileptogenesis. At 3 - 4 weeks after injury, rats were given a single dose of 4-AP (3.5mg/kg, i.p.), and then monitored for the development of stage 4/5 behavioral seizures up to 70 minutes after injection. CCI injured animals treated with BRV (CCI-BRV) demonstrated a ~50% reduction in 4-AP-induced behavioral seizures compared to un-treated CCI animals. These results suggest that early, post-injury administration of a single dose of BRV may be anti-epileptogenic by interfering with the posttraumatic epileptogenic progress and thus reduce susceptibility to PTE.

Session/Poster#

Presenter

B23

Sanya Ahmed

College of Medicine Student

Advisor(s): Dr. William Lytton, Department of Neurology, Department of Physiology and Pharmacology

Computational Models of Age-Associated Cognitive Slowing

Background: Slowing of cognitive function accompanies normal aging, and profound cognitive slowing is a feature of some types of dementia, which is a growing cause of disability. Current understanding of the mechanisms of cognitive slowing is limited.

Objective: We created multiscale computer models of a simple cognitive task - condition 1 of the Stroop test - and then studied how changes associated with aging such as neuronal loss, axonal demyelination, and signal and neuronal noise would affect function of the model.

Method: Simulations were developed using the Nengo system (Bekolay, Bergstra et al, 2014), a cognitive simulation environment designed to model cognitive tasks.

Results: Neuronal ablation had no effect on the time to registration (TTR) within an age-associated range, with breakdown in memory maintenance preceding changes in cognitive speed. The effects of ablation could be compensated for by increasing the gain of recurrent excitations, which was associated with marked slowing. Increases in the amount of noise in the input signal and axonal loss were associated with cognitive slowing.

Conclusion: Our models evaluate hypotheses about mechanisms of cognitive slowing and suggest empirical studies to test those hypotheses.

Session/Poster#

B24

Presenter

Siddhartha Mitra

School of Graduate Studies Student

Advisor(s): Dr. William Lytton, Neural and Behavioral Sciences

Simulation of dendritic plateau potentials in striatal spiny neurons

The striatum receives and integrates excitatory inputs from the cortex and thalamus and outputs inhibitory signals to globus pallidus. It also receives strong dopaminergic innervation from the substantia nigra pars compacta, degeneration of which contributes to the hypokinesia observed in Parkinson's Disease (PD). The striatal projection neurons are Spiny Projection Neurons (SPNs). Around half of these SPN's present D1 type metabotropic dopaminergic receptors (D1Rs) while the other half present D2 type receptors (D2Rs). The D1R cells are involved in the 'go' or direct pathway, promoting motor movement, the D2R cells are considered to be part of the 'no go' pathway or indirect pathway, inhibiting motor movement. In anesthetized model animals, SPN's have been observed to display a cyclic state of depolarization from a somatic resting membrane potential of a 'DOWN state' of about -85 mV to a relatively depolarized -55mV 'UP state'. Evidence indicates similar regenerative dendritic plateaus exist in dendrites. It is hypothesized that the 'UP states' and plateaus create a spatio-temporal window allowing for integration of input information. Understanding of the generative mechanisms of these states is severely limited. Determining the factors could help determine targets for the treatment of PD. We performed computer simulations of neurons using physiologically plausible multi-compartment cell models to explore the generation of plateaus in SPN dendrites using the NEURON simulation software. Our simulations showed that NMDA-generated dendritic plateau potentials could occur in dendrites. The width of the plateaus increased with distance from the soma and was dependent on the distribution of certain calcium and potassium channels. Further modeling and simulation of the SPN will help identify specific channels and potential drug targets for PD.

Session/Poster#

Presenter

B25

Subhashini Sivagnanam

School of Graduate Studies Student

Advisor(s): Dr. William Lytton, Department of Neurology, Department of Physiology and Pharmacology

Enabling integrity and metadata provenance of neuroscience research artifacts using Open Science Chain

In neuroscience, large amounts of experimental and imaging data are produced in a wide variety of formats and are utilized to develop data-driven computational models for elucidating neuronal and network functions. Investigators whose research involves sophisticated processing of large amounts of these multimodal data require techniques to ensure its integrity, especially when trying to build upon prior research work done by other scientists. This research work explores integrating neuroscience workflow software called the Neuro-Integrative Connectivity (NIC) tool that processes and analyzes large-scale neurophysiology data, such as EEG data, to generate functional brain networks in neurological disorders with Open Science Chain (OSC) cyberinfrastructure platform where the integrity and metadata provenance information of the scientific artifact is stored and managed in a consortium blockchain. The NIC tool consists of two components with the first component focused on neurophysiology data pre-processing and transformation into an ontology annotated JSON format that supports brain functional network analysis. The second component of the NIC tool supports multiple signal coupling models, including linear and non-linear regression correlation measures, using either signal frequency or amplitude values. The NIC tool records provenance metadata describing the sampling rate, signal montage, etc associated with specific brain function events. This research integrates OSC with NIC to capture provenance metadata corresponding to the components defined in the NIC framework for reproducibility. Provenance information of the data is sent to the OSC blockchain. The OSC blockchain identifier will be used during dissemination steps, including the publication of results and data sharing with collaborators. Future research includes exploring the integration of OSC with ModelDB to track integrity and metadata provenance related to the reuse of computational neuroscience models.

Session/Poster#

B26

Presenter

Mohamed ElSayed

School of Graduate Studies Student

Advisor(s): Dr. William Lytton and Mohamed Sherif, Neurology Downstate, Psychiatry at Brown University

Adaptation to Repetitive Stimuli in an Auditory Cortex Computer Model

Repetitive sensory stimuli produce reduced neuronal firing, known as adaptation. Despite reduced firing, perception is maintained. To examine possible mechanisms underlying adaptation, we used the human neocortical neurosolver (HNN), a validated computer model of primary sensory neocortical microcircuitry that replicates neocortical activity following stimuli by simulating feedforward and feedback inputs.

The HNN model consists of 200 multicompartmental pyramidal neurons (PN) and 70 inhibitory basket interneurons arranged in equal distribution in supragranular and infragranular layers (layers 2/3 and 5 respectively). We delivered four stimuli to the network with different interstimulus intervals: 50, 100, 150, 200, 300, and 400 ms. Each of the stimulus consisted of a feedforward drive arriving at the soma, followed by a feedback drive targeting the distal apical dendrites, then another drive targeting pyramidal neuronal soma, a pattern that replicates the P50, N100, and P200 event-related potentials. We also examined the role that GABA-b receptors play during adaptation.

With 50 and 100 ms interstimulus interval of repetitive stimuli, and to a lesser extent with 150 and 200 ms, we found reduced firing of layer 5 pyramidal neurons, reflecting adaptation. At an interstimulus interval of 300 ms or more, there were no changes in the firing rate of either layer 2/3 or layer 5 pyramidal neurons.

We describe a mechanism by which adaptation is associated with increased gamma oscillations arising from distinct laminar dynamics. We will next examine how interlaminar interactions and drives result in this phenomenon.

Session/Poster#

Presenter

B27

Adam Newton

Physiology/Pharmacology Fellow

Advisor(s): Dr. William Lytton, Department of Physiology and Pharmacology

Biophysically Detailed Cellular and Network Models of Right Atrial Ganglionic Plexus

The heart's rhythm is generated by the sino-atrial node (SA), which receives direct parasympathetic input from the vagus nerve along with input from the intrinsic cardiac network (ICN), known as “the little brain” of the heart. The ICN comprises neurons clustered together into ganglia of 10s to 100s cells, which further conglomerate into plexi on the surface of the heart. The Right Atrial Ganglionic Plexus (RAGP) contains around 6 to 12 thousand such neurons and is critical in the cardiac response to vagal activity.

The RAGP receives input from two brainstem nuclei, the Nucleus Ambiguus (NA) and the Dorsal Motor Nucleus of the Vagus (DMV). The NA provides a fast lane via myelinated B-fibres responsible for reflexive changes in heart rate, such as the baroreflex and chemoreflex. In contrast, the DMV provides a slow lane via unmyelinated C-fibers and influences ventricular contractility but not heart rate.

We constructed 104 unique biophysical neuron models with Hodgkin-Huxley-based ion channels using single-cell transcription data from 321 neurons. Our neuron models were validated against published electrophysiological data, demonstrating the ability to build biophysical models solely from genetic data. We classified our neuron models as having either a phasic or mixed response during simulated current-clamp experiments.

We surveyed the literature for additional data characterizing the inputs, synaptic plasticity, and connectivity constraints. We used this information with our biophysical neuron models to build a network model in NetPyNE of the RAGP. We explored the parameter space for synaptic strengths to determine a physiologically plausible range of input intensity and interconnectivity. We used this model to examine the role of RAGP in regulating the vagal control of the heart.

Session/Poster#

B28

Presenter

Dzov Singman

School of Graduate Studies Student

Advisor(s): Dr. Jacquelyn Meyers, Psychiatry

Neurocognitive and genetic influences on Eating Disorder and Substance Use Disorder comorbidity in individuals from families enriched with Substance Use Disorders.

Eating disorders (EDs), including anorexia nervosa (AN), bulimia nervosa (BN), and binge-eating disorder (BED), have the highest mortality of all psychiatric disorders, with no pharmacological treatment available. The prevalences of AN, BN, and BED differ from each other as well as by age, by gender, and by race/ethnicity. EDs are often comorbid with substance use disorders, complicating treatment and increasing morbidity and mortality. The comorbidity of EDs and SUDs suggests that there may be shared neurocognitive and genetic influences that underlie both disorders. However, no previous work has examined the influence of neurocognitive and genetic factors together in a large, diverse sample of men and women. The goal of this proposed research is to address gaps in knowledge and elucidate the neurocognitive and genetic comorbidities of EDs and SUDs, across gender, age, and race/ethnicity, utilizing data from the Collaborative Study on the Genetics of Alcoholism (COGA), a large family sample enriched for SUDs and related disorders (N= 14,747). Specifically, I will 1) examine rates of DSM-IV eating disorders (AN, BN, and BED) and rates of comorbid EDs and SUDs, and 1a) whether these rates differ by self-reported race/ethnicity, gender, or age. Next, I will 2) examine neurophysiological and neuropsychological profiles among COGA participants with EDs and comorbid SUDs, and 2a) whether these profiles differ by self-reported race, gender, and age. Last, I will 3) examine whether genetic risk factors (polygenic risk scores (PRS)) for EDs and SUDs moderate the neurocognitive profiles for those with EDs and comorbid SUDs, and 3a) whether these PRS x neurocognitive profiles differ by genetic ancestry, sex, or age. The overarching goal of this work is to increase understanding of the etiology of ED and SUD, informing prevention/intervention efforts tailored to those with co-occurring EDs and SUDs and to increase inclusion of diverse individuals in this literature.

Session/Poster#

Presenter

B29

Jeeyune (June) Jung

School of Graduate Studies Student

Advisor(s): Dr. Samuel Neymotin, Nathan Kline Institute

Self-organized and self-sustained ensemble activity patterns in simulation of mouse primary motor cortex

Cortical networks present different patterns of oscillations, synchronous activities, and various waves. The concept of self-organized signal processing in the cerebral cortex has become popular since Beggs and Plentz reported neuronal avalanches in local field potential recordings from organotypic cultures and acute slices of rat somatosensory cortex. The hypothesis behind this concept is that if neuronal avalanche activity followed inverse power law distributions, then brain activity may be set around phase transitions within self-organized signals. We explored self-organized signals in an isolated slice of our data-driven detailed mouse primary motor cortex model stimulation followed by power-law distributions in size and duration. In our simulation, a brief focal stimulation (100 ms; 0.57 nA/cell, 1.5% of the total 15 different cell type populations) in the M1 cortical model produced spontaneous population bursting activity for as long as the recording continued (10 min) step = 0.05ms) with different random wiring. Then we assessed clusters of spiking activity with distributions of avalanche activity. We placed all simulated spiking activity into 1-millisecond bins and defined an avalanche as adjacent bins filled with one or more action potentials, preceded and followed by at least one empty bin. We observed the mean time between the avalanches was 1.67ms. Interestingly, sometimes there was more than a 10ms time gap between avalanches. Most of the firing activity immediately before and after the avalanche came from IT5B/IT6 cortical cell type. We also observed four types of avalanches and the power law fits all four avalanches with an exponent of -1.52.

Session/Poster#

Presenter

B30

Jonathan Amaro-Barron

College of Medicine Student

Advisor(s): Dr. Edward Quadros, Cell Biology

Transmission of behavioral deficits in rats exposed to folate receptor alpha antibody in utero.

Objectives: 1. Investigate the behavioral deficits in rats exposed to folate receptor alpha autoantibodies (FRAb) during fetal development. 2. Investigate the heritability of this autism spectrum disorder (ASD)-like phenotype by determining whether it is transmitted to a subsequent generation.

Background: Folate deficiency is known to lead to disruptions in neurodevelopment including neural tube defects and developmental anomalies such as ASD. Folate receptor alpha is the main transporter of folate from the mother to the fetus and into the brain. A major subset of the ASD population and their family members have autoantibodies against folate receptor alpha that may cause neuroinflammation and block folate transport in the developing fetus.

Methods: Our laboratory has produced rat-specific FRAb that when injected intraperitoneally into a dam at gestation day 8, will produce a litter with ASD-like behavioral deficits. This phenotype can be prevented when the dam is given D, L-folinic acid, dexamethasone, or a combination of both at the time of FRAb exposure. We tested both the litter directly exposed to FRAb and the offspring of those with an affected phenotype using a battery of social and learning tests.

Results: We observed deficits in social communication, social interaction, learning and memory in both the first and second generations which suggests transmission of the behavioral phenotype associated with FRAb exposure.

Conclusion: The intergenerational transmission of this phenotype to animals not directly exposed to FRAb suggests that it may be mediated by epigenomic changes. We hypothesize that treatment of the directly exposed generation with folinic acid prior to mating may prevent transmission of behavioral deficits to a subsequent generation by altering the epigenome. This may be a strategy to decrease the risk of ASD in families with a history of the disorder.

Session/Poster#

Presenter

B31

Michael Tekin

School of Graduate Studies Student

Advisor(s): Dr. Sheryl Smith, Physiology and Pharmacology

Sex differences in motor learning flexibility in post-pubertal mice are related to mushroom spine density

Human studies report that females have more flexibility in motor learning than males. One factor that may impact this ability is the density of mushroom spines in layer 5 (L5) of the primary motor cortex (M1), which is intrinsic to motor learning. Our lab has shown that pruning of mushroom spines in CA1 hippocampus at puberty is necessary for optimal spatial learning flexibility post-pubertally. My current work shows that pruning of L5 M1 mushroom spines in the proximal, basilar dendrites only occurs in the female mouse, an effect prevented by knock-out of δ -containing GABA-A receptors. Thus, we tested the hypothesis that post-pubertal female mice would have better motor learning flexibility than groups with higher mushroom spine density, male wild-type (WT) and female $\delta^{-/-}$. To assess this, we performed a rotarod test: mice were first trained at constant speed (4 RPM) for 4 (5min) trials ("learning"). The next day, each group was trained at an accelerated speed (4 to 40 RPM) for 4 trials ("learning flexibility"). The latency to fall off the rotarod was assessed for each trial. A linear regression was performed on each learning curve (latency to fall/trial number) for each animal, and a one-way ANOVA used to compare groups, with a post-hoc Tukey's test. On the constant speed test there were no significant differences in the learning curve slopes (female WT = 52.3-15.4 sec/trial, N=5, female $\delta^{-/-}$ = 89.2-7.7 sec/trial, N=4, male WT = 62.2-12.4 sec/trial, N=4). ($F(2,10)=2.16$, $P=0.17$) On the accelerated speed test, the female WT learning slope was significantly higher than that of the female $\delta^{-/-}$ and male WT (female WT = 17.4-4.98 sec/trial, N=5, female $\delta^{-/-}$ = -2.58-4.59 sec/trial, N=5, male WT = -0.08-2.09 sec/trial, N=5). ($F(2,12)=7.18$, $P=0.009$). These findings suggest that a lower mushroom spine density in female adolescent mice improves motor learning flexibility and may underlie the reported sex differences in motor learning flexibility in humans.

Session/Poster#

B32

Presenter

Natalie Cipriano

College of Medicine Student

Advisor(s): Dr. Mark Stewart, Department of Physiology and Pharmacology

Contributions of baroreceptor reflex activity to the brainstem depolarization associated with respiratory arrest after airway occlusion.

Sudden Death in Epilepsy (SUDEP) is a poorly understood phenomenon that occurs most frequently in epileptic patients with generalized tonic-clonic seizures. We investigated the contributions of baroreceptor reflex activity to the brainstem depolarizing response that occurs in association with respiratory arrest after airway occlusion.

Rats were anesthetized using urethane, and a tracheal T-tube was placed. The airway was occluded for 2 minutes after respiratory arrest. Air boluses were injected into the tracheal tube for resuscitation. We performed an initial occlusion/resuscitation with recordings to establish whether the typical brainstem depolarization was evoked. Then, the glossopharyngeal and vagus nerves were cut bilaterally. The experiment was repeated, and the brainstem responses pre- and post-nerve transection were compared.

The average depolarizing response duration was longer in the pre-cut period (57.6 s) compared to the post-cut period (32.6 s; $p = 0.03$). Whereas 4/5 animals showed a decreased duration of the depolarization, pairwise comparison did not reach statistical significance ($p = 0.1$).

Our results show a shorter brainstem depolarizing response after cutting cranial nerves IX and X compared to the burst duration with intact nerves. This indicates that the baroreceptor reflex does contribute to brainstem activity seen after respiratory arrest due to airway occlusion.

Session/Poster#

Presenter

B33

Ramya Sivasubramanian

Pediatrics Resident

Advisor(s): Dr. Sule Doymaz, Pediatric Critical Care Medicine

Step-up to Pediatric Codes: A Prospective Observational Study to Assess Impact of Periodic PALS Arrhythmia Algorithm Teaching Amongst Pediatric Residents

Background: A major challenge that pediatric residents face with algorithms in American Heart Association's Pediatric Advanced Life Support (PALS) is knowledge retention due to limited exposure to actual pediatric codes. Reiterating PALS algorithms frequently is crucial for pediatric residents to perform effectively in codes. While impact of frequent mock codes on resident performance is studied widely, there remains a scarcity in literature that studies the impact of periodic PALS lectures on pediatric residents during their residency training.

Objective: To study effectiveness of periodic lectures focused on PALS arrhythmia algorithms on resident knowledge and confidence.

Methods: We introduced our intervention: forty-five-minute lectures given to eighty-eight residents every four to six weeks for a duration of eight months. We tested residents' knowledge at baseline and through eight months with tests conducted pre- and post- every lecture. Each test had sets of 10 MCQs based on the lecture content. Residents were scored on four categories: Code Team Basics, Arrhythmia Medication & Shock Dosing, Arrhythmia Recognition, Application of knowledge. Overall knowledge trend and residents' confidence levels were assessed. Our null hypothesis tested the impact of the intervention assessed by comparing knowledge in the eighth month to baseline.

Results: Residents showed significant improvement from baseline to eighth month in knowledge in Arrhythmia Medication & Shock Dosing, from 44% to 95% (p value < 0.001) and in Overall knowledge from 47% to 88% (p-value < 0.001) in post-lecture tests. Residents' confidence level on their PALS knowledge also improved from pre- to post-lecture in 3 out of 3 surveys we conducted; Scale of 1-10: Month-3: 5.7 to 7.6, Month-6: 6.2 to 6.8, Month-8: 5.3 to 6.7.

Conclusion: Periodic PALS arrhythmia algorithms teaching is highly effective in improving knowledge and confidence level amongst pediatric residents during residency training.

Session/Poster#

Presenter

B34

David Liu

School of Health Professions Student

Advisor(s): Dr. Mohammad Faysel, Health/Medical Informatics

Comparative Predictive Analysis of Type 2 Diabetes with Social Determinants of Health

This study aimed to develop and compare prediction models for identifying risk factors associated with type 2 diabetes using social determinants of health. The study utilized a cross-sectional survey, the Behavioral Risk Factor Surveillance System, and multiple classifiers to predict type 2 diabetes. The independent variables were significantly associated with the target outcome, with all social determinants of health being highly significant predictors of type 2 diabetes.

The developed models had comparable performance in terms of accuracy, specificity, negative likelihood ratios, and AUC. However, the SAS logistic regression model showed superior sensitivity and positive likelihood ratios compared to the Python predictive models. The MLP model had the highest accuracy and AUC, while the Gaussian Naïve Bayes model showed higher sensitivity and detection rates, making it better for social determinants of health screening for type 2 diabetes.

The study rejected the null hypothesis that AnyHealthcare, NoDocbcCost, Sex, Age, Education, Income, and the responder variable diabetes binary are not statistically significant and accepted the alternative hypothesis that they are. In conclusion, this study provides evidence for the effectiveness of machine learning models in predicting type 2 diabetes using social determinants of health. The findings of this study can aid in early diagnosis and intervention and reduce medical costs associated with type 2 diabetes. Further research is needed to identify potential biases in the datasets used to train these models and to develop strategies for mitigating them. The development and refinement of these models could have broader implications for the field of predictive medicine.

Session/Poster#

Presenter

B35

Samuel Gedailovich

College of Medicine Student

Advisor(s): Dr. Ishaq Ibrahim, Orthopedic Surgery

The Medial and Lateral Forearm Fascia Contribute to Overhead Elbow Extension in Displaced Olecranon Fractures: A Biomechanical Study

Intro: In nonoperative management of displaced olecranon fractures, patients are able to maintain overhead extension despite a persistent nonunion. It has been hypothesized that this is feasible due to an intact lateral cubital retinaculum. The purpose of this biomechanical study was to determine the contribution of the medial and lateral cubital retinacula to overhead extension in the setting of a displaced olecranon fracture.

Methods: Eight fresh-frozen cadaveric upper extremity specimens were used. The triceps muscle was loaded through a pulley system operated by an Instron 8874 Biaxial Servohydraulic Fatigue Testing System (Norwood, MA, USA) at a rate of 10 mm/sec to simulate overhead elbow extension. Each specimen was tested in four states: 1. Native with an olecranon intact; 2. A transverse olecranon fracture; 3. Transection of one cubital retinaculum (medial or lateral); 4. Transection of both medial and lateral cubital retinacula.

Results: Elbow extension was noted in each specimen for trials one through three. Only when both the lateral and medial fascia were transected was elbow extension not achieved. There was no significant difference in the force required to generate extension in the first three trials ($p = 0.99$). There was no significant difference in the change in maximal force required to achieve extension between the specimens with the medial side transected only compared to those with the lateral side transected only ($p = 0.07$).

Discussion: In the setting of an olecranon fracture, this biomechanical study suggests that if either the lateral or medial cubital retinaculum remains in continuity with the distal ulna, active overhead extension can be maintained. This may explain positive clinical outcomes of nonoperative management of displaced olecranon fractures in the elderly patient population. Determining the integrity of the fascial structures preoperatively may help select candidates for nonoperative treatment of displaced olecranon fractures.

Session/Poster#

B36

Presenter

Alissa Belzie

College of Medicine Student

Advisor(s): Dr. Daniel Laroche, Advanced Eyecare of New York

Combination Goniotomy Xen Gel Stent with Mitomycin C: A Case Series

Glaucoma continues to be the leading cause of irreversible blindness worldwide, profoundly impacting the quality of life of those it affects. In the United States, the prevalence rate remains highest among those of African descent and is expected to increase across all racial and ethnic groups given the changing demographics of our rapidly growing, elderly population. New initiatives and a need for exploration of additional alternatives are means by which we can contribute to advancements in this field. We hypothesized that the utilization of both Goniotomy and Xen Gel Stent techniques may improve outcomes in patients with advanced glaucoma while still reducing the complications associated with trabeculectomy procedures and glaucoma tube shunts placements. Little to no data exists on the mix-methods approach to Xen subconjunctival MIGS procedures and its efficacy in the reduction of intraocular pressure for patients with glaucoma. Therefore, the purpose of the case series is to evaluate the effectiveness of a combined Xen Gel Stent and Goniotomy technique in improving outcomes in patients with severe primary angle glaucoma. Postoperative results from this prospective, noncomparative, and interventional case series demonstrated a reduction in IOP and medication usage at 6 months in four eyes of four patients. These findings suggest that this novel approach may contribute to the implementation of a more efficient strategy to improve outcomes for this patient population. A combined Goniotomy and Xen Gel Stent implantation going forward may be clinically indicated in some patients with moderate and advanced glaucoma given it may have a higher success rate relative to the stand-alone techniques, while maintaining the reduced postoperative complications - a venerated characteristic of MIGS approaches.

Session/Poster#

Presenter

B37

Abhishek Parthiban
Research Technician

Advisor(s): Dr. Jason Lazar, Medicine

Nocturia and Cardiovascular Disease: A Survey Study of New York State Cardiologists

Purpose: Nocturia is widely considered a urological symptom, but is often a manifestation of cardiovascular (CV) conditions such as hypertension and heart failure. Awareness of cardiologists as to the importance of assessing nocturia upon routine history taking is unclear. The objective of this study is to determine the frequency in which cardiologists inquire about nocturia and their understanding of the importance nocturia as a CV symptom.

Methods: A survey questionnaire of 15 questions was created using Qualtrics software and emailed to cardiologists across NY State. 49 responses were collected anonymously: 51% were general cardiologists, 18% interventionalists, 12% electrophysiologists, and 10% were heart failure specialists. 78% were male. Respondents fell into the following age groups; <39 years (y): 43%, 40-49y: 16%, 50-59y: 12%, >60y:20%.

Results: Overall, 56% of respondents answered that CV disease patients experience nocturia “often” and 38% responded “sometimes”. The frequency in which they asked patients about nocturia was “always” in 4%, “most of time” -22%, “sometimes” -36%, “rarely” -24%, and “never” -13%. Most cardiologists (58%) reported the typical age of patients with nocturia to be 60-70 y and 11% reported 50-60 y. 73% of respondents believed diuretics are a significant cause of nocturia and 27% did not. 60% of cardiologists cited “2 urinary voids per night as significant and 20% cited “3. Most believed nocturia is a bigger problem in men (67%), 29% believed nocturia affects men and women equally and 4% answered that nocturia is more significant in women. Conditions associated with nocturia that were cited: diabetes-35%, heart failure-33%, and hypertension-18%.

Conclusions: These preliminary data suggest that cardiologists are aware that nocturia is a common symptom, but have misconceptions, and do not routinely ask patients about nocturia. There is opportunity to bridge the gap between knowledge and practice as nocturia relates to CV disease.

Session/Poster#

B38

Presenter

Lina Alhanshali

College of Medicine Student

Advisor(s): Dr. Kristen Lo Sicco, New York University School of Medicine

Understanding and Mitigating the Risks of Religious Headwear-Associated Alopecia

Many religions prescribe specific head-covering practices. Despite variations in the level of practice, there is a substantial number of people worldwide who wear headgear as part of their faith. Religious head coverings have been associated with alopecia, particularly traction alopecia. The traction alopecia can result from the way the headwear is secured on the head, the way it is styled, or other practices regarding the head covering that may lead to tension on the hair and scalp. Increased awareness of headwear-associated alopecia is essential, as there are ways to prevent alopecia while still conforming to religious practices. Herein, we examine various religious head coverings, factors related to headwear that promote alopecia, and ways to mitigate the risk of alopecia. We include visual presentations of the headwear and associated locations of alopecia. Additionally, we address culturally sensitive considerations when approaching hair loss in patients who observe religious head-covering practices. Our goal is to raise awareness regarding the risk of headwear-associated alopecia to facilitate timely diagnosis, treatment, and mitigation strategies, and promote culturally competent care.

Session/Poster#

A22

Presenter

Chellapriya Vythinathan

Pediatrics Resident

Reporting Nasal Pressure Injuries in Neonates Receiving Non-Invasive Ventilation: A Systematic Review

Introduction: Although neonates treated with various non-invasive ventilation (NIV) devices are at risk for nasal pressure injuries, a consensus on its reporting remains limited highlighting the need for a standardized nasal injury classification system for optimal communication and management.

Methods: A systematic review of literature was conducted (July 2022) to identify classification systems used for evaluating and describing nasal pressure injuries with NIV usage in neonates. Databases (PubMed, Embase, and Web of science) were queried for scientific papers published after the year 2000. Methodology from Preferred Reporting Items for Systematic Reviews and Meta Analysis (PRISMA) was employed. Primary outcome was classification system usage.

Results: 705 articles were screened, of which 83 met inclusion criteria. The most common studies were randomized clinical trials (52%), cohort studies (31%), and case series (6%). Nasal injury was often reported dichotomously (yes/no) as seen in 31 studies (37%) or using descriptive measures (mild/moderate/severe) in 8 studies (10%). The most cited (n=13 [16%]) descriptive scale was developed by Fischer et al. (2010), which was adopted from the second most cited (n=9 [11%]) descriptive scale by the National Pressure Ulcer Advisory Panel. Classifications created by authors (n=8 [10%]), adaptations from prior publications (n=7 [8%]) and the use of other scales (n=7 [8%]) made up the rest. While 21 studies reported specific nasal subsite injury, only 2 studies employed nasal endoscopy for intranasal injury assessment. Just 6 studies commented on patient follow-up.

Conclusion

There is a wide heterogeneity in nasal pressure injury reporting and evaluation that exists across institutions, and literature. Implementation of a standardized classification system will help to improve care coordination, allow for better comparison of results across studies, and advance prevention and treatment of nasal pressure injuries.

Session/Poster#

B40

Presenter

Timothy Cooke

College of Medicine Student

Advisor(s): Dr. William Aibinder, Orthopaedic Surgery & Rehabilitation Medicine

The Yield of Subsequent Radiographs During Nonoperative Treatment of Radial Head and Neck Fractures

Introduction: Isolated fractures of the radial head are usually treated nonoperatively. To our knowledge, the only study that identified a notable rate of displacement of isolated radial head fractures (33%) was by Radin and Risborough in the 1960s. Recent literature suggests that serial radiographs may not be necessary after the initial diagnostic radiograph in nondisplaced or minimally displaced radial head or neck fractures (Mason type 1) without additional injury to the affected limb. In this study, we aimed to determine (1) how often subsequent radiographs were obtained after the initial diagnosis of a non- or minimally displaced radial head/neck fracture, and (2) if subsequent radiographs changed initial management protocol. We hypothesized that subsequent radiographs would not change initial management.

Methods: We identified 767 patients with nonoperative treatment for isolated Broberg and Morrey modified Mason type 1 or 2 fractures at a large urban hospital system during the years 2019 and 2022. Patient demographics, provider characteristics, and treatment details were obtained from a hospital database. Nonparametric bivariate analysis was performed, and a p-value < 0.05 was used to indicate statistical significance.

Results: Thirty-eight percent (n=292) of patients had subsequent radiographs. Twelve of the 292 patients that had subsequent radiographs (4.1%) were offered surgery but declined. None of the patients with subsequent radiographs had an alteration of their weight-bearing status. In bivariate analysis, patients with subsequent radiographs were significantly more likely to have subsequent radiographs.

Conclusions: Radiographs after diagnosis do not alter treatment of nondisplaced or minimally displaced radial head or neck fractures (Mason type 1) without additional injury to the affected limb. The decreased utility of subsequent radiographs highlights a potential focus for quality improvement and decreased health-resource utilization.

Session/Poster#

Presenter

B41

Dario Fucich

College of Medicine Student

Advisor(s): Dr. William Aibinder, Orthopaedic Surgery & Rehabilitation Medicine

Is it Safe to Perform Reverse Shoulder Arthroplasty in Patients Under 55 Years of Age?

Introduction: Reverse Shoulder Arthroplasty (RSA) is a common surgical procedure that differs from standard shoulder replacement. In RSA, the natural positions of the ball and socket parts of the glenohumeral joint are reversed. Traditionally, RSA has been reserved for patients older than 60 years of age but recently has been performed on younger patients. It remains to be determined how younger patients will fare after RSA surgery. The objective of this study is to compare postoperative outcomes between patients under 55 years of age and over 55 years of age who have undergone RSA.

Methods: The New York Statewide Planning and Research Cooperative System was queried to identify patients who underwent RSA surgery (ICD9: 8188) with at least a 2-year follow-up. 1:1 propensity score match (PSM) controlling for sex, race, and obesity status was performed. Univariate analysis was used to compare differences in postoperative complications, revisions, reoperations, readmission, and in-hospital mortality in the under-age 55 cohort. Multivariate logistic regression analysis controlling for sex, race, and obesity status was performed to determine age group status as an independent risk factor for postoperative outcomes between the two cohorts.

Results: PSM yielded 94 total patients divided into two cohorts of 47 patients each with an average age of 73.5 years and 48.7 years. Both cohorts had similar incidences of obesity (10.6% vs 8.5%). The younger cohort experienced lower rates of overall postoperative medical complications following RSA surgery ($p=0.006$). The younger cohort was at a lower risk for experiencing overall postoperative medical complications ($OR=0.2$) following RSA surgery.

Discussion and Conclusion: Patients under the age of 55 are at a decreased risk of experiencing medical complications following RSA compared to patients older than 55. Hesitancy of performing RSA on patients younger than 55 is not supported by these findings.

Session/Poster#

Presenter

B42

Brittney Moncrieffe

College of Medicine Student

Advisor(s): Dr. Danielle Casagrande, Orthopaedic Surgery & Rehabilitation Medicine

Surgical and Medical Complications Increase Postoperatively in Patients with Prior Colectomy Undergoing Primary Shoulder Arthroplasty

A colectomy is a procedure in which part of the colon is surgically removed. The impact of a past colectomy on postoperative outcomes of patients undergoing Primary Shoulder Arthroplasty (PSA) is misunderstood. This study compared postoperative outcomes in PSA patients who did and did not undergo previous colectomy. The National Inpatient Sample was retrospectively queried from 2005 - 2012 to identify patients who underwent PSA. Incidence rates of colectomy patients were reported from 2005 - 2012. Patients were stratified into two cohorts based on prior colectomy status and 1:1 propensity score matched for age, sex, and obesity status. Univariate analysis was used to compare differences in postoperative outcomes, revision of shoulder arthroplasty, and mortality between the two cohorts. A multivariate logistic regression model controlling for age, sex, and obesity status was used to determine the independent risk of a colectomy on postoperative complications. Two cohorts of 231 colectomy patients and 231 non-colectomy patients were identified. The cohorts had similar sex (57.1% vs 61.5% female), age (72.16 vs 72.80 years) and obesity (16.5% vs 13.9%) distributions. Incidence rates of colectomy patients increased by 25.78% with an average rate of 0.95 (95%CI: 0.53- 1.38) per 1,000,000 person-years. Colectomy patients who had PSA had higher rates of overall surgical complications, medical complications, and transfusions (all, $p < 0.05$). Also, multivariate logistic regression showed colectomy to be an independent predictor of increased risk for surgical complications (OR=2.435, 95%CI=1.360-4.360, $p=0.003$), medical complications (OR=2.726, 95%CI=1.220 - 6.039, $p=0.013$), and transfusions (OR=2.710, 95%CI=1.400 - 5.246, $p=0.003$). Colectomy patients who underwent PSA experienced higher rates and increased odds of developing surgical complications, medical complications, and transfusions. This should be taken into consideration to optimize these patients prior to PSA.

Session/Poster#

Presenter

B43

Giovanni Sanchez

College of Medicine Student

Advisor(s): Dr. Danielle Casagrande, Orthopaedic Surgery & Rehabilitation Medicine

**General Anesthesia Versus Regional Anesthesia in Acromioclavicular Joint Reconstructions: An ACS NSQIP Analysis
2008-2016**

Introduction: Acromioclavicular (AC) joint injuries are very common amongst athletes, with more serious injuries requiring AC joint reconstructions. Given its prevalence amongst the athletic and general population, it becomes important to understand the demographics of patients with such injuries, as well as which anesthesia techniques lead to better postoperative outcomes.

Methods: The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database was retrospectively queried between 2008 and 2016. 5,275 patients undergoing AC joint reconstructions (CPT codes 23550 23552 23120) were isolated and grouped by the two most common anesthesia techniques used, general and regional. These groups were 1:1 propensity score matched with regards to estimated probability of morbidity, age, and gender. Patient demographics, comorbidities, and 30-day post-operative outcomes were collected and analyzed between groups who received general or regional anesthesia.

Results: Aside from differences in current smoking status between regional and general anesthesia cohorts (12.7% v 26.8%, $p = 0.035$), patient demographics and comorbidities are similar between both groups. Patients who were given regional anesthesia had shorter operative times, as compared to general anesthesia (58.13 v 81.17 min, $p < 0.001$). Rates of postoperative complications, readmissions, reoperations, and mortality are also comparable between both cohorts.

Conclusion: Despite the abundance of criticism for and against regional anesthesia use in shoulder surgeries, it was shown to have similar lengths of hospital stay and major post-operative complications when compared to general anesthesia in AC joint reconstructions. However, decreased operative times, as seen with regional anesthesia, are known to have other advantages. Therefore, such benefits should be considered by surgeons when determining which form of anesthesia to use.

Session/Poster#

Presenter

B44

Kelsha Sanchez

College of Medicine Student

Advisor(s): Dr. Danielle Casagrande, Orthopaedic Surgery & Rehabilitation Medicine

Upper Extremity Amputations Increase Postoperative Complications in Patients with End-Stage Renal Disease: A Propensity Score-Matched Analysis

Upper extremity amputations continue to be performed in patients with multiple comorbidities including end stage renal disease (ESRD). It is important to understand the risks faced by this patient population. This study aims to address the impact of ESRD on post-operative outcomes of upper extremity amputations. The American College of Surgeons National Surgical Quality Improvement Program database was queried between 2008 and 2016 for upper extremity amputations (excluding revision amputations). ESRD was defined in dialysis patients with a glomerular filtration rate (GFR) below 15 mL/min/1.73 m². Patient demographics, comorbidities, and 30-day post-operative outcomes were collected. Univariate analysis and multivariate logistic regression models were used to analyze ESRD and risk factors for postoperative complications. 1447 patients were identified that had undergone upper extremity amputation (251 with ESRD, 1196 without). Using 1:1 propensity score matching, 228 patients with and without ESRD were isolated. Among the study population 198 (13.7%) patients experienced postoperative complication, 131 (9.1%) patients were readmitted, 85 (5.9%) underwent reoperation, and there was a 3.0% mortality rate. Post-operatively, patients with ESRD had increased rates for adverse events, particularly superficial surgical site infections (p=0.030) and sepsis-related complications (p=0.037). Using multivariate logistic regression, ESRD was found to be an independent predictor of any postoperative complication (OR 1.7 [1.1-2.6]; p=0.028), superficial surgical site infections (OR 3.8 [1.0-13.8]; p=0.022), and sepsis-related complications (OR 2.0 [1.0-3.8]; p=0.040). There were no differences seen in reoperation, readmission, or mortality rates.

Session/Poster#

B45

Presenter

Karina Soorya

College of Medicine Student

Advisor(s): Dr. Danielle Casagrande, Orthopaedic Surgery & Rehabilitation Medicine

Effect of Atrial Septal Defect on Postoperative Outcomes of Primary Shoulder Arthroplasty Patients

Introduction: Atrial Septal Defect (ASD) is a congenital heart defect defined by an insufficient interatrial septum. ASD can lead to life-threatening complications, and in the literature, the impact of ASD on outcomes following Primary Shoulder Arthroplasty (PSA) is poorly understood. This study explores whether postoperative outcomes vary between PSA patients based on ASD status.

Methods: The National Inpatient Sample was queried retrospectively from 2005-2012 to identify patients who underwent PSA (ICD9: 8180, 8181 and 8188). Demographics and incidence rates of patients diagnosed with ASD were reported from 2005-2012. These patients were stratified into two cohorts based on ASD status and a 1:1 propensity score match controlling for age, sex and obesity status. Univariate analysis was used to compare rate of postoperative complications, revision of shoulder arthroplasty (ICD9: 8197) and in-hospital mortality while multivariate logistic regression analysis was used to find whether ASD serves as an independent risk factor for postoperative complications.

Results: Following propensity score matching, two cohorts of 72 ASD patients and 72 non-ASD patients were identified. Both cohorts had similar demographic profiles, including sex (66.4% vs 66.2% female), age (73.08 vs 71.97 years) and obesity (18.2% vs 19.5%). The average incidence rate of patients who had an ASD from 2005 to 2012 was 0.30 (95% CI: 0.19 - 0.41) per 1,000,000 person years. Incidence rates of ASD patients increased by 4.96% from 2005-2012. ASD patients who underwent PSA did not experience different rates of postoperative complications (all, $p>0.05$). Multivariate logistic regression suggested that patients with ASD were not at increased risk for complications following PSA (all, $p>0.05$).

Discussion and Conclusion: ASD patients undergoing PSA did not experience increased risk in postoperative complications as compared to non-ASD patients which endorses further consideration of PSA in ASD patients.

Session/Poster#

Presenter

B46

Joydeep Baidya

College of Medicine Student

Advisor(s): Dr. Qais Naziri, Orthopaedic Surgery & Rehabilitation Medicine

Risk Factors for Adverse Postoperative Outcomes following Total Hip Arthroplasty for Intertrochanteric Hip Fractures

Introduction: One modality of treating intertrochanteric hip fractures (ITHF) is total hip arthroplasty (THA). However, there is a paucity of data regarding risk factors for adverse outcomes in this context. The purpose of this study was to evaluate the 1) rate and 2) risk factors for adverse postoperative outcomes in patients undergoing THA for ITHF.

Methods: The American College of Surgeons National Surgical Quality Improvement Program database was retrospectively reviewed for patients who underwent THA for ITHF between 2008 and 2016. Primary endpoints were the rate of adverse outcomes (any complication, readmission, reoperation) and patient-related risk factors associated with adverse outcomes within 30 days following the procedure. A logistic regression model was used to determine the odds ratios (OR) of comorbid conditions on adverse outcomes. A p value of 0.05 was denoted to be the significance threshold.

Results: The database query yielded 221 patients who underwent THA for ITHF. Patients in the study group were older (mean age 73.3), mostly female (68.3%), and mostly White (86.4%). Adverse events occurred in 47.1% of patients. The rates of any complication, readmission, and reoperation were 44.8%, 7.0%, and 2.1%, respectively. A large proportion of complications was “bleeding requiring blood transfusion.” Underweight patients had a significantly lower risk of adverse outcomes (OR: 0.2 [0.1-0.8], p=0.023).

Conclusion: The rate of adverse outcomes following THA for ITHF was relatively high at 47.1%. However, a significant proportion of that was attributable to bleeding requiring blood transfusion. Many potential risk factors such as increased BMI, age, and smoking were not associated with an increased risk of adverse 30-day postoperative outcomes in this study group. Notably, underweight patients had a significantly lower risk of adverse outcomes. The findings from this study may be beneficial in the risk stratification of patients with ITHF.

Session/Poster#

Presenter

B47

Stephanie Chan

SGU School of Medicine (Medical Student)

Advisor(s): Dr. Qais Naziri, Orthopaedic Surgery & Rehabilitation Medicine

Atrial Septal Defects Increase Risk of Post-Operative Complications for Total Knee Arthroplasty

Introduction: Atrial septal defect (ASD) is a congenital heart defect defined by a hole between the atria that increases the risk of life-threatening complications after surgery. ASD patients undergoing total knee arthroplasty (TKA) are understudied therefore prompting an analysis of incidence rates and postoperative outcomes in ASD patients versus controls.

Methods: The 2005-2012 National Inpatient Sample was queried for patient demographics and incidence rates to identify patients who underwent TKA. Multivariate logistic regression analysis was used to control for age, sex and obesity status, and to compare the differences and rates of postoperative complications between cohorts.

Results: 559 ASD patients and 559 non-ASD patients were matched for sex (66.4% vs 66.2% female), age (67.70 vs 67.67 years) and obesity (18.2% vs 19.5%). TKA ASD patients had higher rates of surgical and medical complications, transfusions, acute myocardial infarctions (MI), acute renal failure (ARF), pulmonary embolisms (PE), deep vein thrombosis (DVT), and cerebrovascular events (all, $p < 0.05$). Moreover, ASD was an independent predictor of increased risk of surgical complications (OR=1.516, 95%CI=1.084 - 2.119, $p=0.015$), medical complications (OR=1.656, 95%CI=1.299 - 2.111, $p < 0.001$), gastrointestinal complications (OR=4.890, 95%CI=3.196 - 7.483, $p < 0.001$), transfusions (OR=1.524, 95%CI=1.081 - 2.147, $p=0.016$), acute MI (OR=17.502, 95%CI=2.321 - 131.967, $p < 0.001$), ARF (OR=3.090, 95%CI=1.376 - 6.938, $p=0.006$), PE (OR=9.799, 95%CI=2.272 - 42.271, $p=0.002$), DVT (OR=4.066, 95%CI=1.141 - 14.487, $p=0.031$) and cerebrovascular events (OR=18.895, 95%CI=6.840 - 52.194, $p < 0.001$).

Discussion and Conclusion: ASD patients undergoing TKA have significantly higher risk of postoperative surgical and medical complications, transfusions, acute MI, ARF, PE, DVT and cerebrovascular events. Our findings beg for precautionary considerations for patients with ASD prior to TKA to improve patient care.

Session/Poster#

B48

Presenter

Shirley Chen

College of Medicine Student

Advisor(s): Dr. Qais Naziri, Orthopaedic Surgery & Rehabilitation Medicine

The Impact of Ulcerative Colitis on Outcomes and Complications Following Total Hip Arthroplasty

Introduction: The objective of this study is to compare outcomes and complication rates between patients with and without ulcerative colitis (UC) undergoing surgery for total hip arthroplasty (THA). There is limited literature evaluating the impact of UC on long-term outcomes after THA surgery.

Methods: Using the National Inpatient Sample (NIS), patients admitted from 2005 to 2012 with a diagnosis of UC who underwent THA were retrospectively reviewed. A 1:1 propensity score-match (PSM) by age, sex, and obesity status was performed before analyzing data. Univariate analyses evaluated demographics, complications, and subsequent revision. Multivariate binary logistic regression models were also conducted to identify correlations between UC and postoperative THA outcomes.

Results: Both cohorts were nearly identical in age (UC: 64.35 years, non-UC: 64.46 years $p=0.862$), sex (UC: 52.4% female, non-UC: 53.7% female $p=0.549$), and obesity status (UC: 11.3%, non-UC: 11.2% $p=0.942$). The UC cohort, compared to the non-UC cohort, had more white patients (91.7% vs. 88.7%, $p=0.004$). Both cohorts were comparable in Deyo score ($p=0.448$), length of stay ($p = 0.230$), and total charge ($p=0.095$). The average incidence rate between 2005 and 2012 for patients with UC undergoing THA is 3.87. The incidence rate increased by 31.61% during this time period. With a 1:1 PSM, patients with UC, compared to non-UC patients, had higher rates for medical complications (OR: 1.582, $p=0.048$), but comparable surgical complication rates (OR: 1.256, $p=0.081$).

Conclusion: In the general population undergoing THA, patients with UC, compared to non-UC patients, had comparable surgical charges, length of stay, and Deyo score. UC patients had higher risk for medical complications compared to non-UC patients. These results can support management of postoperative expectations and concerns in this patient cohort.

Session/Poster#

Presenter

B49

Ginamarie Gioia

College of Medicine Student

Advisor(s): Dr. Qais Naziri, Orthopaedic Surgery & Rehabilitation Medicine

Risk Factors and Thirty-Day Postoperative Outcomes in Osteonecrosis Patients Undergoing Total Knee Arthroplasty

Introduction: There is a paucity of literature reporting risk factors for unfavorable thirty-day postoperative outcomes of patients with osteonecrosis of the knee (ON) undergoing total knee arthroplasty (TKA). This study aims to evaluate risk factors for ON patients undergoing TKA and their impact on postoperative outcomes.

Methods: A retrospective analysis of the American College of Surgeons National Surgical Improvement Program database (2008 -2016) was conducted. Patients undergoing TKA were isolated and matched into ON and non-ON cohorts using 1:1 propensity score matching (PSM) based on gender, age, and BMI. Patient demographics, preoperative risk factors, perioperative period, and overall postoperative outcomes (complications, reoperation, readmission, or in-hospital mortality) were compared between the two cohorts. Regression models were used to evaluate if risk factors were independent predictors of adverse events.

Results: 225,475 patients undergoing TKA were identified. PSM yielded 302 patients, stratified into ON and non-ON TKA cohorts (both, n=151). Chronic obstructive pulmonary disease (COPD) and bleeding disorders occurred at higher rates within the ON cohort compared to the non-ON cohort. Operative time, length of hospital stay, and overall postoperative outcomes were statistically comparable between the two cohorts (all, $p>0.05$). Regression models showed none of the researched preoperative risk factors to be predictive of postoperative outcomes (all, $p>0.05$).

Conclusion: No data was found to support the studied risk factors correlated with significantly different postoperative TKA outcomes when comparing ON patients to non-ON patients. This includes COPD and bleeding disorders, which were present at higher rates in the ON cohort. Further research is warranted to better understand an existing relationship between risk factors and negative postoperative outcomes of ON patients undergoing TKA in order to mitigate post-op complications.

Session/Poster#

B50

Presenter

Katharine Glaser

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Iron Deficiency in Primary Total Hip Arthroplasty Patients is Associated with Increased Rates of Postoperative Outcomes

Introduction: Past studies have not explored the relationship between iron deficiency anemia (IDA) and postoperative outcomes after primary total hip arthroplasty (THA) surgery. The purpose of this study was to compare postoperative outcomes within a minimum of 2 years follow up in THA patients with and without IDA.

Methods: New York State's Statewide Planning and Research Cooperative System (SPARCS) database was retrospectively analyzed from 2009 to 2013 to identify patients who underwent primary THA. Patients were stratified into two cohorts based on IDA status and 1:1 propensity score matched based on age, gender, and obesity status.

Patient demographics, hospital variables, and postoperative outcomes (surgical complications, medical complications, readmissions, revision of THA, reoperations, mortality during hospitalization) were compared between the two cohorts. A logistic regression model with covariates (age, gender, and obesity status) was performed to evaluate the association of IDA with postoperative outcomes after THA surgery.

Results: 60,168 THA patients were identified, and 984 patients remained in each cohort following propensity score matching. IDA patients were found to have longer hospital stays (5.1 days vs. 3.9 days; $p < 0.001$) and increased total surgical charges (\$52,911 vs. \$48,981; $p = 0.006$). Logistic regression showed IDA patients to have increased rates of surgical complications (wound complications, transfusions of blood) and medical complications (acute renal failure) but decreased rates of revision of THA (all, $p < 0.05$).

Conclusion: This retrospective study found that IDA is a significant predictor of increased rates of postoperative medical and surgical complications within a 2-year minimum follow-up of patients who underwent THA. These results suggest additional risks and benefits associated with THA surgery that orthopaedic surgeons may communicate to patients based on their medical conditions.

Session/Poster#

B51

Presenter

Ezekiel Kopilak

College of Medicine Student

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The Impact of Pancreatitis on Postoperative Outcomes in Total Hip Arthroplasty with Minimum Two-Year Surveillance

Introduction: The objective of this study is to identify the impact of pancreatitis, a common condition in many western populations, on 2-year postoperative outcomes following total hip arthroplasty (THA) surgery. The relationship between pancreatitis and post-operative surgical outcomes for total hip arthroplasty is poorly characterized, showing the need for more research in this field.

Methods: The New York Statewide Planning and Research Cooperative System was queried to identify patients who underwent THA surgery with at least a 2-year follow-up. Age, sex and obesity designation were controlled to evaluate differences in post-operative outcomes in a cohort diagnosed with pancreatitis. This cohort was compared to a control group of similar size that did not have pancreatitis. Demographics and rates of 2-year postoperative surgical and medical complications were compared between the 2 cohorts utilizing Chi Square, T-test and logistical regression analysis.

Results: A cohort of 54 pancreatitis patients and 54 non-pancreatitis patients were identified. Pancreatitis and non-pancreatitis patients had comparable ages (63.56 vs 634.85 years) and sex distributions (48.1% vs 57.4% female). Pancreatitis patients had a higher risk of surgical complications (2.7 [1.2- 6.0]; $p=0.013$), transfusion of blood (2.9 [1.3 - 6.5]; $p=0.008$), medical complications (5.4 [1.8 -16.1]; $p=0.003$), and acute renal failure (4.3 [1.1 - 16.9]; $p=0.035$).

Conclusion: When compared to a control cohort, pancreatitis patients who undergo THA required more blood transfusions, a surgical complication. There was also a higher incidence of acute renal failure in this same patient population. Moving forward, considering these findings will offer a better standard of care to pancreatitis patients prior to THA surgery.

Session/Poster#

B52

Presenter

Thomas Lin

College of Medicine Student

Advisor(s): Dr. Qais Naziri, Orthopaedic Surgery & Rehabilitation Medicine

Effects of Coronary Atherosclerosis on Postoperative Outcomes of Patients Undergoing Knee Arthroscopy: Analysis with Two-Year Minimum Surveillance

Introduction: Coronary atherosclerosis (CA) and knee arthroscopy (KA) are highly prevalent in the western elderly population. Long-term outcomes in patients undergoing KA are poorly characterized. This study aims to identify the impact of CA on two-year postoperative outcomes following KA surgery.

Methods: The New York Statewide Planning and Research Cooperative System (SPARCS) was queried to identify patients who underwent KA with two-year follow-up. Differences in post-operative outcomes in a cohort diagnosed with CA were compared to a control, controlling for variables such as age, sex, and obesity designation. Univariate and multivariate analyses were utilized to compare demographics and rates of postoperative outcomes, surgical and medical complications, reoperation, readmission, and in-hospital mortality between the two groups.

Results: A cohort of 150 CA and 150 non-CA patients were identified. CA and non-CA patients had comparable ages and sex distributions. From the analyses, it was revealed that CA patients when compared to non-CA patients, had experienced higher rates of medical complications such as pneumonia ($p = 0.043$), acute renal failure ($p = 0.044$), and sepsis ($p = 0.028$) in addition to higher rates of in-hospital mortality ($p = 0.050$).

Conclusions: CA patients who underwent KA surgery experienced higher rates of medical complications such as pneumonia, acute renal failure, sepsis, and higher likelihood of mortality within 2 years post-operation compared to a control cohort. These findings should be taken into consideration to optimize outcomes in CA patients prior to KA surgery.

Session/Poster#

Presenter

C01

Adam Naqvi

College of Medicine Student

Advisor(s): Dr. Qais Naziri, Orthopaedic Surgery & Rehabilitation Medicine

The Impact of Pancreatitis on Postoperative Outcomes in Total Knee Arthroplasty with Minimum Two Year Surveillance

Introduction: Pancreatitis (PA) is a common condition affecting the Western population. However, the relationship between pancreatitis and postoperative surgical outcomes for total knee arthroplasty (TKA) is poorly characterized. This study aimed to identify the impact of pancreatitis on 2-year postoperative outcomes following total knee arthroplasty.

Methods: The New York Statewide Planning and Research Cooperative System database was queried to identify all patients who underwent TKA surgery with at least a 2-year follow-up between 2009-2013. Differences in postoperative outcomes were compared between patients with pancreatitis and patients without pancreatitis after controlling for variables such as age, sex, and obesity designation. Demographics and 2-year postoperative surgical and medical complication rates were compared between the two cohorts utilizing Chi-Square, T-test, and logistical regression analysis.

Results: 622 patients were identified (pancreatitis: n=311; non-pancreatitis: n=311). Pancreatitis and non-pancreatitis patients had comparable ages (64.2 vs. 64.0 years) and sex (64.3% vs. 64.3% female) distributions. Pancreatitis patients within two years post-operation had higher rates of medical complications, acute renal failure, and readmission, but an overall decrease in reoperation rate (all, $p<0.05$). These patients had a higher risk of medical complications (1.6 [1.1-2.3]; $p=0.013$), acute renal failure (2.3 [1.3-3.9]; $p=0.002$), and readmission (16.2 [8.0-32.9]; $p<0.001$), but a decreased risk in reoperation (0.6 [0.4-0.9]; $p=0.017$).

Conclusion: Patients with pancreatitis experienced higher rates of postoperative medical complications, acute renal failure, and readmissions than patients without pancreatitis undergoing TKA in New York State. These findings should be taken into consideration when operating on patients with pancreatitis.

Session/Poster#

Presenter

C02

Mohamed Said

College of Medicine Student

Advisor(s): Dr. Qais Naziri, Orthopaedic Surgery & Rehabilitation Medicine

Effect of Ulcerative Colitis on Postoperative Outcomes of Total Knee Arthroplasty Patients

Introduction: Ulcerative colitis (UC) is an inflammatory bowel disease that causes inflammation and ulcers in the large intestines. The impact of this disease and its potential effects on postoperative outcomes in patients undergoing total knee arthroplasty surgery (TKA) is poorly characterized. This study aims to characterize incidence rates and postoperative outcomes between ulcerative colitis patients and a control cohort undergoing TKA surgery.

Methods: The National Inpatient Sample was queried to identify patients who underwent TKA surgery from 2005 - 2012. Patient demographics and incidence rates of patients with UC were reported from 2005 - 2012. Controlling for variables such as age, sex, and obesity status, differences in postoperative outcomes in the cohort with UC and a control cohort were compared. Multivariate logistic regression analysis controlling for age, sex, and obesity status was performed to determine rates and risks of postoperative complications between the two cohorts.

Results: A cohort of 1,488 UC patients and 1,467 non-UC patients were identified. Both cohorts had similar sex (62.5% vs. 63.6% female) and age (65.89 +/- 10.011 vs. 65.91 +/- 10.007 years) distributions. The average incidence rate of patients with UC from 2005 - 2012 was 7.53 (95%CI: 6.29 - 8.76) per 1,000,000 person-year. Incidence rates of UC increased by 113.85% from 2005 - 2012. There were no notable differences in postoperative surgical outcomes between the UC cohort and control cohort (all, $p > 0.05$).

Discussion: Patients with ulcerative colitis were not at increased risk for postoperative medical or surgical complications following total knee arthroplasty. These findings should be considered when considering treatment with TKA surgery in UC patients.

Session/Poster#

Presenter

C03

Joshua Singavarapu

College of Medicine Student

Advisor(s): Dr. Qais Naziri, Orthopaedic Surgery & Rehabilitation Medicine

Total Knee Arthroplasty Patients with Underlying Ventricular Septal Defect Experience Higher Rates of Post-Operative Surgical Complications

Introduction: It has previously been demonstrated that patients with congestive heart failure experience significantly higher rates of operative complications. However, the impact of an underlying ventricular septal defect (VSD) on postoperative outcomes of total knee arthroplasty (TKA) remains poorly understood. The study aims to characterize the impact of VSD on postoperative outcomes for TKA patients.

Methods: A retrospective cohort study was conducted in patients having undergone TKA with or without VSDs. The National Inpatient Sample was contacted to identify patients who underwent TKA surgery from 2005 to 2012. The data was then analyzed to identify patient demographics from 2005 to 2012. Multivariate logistic regression analysis controlling for age, sex and obesity status was performed to determine rates and risks of postoperative complications between the VSD and control cohorts.

Results: A cohort of 57 VSD patients and 57 non-VSD patients were identified. Both cohorts had similar sex (64.9% vs 66.7% female), age (63.86 vs 64.54 years), and obesity (14.0% vs 17.5%) distributions. The average incidence of patients who had a VSD from 2005 to 2012 was 0.23 (95%CI: 0.17 - 0.29) per 1,000,000 person years. Incidence rates of VSD patients increased by 2.87% from the years 2005 to 2012. VSD patients who underwent a TKA procedure had higher rates of overall surgical complications ($p < 0.043$). Furthermore, VSD was found to be an independent predictor of increased risk of surgical complications (OR=4.304, 95% CI=1.132 - 16.370, $p=0.032$).

Conclusions: VSD patients who underwent TKA experienced higher rates of post-operative surgical complications than non-VSD patients. These findings could inform future post-operative management of VSD patients in order to optimize surgical outcomes of TKA.

Session/Poster#

Presenter

C04

Tanveer Singh

College of Medicine Student

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Iron Deficiency Anemia Is Associated with Adverse Postoperative Outcomes Following Primary Total Knee Arthroplasty: Minimum 2-Year Follow-Up

Introduction: Iron deficiency anemia (IDA) is the most common anemia and affects a substantial number of Americans. However, not much literature explores the impact of IDA on primary total knee arthroplasty (TKA) outcomes. This study evaluates IDA as a risk factor for adverse outcomes after primary TKA.

Methods: The New York State Statewide Planning and Research Cooperative System (SPARCS) database was retrospectively queried using the ICD-9 code for primary TKA procedures with minimum 2-year follow-up performed between 2009 and 2013. One-to-one propensity score matching (PSM) was used to control for age, gender, and obesity and stratify patients into two cohorts based on IDA status. Demographic, preoperative, and postoperative variables including medical and surgical complications, readmissions, reoperations, revisions, and in-hospital mortality were then compared. Univariate and multivariate logistic regression analysis used age, gender, and obesity to assess the association between IDA and adverse outcomes.

Results: Between 2009 and 2013, 92,627 patients underwent primary TKA procedures. The cohorts stratified by IDA status each contained 1,440 patients. The cohorts showed no significant differences in age, gender, obesity, race, payment method, or total surgical charges. The IDA cohort had longer hospital stays than the non-IDA cohort (4.2 days vs. 3.8 days; $p < 0.001$). Univariate and multivariate analyses showed that patients with IDA had higher rates of overall medical and surgical complications, blood transfusions, altered mental status, acute myocardial infarction, acute renal failure, sepsis, and readmission (all $p < 0.05$).

Conclusion: Patients with IDA undergoing primary TKA had longer hospital stays and higher rates of adverse postoperative outcomes. Surgeons should be aware of IDA as a risk factor and counsel patients accordingly. Future research can explore the impact of preoperative iron status correction in patients with IDA on outcomes following TKA.

Session/Poster#

C05

Presenter

Michelle Zhu

College of Medicine Student

Advisor(s): Dr. Qais Naziri, Orthopaedic Surgery & Rehabilitation Medicine

Patients with Congestive Heart Failure Experience Higher Rates of Surgical and Medical Complications Following Total Knee Arthroscopy

Introduction: Congestive Heart Failure (CHF) is a condition in which the heart cannot pump enough blood to meet body demand, potentially leading to a wide range of adverse effects including dizziness, fatigue, shortness of breath, and fluid retention. The clinical outcomes of patients who undergo knee arthroscopy (KA) while diagnosed with CHF remain poorly understood. The objective of this study is to identify the impact of CHF on two-year postoperative outcomes following KA.

Methods: The New York Statewide Planning and Research Cooperative System was queried to identify patients who underwent KA procedure with at least a two-year follow-up. Controlling for age, sex, race, and obesity, differences in postoperative outcomes in a cohort diagnosed with CHF were compared to a control. Demographics and rates of two-year postoperative surgical and medical complications were compared between the two cohorts.

Results: A cohort of 82 CHF patients and non-CHF patients were identified. Non-CHF patients and CHF patients had similar sex (54.9% vs. 59.8%), age (71.0 vs. 71.0 years), and obesity (15.9% vs. 15.9%) distributions. CHF patients were more likely to have experienced surgical complications, transfusions, medical complications, acute renal failure, sepsis, and hospital mortality (all, $p < 0.05$). CHF was found to be an independent predictor of increased rates of surgical complications (OR=1.969, 95%CI=1.038 - 3.734, $p=0.038$), transfusions (OR=2.519, 95%CI=1.700 - 6.194, $p < 0.001$), acute renal failure (OR=3.071, 95%CI=1.556 - 6.059, $p=0.001$), sepsis (OR=2.257, 95%CI=1.110 - 4.588, $p=0.025$), and hospital mortality (OR=7.150, 95%CI=2.339 - 21.854, $p < 0.001$).

Conclusion: CHF patients who underwent KA experienced higher rates of surgical complications, transfusions, medical complications, acute renal failure, sepsis, and hospital mortality. These findings should be considered when preparing patients for KA and priming providers for such potential complications post-operation.

Session/Poster#

Presenter

C06

Mohamud Abdi

College of Medicine Student

Advisor(s): Dr. Carl Paulino, Orthopaedic Surgery & Rehabilitation Medicine

Should You Transplant the Kidney Before or After Laminectomy Surgery in Adult Patients with End Stage Renal Disease?

Introduction: End Stage Renal Disease(ESRD) is associated with changes in cardiovascular function, homeostasis in body fluid, bone metabolism, and erythropoiesis. The clinical outcomes for adult patients who undergo laminectomy surgery with ESRD or have received a transplant prior to the operation have not been extensively compared.

Methods: The National Inpatient Sample was queried to identify patients who underwent laminectomy surgery(ICD9:0309,0302) from the years 2005-2012, and demographics and incidence rates of patients with ESRD and those that received kidney transplants were collected. Univariate analysis was used to compare differences in postoperative complications and in-hospital mortality in the transplanted and ESRD cohort. Multivariate logistic regression analysis controlling for age, sex, race, and obesity status was performed to determine ESRD compared to prior kidney transplant status as an independent risk factor for postoperative outcomes.

Results: The average incidence rate of patients with ESRD from 2005-2012 was 4.2(95%CI:3.1-5.3) per 1,000,000 person years and 1.2(95%CI:1.1-1.4) per 1,000,000 person years for those treated with kidney transplant. 1,347 patients with ESRD or kidney transplants were isolated. Incidence rates of ESRD increased 62.14% while prior kidney transplant decreased by 0.36% from the years 2005-2012 in adult laminectomy patients. Compared to the prior kidney transplant group, ESRD patients had increased risk of surgical complications (OR=2.5), medical complications (OR=2.5), wound complications (OR=2.8), blood transfusions (OR=3.0), acute renal failure (OR=2.1), sepsis (OR=4.5), cerebrovascular events (OR=3.7) and in-hospital mortality (OR=5.9).

Conclusion: Adult ESRD patients who undergo a laminectomy experienced higher rates of complications, and in-hospital mortality. These findings should be taken into consideration to optimize care for ESRD patients by having a kidney transplant prior to laminectomy surgery.

Session/Poster#

Presenter

C07

Sukhpreet Ahluwalia

College of Medicine Student

Advisor(s): Dr. Carl Paulino, Orthopaedic Surgery & Rehabilitation Medicine

The Impact of Atrial Septal Defect on Outcomes and Complications Following Adult Spinal Fusion: A Propensity Scored-Match Analysis

Introduction: Spinal Fusion is a common intervention for lumbar disc degenerative changes causing chronic low back pain. The goal is to fuse two or more vertebral bodies, restricting spinal motion, which alleviates symptoms. It is important to study outcomes in patients with comorbid conditions. Due to limited literature, this case-control study aims to compare outcomes and complication rates between patients with and without atrial septal defect (ASD) undergoing spinal fusion.

Methods: Using the National Inpatient Sample, patients admitted from 2005 to 2012 with ASD who underwent spinal fusion were identified. A 1:1 propensity score-match by age, gender, and obesity status was performed to identify patients without ASD. Univariate analyses evaluated demographics, complications, and mortality. Multivariate binary logistic regression models were conducted to identify correlations between ASD and postoperative outcomes, controlling for age, sex, and obesity status.

Results: A total of 358 propensity score-matched patients were identified (ASD: n=358; non-ASD: n=358). The ASD cohort, compared to the non-ASD cohort, had greater length of stay (7.4 days vs. 3.7 days, $p<0.001$), Deyo score (1.08 vs. 0.75, $p=0.003$), and total hospital charge (\$132,381 vs. \$79,806, $p<0.001$). Patients with ASD, compared to non-ASD patients, had higher rates for surgical complication, blood transfusion, medical complication, altered mental status, pneumonia, acute renal failure, sepsis, deep venous thrombosis, and cerebrovascular event (all, $p<0.05$.) The average incidence rate between 2005 and 2012 for patients with ASD undergoing spinal fusion increased by 23.3%.

Conclusions: Patients with ASD, compared to non-ASD patients, had greater length of stay, Deyo scores, and total surgical charge. Patients with ASD had higher risks for surgical/medical complications. These results should be considered and provide insight into management of postoperative expectations in this growing patient cohort.

Session/Poster#

Presenter

C08

Gabriela Cendejas

College of Medicine Student

Advisor(s): Dr. Carl Paulino, Orthopaedic Surgery & Rehabilitation Medicine

Effect of Having an Atrial Septal Defect on Postoperative Outcomes of Laminectomy in Adult Patients

Introduction: An atrial septal defect (ASD) is a congenital heart defect where there is a pathologic channel that may lead to life-threatening complications. The impact of having ASD on postoperative outcomes of adult patients undergoing laminectomy is poorly understood. The purpose of this study was to compare postoperative outcomes and complications in patients with and without ASD undergoing laminectomy surgery.

Methods: The National Inpatient Sample was queried to identify patients who underwent laminectomy surgery (ICD9: 0309, 0302) from 2005 - 2012. Patient demographics and incidence rates of patients diagnosed with ASD were reported. Univariate analysis was used to compare differences in postoperative complications and in-hospital mortality. Multivariate logistic regression analysis controlling for age, sex, and obesity status was performed to determine laminectomy status as an independent risk factor for postoperative outcomes.

Results: A cohort of 198 ASD patients and 198 non-ASD patients were identified. Both groups had similar sex, age, and obesity distributions. ASD patients who underwent laminectomy procedure experienced higher rates of overall postoperative medical complications (35.4% vs 19.6%, $p<0.001$), pulmonary complications, acute renal failure, sepsis, deep vein thrombosis, and cerebrovascular events. Analysis revealed that patients with ASD who underwent a laminectomy were at increased risk for overall postoperative acute renal failure (OR=15.1, 95%CI=3.5-65.6, $p<0.001$), cerebrovascular events (OR=4.8, 95%CI=2.0-12.2, $p=0.001$), medical complications (OR=4.7, 95%CI=2.8-8.2, $p<0.001$), and sepsis (OR=3.6, 95%CI=1.5-8.5, $p<0.001$).

Conclusion: ASD patients who underwent laminectomy experienced higher rates of postoperative medical complications, pulmonary complications, acute renal failure, sepsis, deep vein thrombosis, and cerebrovascular events. Further study is needed to elucidate the effects of ASD on patients receiving laminectomies.

Session/Poster#

Presenter

C09

Andrew Dorritie

College of Medicine Student

Advisor(s): Dr. Carl Paulino, Orthopaedic Surgery & Rehabilitation Medicine

Surgical and Medical Complications Increase Following Adult Laminectomy in Patients with End-Stage Renal Disease

Introduction: End-stage renal disease (ESRD) is a medical condition in which a patient's kidneys cease to function leading to the need for long-term dialysis or kidney transplantation. The objective of this study is to characterize incidence rates of ESRD in adult laminectomy patients and compare postoperative outcomes between those with ESRD and a control cohort.

Methods: The National Inpatient Sample was queried to identify patients who underwent laminectomy surgery (ICD9: 0309, 0302) from the years 2005-2012. Patient demographics and incidence rates of patients that had ESRD were reported from the years 2005-2012. 1:1 propensity score match controlling for age, sex, race, and obesity status was performed. A cohort of 912 ESRD patients and 912 non-ESRD patients was identified. Both cohorts had similar age (61.6 vs 62.0 years) and obesity (11.4% vs 11.0%) distributions. Univariate analysis was used to compare differences in postoperative complications and in-hospital mortality. Multivariate logistic regression analysis controlling for age, sex, race, and obesity was performed to determine ESRD status as an independent risk factor for postoperative outcomes.

Results: The average incidence rate of patients who had ESRD from 2005-2012 was 4.4 (95% CI: 3.3-5.5) per 1,000,000 person-year. Incidence rates of ESRD patients increased by 60.1% from the years 2005-2012. ESRD patients who underwent a laminectomy procedure experienced higher rates of and were at an increased risk for overall surgical and medical complications and in-hospital mortality compared to the control cohort (all, $p < 0.05$). These patients also had higher rates of specific complications such as pneumonia, sepsis, and others ($p < 0.05$).

Conclusion: Adult patients with ESRD who underwent laminectomy experienced higher rates of surgical and medical complications. These findings should be taken into consideration in ESRD patients prior to laminectomy surgery and to prepare providers for potential complications.

Session/Poster#

Presenter

C10

Jordan Eidlitz

College of Medicine Student

Advisor(s): Dr. Carl Paulino, Orthopaedic Surgery & Rehabilitation Medicine

Effects of Having Acquired Immunodeficiency Syndrome on Post-Operative Outcomes in Patients Undergoing Laminectomy

Introduction: AIDS results in severe immune dysfunction. The impact of AIDS on adult laminectomy patient outcomes is poorly understood. This study compares incidence rates and postoperative outcomes of adult AIDS patients and a control cohort undergoing laminectomy.

Methods: The National Inpatient Sample was used to find laminectomy patients 18+ years old from the years 2005 - 2012. Patient demographics and incidence rates of AIDS were reported. 1:1 propensity score match controlling for age, sex and obesity was performed. Univariate analysis was used to compare differences in postoperative complications and in-hospital mortality between patients with and without AIDS. Multivariate logistic regression analysis controlling for age, sex, race, and obesity status was done to find independent risk factors for postoperative complications.

Results: Cohorts of 183 AIDS patients and 183 non-AIDS patients were found. Both cohorts had similar sex (12.6% vs 15.3% female, $p=0.450$), age (49.48 vs 50.67 years, $p=0.339$) and obesity (1.6% vs 3.3%, $p=0.502$) distributions. The average incidence rate of patients with AIDS increased 7.86% from 2005 - 2012 and was 0.9 (95%CI: 0.7- 1.1) per 1,000,000 person years. Laminectomy patients with AIDS had higher rates of transfusions (13.1% vs 3.8%, $p=0.001$), medical complications (23.0% vs 6.0%, $p<0.001$) acute renal failure (7.1% vs 0.5%, $p=0.001$), sepsis (7.7% vs 0.5%, $p=0.001$), and in-hospital mortality (23.0% vs 6.0%, $p=0.001$). AIDS was associated with increased risk of transfusions (OR=3.8, 95%CI=1.6-9.0, $p=0.003$), acute renal failure (OR=13.9, 95%CI=1.8-107.5, $p=0.012$), sepsis (OR=15.1, 95%CI=2.0-115.9, $p=0.009$), and in-hospital mortality (OR=9.4, 95%CI=1.2-75.1, $p=0.034$).

Conclusion: Laminectomy patients with AIDS required more transfusions and suffered more medical complications, acute renal failure, sepsis, and in-hospital mortality in the postoperative period. Further studies should investigate the etiology of these complications.

Session/Poster#

Presenter

C11

Andrew Khan

College of Medicine Student

Advisor(s): Dr. Carl Paulino, Orthopaedic Surgery & Rehabilitation Medicine

Patients with End-Stage Renal Disease Experience Higher Surgical Charges, Lengths of Stay, and Deyo Scores Following 2+ Level Spinal Fusion

Introduction: There is limited literature evaluating the impact of end stage renal disease (ESRD) on long-term outcomes after spinal fusion (≥2-level) surgery in adult spinal deformity (ASD) patients. Therefore, this study compared outcomes and complication rates between adult spinal deformity patients with and without ESRD undergoing spinal fusion (≥2-level) surgery.

Methods: Adult spinal deformity patients admitted from 2009 to 2011 with diagnoses of ESRD who underwent spinal fusion (≥2-level) surgery with a minimum 2-year follow-up surveillance were retrospectively reviewed. A 1:1 propensity score-match (PSM) by age, sex, and obesity status was performed before analyzing data. Univariate analyses evaluated demographics, complications, and subsequent revision within the ESRD groups.

Results: 84 propensity score-matched patients with adult spinal deformity were identified (ESRD: n = 42; non-ESRD: n = 42). Both cohorts were nearly identical in age (ESRD: 63.21 years, non-ESRD: 62.93 years, p = 0.921), sex (ESRD: 45.2% female, non-ESRD: 45.2% female, p = 1.000), and obesity status (ESRD: 7.1%, non-ESRD: 4.8%, p = 0.645). Compared to the non-ESRD cohort, the ESRD cohort had higher surgical charges (\$179,040.98 vs. \$56,826.17, p = 0.001), Deyo score (ESRD: 3.40, non-ESRD: 0.95, p < 0.001) and length of stay (ESRD: 18.38 days, non-ESRD: 3.76 days, p < 0.001). With a 1:1 PSM, patients with ESRD, had comparatively higher rates of medical complications (p=0.003).

Discussion and Conclusion: ASD patients with ESRD had higher surgical charges, length of stay, and Deyo score compared to a propensity score matched patient cohort without ESRD from the general population undergoing spinal fusion (≥2-level) surgery. These results can support management of postoperative expectations and concerns in this patient cohort.

Session/Poster#

Presenter

C12

Alex La Poche

College of Medicine Student

Advisor(s): Dr. Carl Paulino, Orthopaedic Surgery & Rehabilitation Medicine

Impact of Congestive Heart Failure on Postoperative Outcomes of Spinal Fusion (4+ levels) in Adults with Spinal Deformity

Introduction: Limited research has studied the effect of CHF on spinal fusion surgery outcomes in patients with spinal deformity. This study compared outcomes in patients with and without CHF who underwent spinal fusion surgery (4+ levels).

Methods: Patients with spinal deformity and CHF who underwent spinal fusion surgery (4+ levels) between 2009-2011 were identified using New York State's Statewide Planning and Research Cooperation System. Propensity score matching was used to compare demographics, complications, and subsequent revision. Multivariate logistic regression analyses were performed to evaluate the association between CHF and postoperative outcomes while controlling for sex, age, and obesity status.

Results: 768 patients with spinal deformity were identified (CHF: n=384; non-CHF: n=384). Both cohorts were similar in age (mean age 68.7 years for CHF group and 68.8 years for non-CHF group, $p=0.967$), sex (52.3% female in CHF group and 52.3% female in non-CHF group, $p=1.000$), and obesity status (22.4% in CHF group and 22.1% in non-CHF group, $p=0.931$). The CHF cohort had higher surgical charges (\$107,660 vs. \$64,685, $p<0.001$), longer hospital stays (9.0 days vs. 4.3 days, $p<0.001$), and higher Deyo scores (2.6 vs. 1.0, $p<0.001$) compared to the non-CHF cohort. Surgical and medical complications were more frequent in the CHF cohort (all, $p<0.05$). After propensity score matching, patients with CHF had a higher risk of surgical complications (OR:1.8 [1.3 - 2.6], $p=0.001$), wound complications (OR:3.2 [1.1 - 8.9], $p=0.030$), medical complications (OR:3.4 [2.1 - 5.5], $p<0.001$), acute myocardial infarction (OR: 10.4 [3.9 - 27.8], $p<0.001$), and acute renal failure (OR: 2.9 [1.4 - 6.0], $p=0.003$).

Conclusion: Patients with spinal deformity and CHF who underwent spinal fusion surgery (4+ levels) experienced higher costs, longer stays, and increased rates of complications. Preoperative medical optimization and patient counseling should be improved to mitigate these risks.

Session/Poster#

Presenter

C13

Sharon Lee

College of Medicine Student

Advisor(s): Dr. Carl Paulino, Orthopaedic Surgery & Rehabilitation Medicine

Retrospective Cohort Study Examining the Effect of Having a Prior Colectomy on Postoperative Outcomes of Adult Laminectomy Patients

Introduction: Laminectomy is a widely performed surgical procedure which involves removal of the lamina of the spinal canal. The impact of having a prior colectomy on postoperative outcomes of adult patients undergoing a laminectomy is poorly understood. This retrospective cohort study examines postoperative outcomes of adult patients undergoing laminectomy who have had a prior colectomy, as compared to patients who have not had a prior colectomy.

Methods: The National Inpatient Sample was queried to identify patients who underwent laminectomy surgery from 2005 - 2012. A 1:1 propensity score match was used to control for age, sex, and obesity. A univariate analysis identified differences in postoperative complications in the colectomy cohort. A multivariate logistic regression analysis determined colectomy status as an independent risk factor for postoperative outcomes.

Results: 630 colectomy patients and 630 non-colectomy patients were identified with similar sex (45.4% vs 44.6% female), age (66.7 vs 66.8) and obesity (12.7% vs 13.7%) distributions. Prior colectomy patients were found to be at increased risk for postoperative surgical complications (OR=1.8 [1.3-2.4]), wound (OR=2.1 [1.3-3.4]), central nervous system (OR=1.6 [1.1-2.5]), medical (OR=3.3, [2.2-4.7]), gastrointestinal (OR=8.3 [2.5-27.6]), acute renal failure (OR=2.9 [1.6-5.2]), sepsis (OR=6.3 [2.9-13.4]), and in-hospital mortality (OR=9.0 [2.7-29.9]) (all $p < 0.05$). The number of patients with overall surgical complications, medical complications, and in-hospital mortality was significantly increased as compared to control ($p > 0.05$).

Conclusions: Adult laminectomy patients with a prior colectomy had increased risk of postoperative surgical, medical, and in-hospital mortality complications. Providers should be aware of these risks when prepping for laminectomy surgery in such patients.

Session/Poster#

Presenter

C14

Hong Bao

College of Medicine Student

Advisor(s): Dr. Nishant Suneja, Orthopaedic Surgery & Rehabilitation Medicine

General Anesthesia Versus Spinal Anesthesia in Syndesmosis Fixation: An ACS NSQIP Analysis 2008-2016

Introduction: Syndesmosis fixation (SF) is commonly done for syndesmotic instability after fixation of associated fractures. SF is usually done utilizing general anesthesia (GA) or spinal anesthesia (SA), however there is a lack of data supporting one over the other.

Methods: The American College of Surgeons National Surgical Quality Improvement Program database was queried via CPT codes from 2008-2016 for all SF procedures (CPT code 27829). These were then categorized into isolated GA or SA groups, and a 1:1 propensity score controlled for age and gender. Univariate analysis and multivariate logistic regression models, controlling for demographics, comorbidities, and 30-day postoperative outcomes, were used to identify GA or SA as risk factors for adverse postoperative outcomes.

Results: 3358 total patients that underwent an SF procedure between 2008-2016 were identified (73.6% GA, 3.8% SA). Using 1:1 propensity score matching, 123 patients having undergone GA or SA each were isolated. SA was associated with a significantly shorter operative time (73.36 vs. 85.37 mins, $p=0.032$). Length of hospital stay was not significantly different (2.83 vs. 2.02 days, $p=0.186$). Age, BMI, ASA class, probability of morbidity and mortality were not significantly different (all, $p>0.328$). Comorbidities were not significantly different (all, $p>0.156$).

Relative to SA, GA did not have significantly different rates of 30-day wound complications, UTIs, sepsis-related complications, readmission, and reoperation (all, $p>0.156$). Using multivariate logistic regression, GA was not an independent predictor of higher risk for postoperative complications (all, $p>0.387$).

Conclusion: No significant differences are seen in comorbidities of patients undergoing each type of anesthesia. While there was no significant difference in risk of postoperative complications, SA was associated with shorter operative times.

Session/Poster#

Presenter

C15

Madeline Fudala

College of Medicine Student

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The Impact of Preoperative and Demographic Risk Factors on Reoperation and Readmission on Slipped Capital Femoral Epiphysis Patients: A NSQIP-Pediatric Analysis Between 2012 and 2016

Introduction: Slipped capital femoral epiphysis (SCFE) occurs primarily in overweight or obese children and can lead to serious complications. Data examining risk factors contributing to readmission and reoperation of SCFE patients after repair is scarce.

Methods: The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database was queried via CPT codes from 2012-2016 to identify patients who underwent SCFE surgery. Patients were grouped based on whether they required readmission or reoperation. Patient demographics, comorbidities, 30-day postoperative outcomes, and other risk factors were analyzed with univariate analysis and multivariate logistic regression models.

Results: Of 2,660 patients identified, 32 required readmission and 31 required reoperation. 39.5% were African American, 59.3% were overweight, and 40.7% were obese. Common comorbidities were asthma (7.3%), congenital malformation (4.2%), developmental delay (3.5%), and premature birth (3.1%). Patients requiring readmission were more likely to be ASA class 2 (68.6%, $p<0.001$) while those requiring reoperation were more likely to be ASA class 3 (12.9%, $p<0.001$). ASA class 4 was an independent predictor for readmission (OR 522.6 [35.4-8629.4]; $p<0.001$) and reoperation (OR 46.3 [3.5-604.4]; $p=0.003$). Structural CNS abnormalities were a risk factor for readmission (OR 8.3 [1.0-67.2; $p=0.048$) while requiring nutritional support was a risk factor for readmission (OR 23.1 [1.8-301.9]; $p=0.017$) and reoperation (OR 22.9 [1.8-299.4]; $p=0.017$). No differences in readmission or reoperation were noted pertaining to race or body mass index (BMI) (all, $p>0.116$).

Conclusion: Patients in higher ASA classes, with structural CNS abnormalities, or requiring nutritional support were at higher risk for readmission and reoperation after SCFE repair. Importantly, BMI and race were not found to be risk factors of these outcomes. These findings can be used to guide management of SCFE patients.

Session/Poster#

Presenter

C16

Roy Li

College of Medicine Student

Advisor(s): Dr. Nishant Suneja, Orthopaedic Surgery & Rehabilitation Medicine

General Anesthesia Versus Spinal Anesthesia in Tibial Shaft Repair: An ACS NSQIP Analysis 2008-2016

Tibial shaft fractures are common injuries that require surgical intervention to repair. General and spinal anesthesia are the two most common techniques for tibial shaft repair. This study aims to compare the effectiveness and safety of general anesthesia with spinal anesthesia while taking many patient factors into consideration, such as age, sex, and comorbidities. Using the American College of Surgeons National Surgical Quality Improvement Program database, we looked at 129 patients that underwent tibial shaft repairs between 2008 and 2016 and divided the study group based on their anesthetic technique. We compared the various complications, readmissions, reoperations, mortality, and hospital stay lengths while taking into account patient comorbidities, age, and sex using a 1:1 propensity score match. Most comorbidities between anesthetic groups did not differ significantly, however, patients undergoing general anesthesia were more likely to have a bleeding disorder. Compared to spinal anesthesia, the general anesthesia group experienced significantly higher rates of 30-day wound and pulmonary complications. Additionally, general anesthesia was found to be an independent predictor of a higher risk for post-operative complications. In conclusion, general anesthesia was associated with a higher risk for bleeding that necessitated transfusion to treat. This risk may play a role when determining which type of anesthesia should be used for patients that require tibial shaft repairs.

Session/Poster#

Presenter

C17

Samer Mahmoud

College of Medicine Student

Advisor(s): Dr. Nishant Suneja, Orthopaedic Surgery & Rehabilitation Medicine

General Anesthesia Versus Spinal Anesthesia in Tibial Plateau Open Reduction Internal Fixation: An ACS NSQIP Analysis 2008-2016

Introduction: Tibial plateau open reduction internal fixation (ORIF) is a common procedure. Patients undergoing these procedures may have comorbidities, which may influence the anesthesia used. This study aims to address potential differences in postoperative complications between general and spinal anesthesia.

Methods: The NSQIP database was queried via CPT codes between 2008 and 2016 for all tibial plateau ORIF procedures which were categorized into general or spinal anesthesia groups, controlling for estimated probability of morbidity, age, and gender. Univariate analysis and multivariate logistic regression models were performed to assess postoperative outcomes.

Results: A total of 3115 patients underwent tibial plateau ORIF; 179 patients in each group were isolated.

Postoperatively, 51 (14.2%) experienced complications, with wound complications being the most common. Operative time for spinal anesthesia was significantly shorter (107.3 vs. 120.2 minutes, $p=0.034$). Age, BMI, ASA class, comorbid conditions, and probability of mortality and morbidity, were not found to differ significantly. Multivariate logistic regression demonstrated that general anesthesia was not an independent predictor of higher risk for any postoperative complication.

Conclusion: Patients undergoing tibial plateau ORIF experienced similar rates of postoperative complications with either general or spinal anesthesia. While no differences were found in the length of hospital stay, readmission, reoperation, or mortality rate between the two groups, there was a significantly lower operative time for the spinal anesthesia group. Such factors need to be considered when determining the anesthetic type to provide patients undergoing tibial plateau ORIF.

Session/Poster#

Presenter

C18

Glenn Alvarez Arias

College of Medicine Student

Advisor(s): Dr. Jaime Uribe, Orthopaedic Surgery & Rehabilitation Medicine

Impact of Diabetes on Postoperative Outcomes of Syndesmotic Fixation: An ACS NSQIP Analysis 2008-2016

Introduction: The prevalence of diabetes mellitus has continuously been on the rise and has impacted patient care in many ways. Due to the comorbidities related to diabetes, a significant amount of risk can be introduced while carrying out orthopedic procedures, such as syndesmotic fixations. This study aims to evaluate the impact of diabetes on syndesmotic fixations postoperatively and highlight important risk factors.

Methods: The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database between 2008-2016 was evaluated for patients with diabetes who underwent syndesmotic fixations. A 1:1 propensity score match was performed to control for age, gender, and estimated probability of mortality. Univariate analysis and multivariate logistic regression models were used to assess the implications of diabetes and risk factors on postoperative complications.

Results: A total of 556 propensity score-matched patients were identified (Diabetes: n=278; no-Diabetes: n=278). Patients with diabetes had higher probabilities of experiencing adverse events ($p=0.011$), postoperative complications ($p=0.044$), wound complications ($p=0.012$), and bleeding requiring transfusion ($p=0.007$). These patients had higher probabilities of developing postoperative complications (OR 2.0 [1.0 - 4.0]; $p=0.047$), particularly wound complications (OR 3.1 [1.2 - 8.0]; $p=0.017$) and bleeding requiring transfusion (OR 6.2 [1.4 - 28.1]; $p=0.017$). There were no significant differences in rates of renal or pulmonary complications.

Conclusion: Patients with diabetes experienced higher rates of postoperative complications, adverse events, and associated comorbidities than patients without diabetes undergoing syndesmotic fixations. Due to these complications, further investigation and increased caution are necessary while operating on patients with diabetes.

Session/Poster#

Presenter

C19

Amber Khemlani

College of Medicine Student

Advisor(s): Dr. Jaime Uribe, Orthopaedic Surgery & Rehabilitation Medicine

Smoking Increases Rates of Readmission, Reoperation, and Comorbidity Status in Patients Undergoing Syndesmotic Fixation

Introduction: In America, the impact of smoking can be seen in postprocedural recovery of orthopedic procedures. The purpose of this study is to identify syndesmotic fixations and postoperative risk factors in smokers.

Methods: The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database in conjunction with CPT codes were queried for syndesmotic fixations between 2008 and 2016. Patients were categorized as smokers or non-smokers with information on 30-day postoperative outcomes, demographics, and comorbidities. 1:1 propensity score matching, univariate analysis, and multivariate logistic regression models were used to control for gender, age, and probability of morbidity while analyzing postoperative risk factors.

Results: 3358 patients were assessed. 2471 were non-smokers, while 887 smoked regularly. 778 patients were isolated through 1:1 propensity score match to account for covariates. Compared to non-smokers, smokers had a significantly lower BMI (31.7 vs. 32.9; $p=0.004$), higher rates of chronic obstructive pulmonary disease (3.8% vs. 1.3%; $p=0.001$), and lower rates of diabetes (6.6% vs. 9.4%; $p=0.041$). Smokers have significantly higher rates of postoperative complications (4.2% vs. 2.4%; $p=0.048$), readmission (3.0% vs. 1.1%; $p=0.008$), and reoperation (3.2% vs. 0.9%; $p=0.001$). Multivariate logistic regression models demonstrate smokers had higher rates of adverse events (OR 1.7 [1.0 - 2.9]; $p=0.034$) and postoperative complications (OR 2.1 [1.1 - 3.9]; $p=0.020$). Smokers showcased higher rates of readmission (OR 2.9 [1.3 - 6.3]; $p=0.009$) and reoperation (OR 4.0 [1.6 - 9.6]; $p=0.002$).

Conclusion: Smoking is associated with higher rates of readmission, reoperation, and comorbidities in syndesmotic fixation patients. Further studies include possible side effects and comorbidities amongst smokers to increase the likelihood of positive outcomes while carrying out procedures including but not limited to syndesmotic fixations.

Session/Poster#

Presenter

C20

Joshua Harounian

College of Medicine Student

Advisor(s): Dr. Carl Paulino, Orthopaedic Surgery & Rehabilitation Medicine

Effect of Having Crohn's Disease on Postoperative Outcomes of Adult Laminectomy Patients

Introduction: Crohn's disease (CD) is an inflammatory bowel disease that can affect the gastrointestinal tract. The impact of CD on postoperative outcomes of patients undergoing laminectomy surgery is poorly understood.

Methods: The National Inpatient Sample was queried to identify patients who underwent laminectomy surgery (ICD-9 03.09, 03.02) from the years 2005-2012. Patient demographics and incidence rates of patients that have had CD were reported. 1:1 propensity score match controlling for age, sex, and obesity status was performed. A univariate analysis was used to compare differences in postoperative complications and in-hospital mortality between the CD and control cohorts. A multivariate logistic regression analysis controlling for age, sex, and obesity status was performed to determine CD status as an independent risk factor for postoperative outcomes between the two cohorts.

Results: A cohort of 535 CD patients and 535 non-CD patients were identified. Both cohorts had similar sex (55.7% vs. 53.1% female), age (61.3 vs. 60.7 years), and obesity (11.4% vs. 12.3%) distributions. The average incidence rate of patients who had CD from 2005-2012 was 2.7 per 1,000,000 people (95% CI=2.5-2.9). CD patients who underwent laminectomy experienced higher rates of wound complications, sepsis, and deep vein thrombosis compared to control patients (all, $p<0.05$). When controlling for demographics, patients with a diagnosis of CD who underwent laminectomy were at increased risk for postoperative wound complications (OR=1.8, 95% CI=1.0-3.0, $p=0.039$), and sepsis (OR=2.8, 95% CI=1.0-8.0, $p=0.046$) compared to control patients.

Conclusion: Adult patients with CD who underwent laminectomy experienced higher rates of postoperative wound complications, sepsis, and deep vein thrombosis. These findings should be taken into consideration for CD patients prior to laminectomy surgery to prepare patients and providers for potential postoperative complications.

Session/Poster#

Presenter

C21

Bruce Zhang

College of Medicine Student

Advisor(s): Dr. Qias Naziri, Orthopaedic Surgery & Rehabilitation Medicine

Should You Transplant the Kidney Before or After Total Hip Arthroplasty in Patients with ESRD

Introduction: In patients with ESRD, a successful kidney transplant can improve quality of life and reduce risk of mortality when compared to maintenance dialysis. This study aims to compare outcomes in kidney transplant versus ESRD patients undergoing total hip arthroplasty (THA).

Methods: Using the National Inpatient Sample (NIS), patients admitted from 2005-2012 with ESRD or prior kidney transplant who underwent THA were retrospectively reviewed. Patients with prior kidney transplant with concomitant ESRD were excluded. Univariate analyses evaluated demographics, complications, and subsequent revision. Multivariate binary logistic regression models were conducted to identify correlations between ESRD or prior kidney transplant and postoperative THA outcomes.

Results: The ESRD cohort, had higher mean age (63.77 years vs. 54.95 years, $p < 0.001$), Deyo score (3.2896 vs. 1.1058, $p < 0.001$), length of stay (7.71 days vs. 4.12 days, $p < 0.001$), and surgical charge (\$86,279.71 vs. \$53,482.61, $p < 0.001$). The average incidence rate between 2005-2012 is 4.07 [3.21 - 4.92] for ESRD and 2.52 [2.31 - 2.73] for kidney transplant. During this period, incidence rate for ESRD increased by 0.3778% and decreased by 0.067% for kidney transplant. Rates of surgical complications were increased in the ESRD cohort ($p < 0.001$). ESRD patients, compared to the kidney transplant patients had higher risk for surgical complications (OR: 2.238 [1.415 - 3.542], $p < 0.001$), nonunion of fracture (OR: 5.139 [1.981 - 13.336], $p = 0.001$), prosthetic implant joint (OR: 2.149 [1.034 - 4.469], $p = 0.040$), acute renal failure (OR: 0.559 [0.344 - 0.908], $p = 0.019$), and sepsis (OR: 3.892 [1.326 - 11.425], $p = 0.013$).

Conclusion: ESRD patients had higher surgical charges, greater length of stay, risk of surgical complication and Deyo score than kidney transplant patients undergoing THA. These results support management of postoperative expectations and concerns within this patient cohort.

Session/Poster#

Presenter

C22

Zenab Jamil

College of Medicine Student

Advisor(s): Dr. Carl Paulino, Orthopaedic Surgery & Rehabilitation Medicine

The Impact of Ventricular Septal Defect on Outcomes and Complications Following Adult Spinal Fusion: A Propensity Scored-Match Analysis

Introduction: A ventricular septal defect (VSD) is a heart defect in which there is an opening in the ventricular septum. Within the literature there are limited findings evaluating the impact of VSD on long-term outcomes after spinal fusion. This study sought to compare outcomes and complication rates between patients with and without VSD undergoing surgery for spinal fusion.

Methods: Using the National Inpatient Sample (NIS), patients above the age of 18 admitted from 2005 to 2012 who underwent spinal fusion were retrospectively reviewed. A 1:1 propensity score-match (PSM) by age, gender, and obesity status was performed before analyzing data. Univariate analyses evaluated demographics, complications, and mortality. Multivariate binary logistic regression models were also conducted to identify associations between VSD and postoperative spinal fusion outcomes, controlling for multiple demographic factors.

Results: A total of 104 propensity score-matched patients were identified (VSD: n=52; non-VSD: n=52). The VSD cohort, compared to the non-VSD cohort, had comparable length of stay (3.9 - 4.1 days vs. 3.3 - 3.2 days, p=0.426), Deyo score (0.7 - 1.4 vs. 0.4 - 1.2, p=0.323), and total hospital charge (\$86,205 - 82,004 vs. \$74,931 - 47,361, p=0.393). With a 1:1 PSM, patients with VSD, compared to non-VSD patients, had comparable rates for all postoperative complications. VSD was not an independent risk factor for surgical complications (OR: 2.7 [0.9 - 8.7], p=0.089) or medical complications (OR: 2.7 [0.5 - 14.8], p=0.254).

Conclusion: As observed in the study, adult patients with Ventricular Septal Defect (VSD) undergoing spinal fusion did not have an increased risk for surgical and medical complications compared to those without a VSD. Further study with a larger sample size should be done to see if a VSD is associated with adverse postoperative outcomes.

Session/Poster#

Presenter

C23

Arie Monas

College of Medicine Student

Advisor(s): Dr. Carl Paulino, Orthopaedic Surgery & Rehabilitation Medicine

The Impact of Congestive Heart Failure on Outcomes and Complications Following Adult Spinal Fusion: A Propensity Scored-Match Analysis

Introduction: Congestive heart failure (CHF) is defined clinically as a cardiac pump dysfunction. There is limited literature evaluating the impact of CHF on outcomes and complications following adult spinal fusion. Therefore, the purpose of this study was to compare outcomes and complications between CHF and non-CHF patients undergoing spinal fusion surgery.

Methods: A retrospective query of the National Inpatient Sample (NIS) database was performed between 2005 to 2012. Adult CHF patients who underwent spinal fusion served as the study cohort. Adult non-CHF patients who underwent spinal fusion served as the comparison group. A 1:1 propensity score-match (PSM) by age, gender, and obesity status was performed. Univariate analyses evaluated demographics, complications, and mortality. Multivariate binary logistic regression models were used to identify associations between CHF and postoperative spinal fusion outcomes, controlling for age, sex, and obesity.

Results: A total of 11,211 PSM patients were identified (CHF: n=11,211; non-CHF: n=11,211). The CHF group had increased hospital length of stay (8.8-11.2 days vs. 4.3-4.7 days, $p<0.001$), total hospital charges (\$130,791-126,223 vs. \$90,583-80,326, $p<0.001$), and Deyo score (2.6-1.7 vs. 0.7-1.2, $p<0.001$). Patients with CHF had higher rates of complications ($p<0.001$) and mortality ($p<0.001$). CHF was an independent risk factor for blood transfusion ($p<0.001$), acute myocardial infarction ($p<0.001$), pneumonia ($p<0.001$), acute renal failure ($p<0.001$), sepsis ($p<0.001$), pulmonary embolism ($p<0.001$), deep venous thrombosis ($p<0.001$), and cerebrovascular event ($p<0.001$).

Conclusion: In the general adult population undergoing spinal fusion, patients with CHF had greater hospital length of stay, surgical costs, and Deyo scores. CHF patients were also at increased risk for complications and overall mortality. These results should guide providers in optimizing patient outcomes prior to spinal fusion surgery.

Session/Poster#

Presenter

C24

Lindsay Blank

College of Medicine Student

Advisor(s): Dr. Nishant Suneja, Orthopaedic Surgery & Rehabilitation Medicine

Effect of Dialysis on Postoperative Outcomes of Lower Extremity Amputations in CKD5/ESRD Patients: Should We Dialyze First?

Introduction: Kidney failure, often requiring dialysis, is a common comorbidity in those undergoing lower extremity amputations. Whether to dialyze patients before surgical lower extremity amputation is debated and data is limited on its benefits and risks.

Methods: The American College of Surgeons National Surgical Quality Improvement Program database was queried for lower extremity amputations between 2008 and 2016. Patients were identified with end stage renal disease or stage 5 chronic kidney disease via a glomerular filtration rate less than 15. 1:1 propensity score matching was used to control for gender, age, and estimated probability of morbidity. Patient demographics, comorbidities, and 30-day postoperative outcomes were collected. Univariate and multivariate logistic regression analysis were used to assess risk for postoperative complications with or without preoperative dialysis.

Results: 547 patients who did or did not undergo preoperative dialysis were identified, of which 61.4% were male, 52.4% Caucasian, 42.5% African American; the average age was 63.3 years. Patients who did not receive dialysis had higher postoperative complication rates ($p<0.001$). The most reported was bleeding requiring transfusion ($p=0.005$) followed by renal ($p<0.001$), pulmonary ($p<0.001$), and sepsis-related ($p=0.037$) complications. The two cohorts did not differ in readmission, reoperation, or mortality rates (all $p>0.204$). Multivariate logistic regression analysis found that not receiving preoperative dialysis is an independent predictor of high risk for any post-operative complication ($p=0.001$), particularly renal ($p<0.001$), pulmonary ($p=0.001$), and septic shock ($p<0.001$).

Conclusion: Preoperative dialysis decreased the rate of most postoperative complications seen in patients with ESRD/CKD5, notably renal. While there was no change in mortality or reoperation, the decreased risk of adverse events and severe complications warrants consideration of preoperative dialysis.

Session/Poster#

Presenter

C25

Sudhish Gogula

St. Georges University School of Medicine

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The Impact of Hyperparathyroidism on Outcomes and Complications Following Total Knee Arthroplasty with Minimum 2-Year Surveillance

Introduction: Hyperparathyroidism (HPT) is a condition characterized by elevated levels of parathyroid hormone causing markedly elevated serum calcium levels. There is limited literature evaluating the impact of HPT on long-term outcomes after total knee arthroplasty (TKA) surgery. Therefore, we compared outcomes and complication rates between patients with and without HPT undergoing surgery for TKA.

Methods: Using New York State's Statewide Planning and Research Cooperation system, we retrospectively reviewed patients admitted from 2009 to 2011 with diagnoses of HPT who underwent TKA with a minimum 2-year follow-up surveillance. A 1:1 propensity score-match (PSM) by age, sex, and obesity status was performed before analyzing data. Univariate analyses evaluated demographics, complications, and subsequent revision. Multivariate binary logistic regression models were conducted to identify correlations between HPT and postoperative outcomes.

Results: A total of 394 (PSM) patients were identified (HPT: n=197; no-HPT: n=197), with a mean age of 70.44 years, female % of 78.2, and obesity status of 22.3% for both cohorts (all, $p>0.05$). The HPT cohort, compared to the non-HPT cohort, had fewer white patients (70.6% vs. 89.3%, $p=0.001$), higher Deyo score (1.39 vs. 0.92, $p<0.001$), longer length of stay (4.66 vs. 3.49 days, $p<0.001$), and higher surgical charges (\$48,871.58 vs. \$33,870.85, $p<0.001$). With a 1:1 PSM, HPT patients, compared to the non-HPT patients, had lower risk for surgical and medical complications, cerebrovascular event, and blood transfusions.

Discussion and Conclusion: Patients with HPT had higher surgical charges, greater length of stay, and Deyo score than a (PSM) patient cohort without HPT from the general population undergoing total knee arthroplasty. HPT patients had lower risk for surgical and medical complications compared to non-HPT patients. These results can support management of postoperative expectations and concerns in this patient cohort.

Session/Poster#

C26

Presenter

Mousa Payinkay

College of Medicine Student

Advisor(s): Dr. Carl Paulino, Orthopaedic Surgery & Rehabilitation Medicine

Effects of Sickle Cell Anemia on Postoperative Outcomes in Patients Undergoing Laminectomy

Introduction: Sickle cell anemia (SCA) is an inherited blood disorder that has profound implications on many organ systems, especially the musculoskeletal system. Patients with SCA have a higher risk of developing spinal pathologies. Including compression fracture, vertebral vaso-occlusive crises, and osteoporosis, among others. The impact of SCA on adult patients undergoing laminectomy is poorly characterized. This study aims to analyze effects of SCA on postoperative laminectomies.

Methods: Using the National Inpatient Sample, we identified patients who underwent laminectomy surgery (ICD9: 0309, 0302) from the years 2005 - 2012. A cohort of 157 SCA patients and 157 non-SCA patients were identified. Both cohorts had similar sex (male 52.9% vs 63.1% female) and BMI (14.0% vs 17.8%) distributions. Incidence rates of patients with SCA were reported from the years 2005 - 2012. 1:1 propensity score match controlling for age, sex, race, and obesity status was performed. Univariate analysis was used to compare differences in postoperative complications and in-hospital mortality in the SCA cohort. Multivariate logistic regression analysis was performed to determine SCA status as an independent risk factor for postoperative outcomes between the two cohorts. This allowed us to minimize the effects of confounding variables and differences between cohorts aside from the variable of interest.

Results: The average incidence rate of patients who had SCA from 2005 - 2012 was 0.7 (95%CI: 0.6 - 0.8) per 1,000,000 person/years. Postoperatively Patients with SCA who underwent a laminectomy procedure did not experience higher rates of overall surgical and medical complications ($p>0.05$).

Discussion and Conclusion: Patients with SCA who undergo laminectomy did not experience higher rates of post-operative surgical complications or medical complications. The findings suggest that SCA patients and non SCA patients who receive laminectomies should not require alternative guidelines.

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Presenter

C27

Mary Valmont

Associate Executive Director, Health Science Academy, Arthur Ashe Institute for Urban Health

Advisor(s): Dr. Marilyn Fraser, Arthur Ashe Institute for Urban Health

Increasing HIV/AIDS and Mental Health Knowledge Among Brooklyn, NY Residents: A Retrospective Evaluation of the 2020 Gilead HIV/AIDS and Mental Health Stigma Education Program - Customers

Background: This study examined the effectiveness of the Arthur Ashe Institute for Urban Health (AAIUH) and Gilead Sciences, Inc, HIV/AIDS, and Mental Health Stigma Education Initiative in increasing HIV/AIDS prevention and mental health knowledge among customers of barbershops and hair salons in central Brooklyn. The initiative was expected to increase the knowledge of HIV/AIDS and mental health among barbershop and hair salon customers.

Methods: High school and college students enrolled in the AAIUH's Doris Duke Charitable Foundation Clinical Research program examined data collected during the Gilead AAIUH HIV/AIDS and Mental Health Initiative. Barbers and hairstylists in Central Brooklyn were recruited and trained as advocates to educate clients on PrEP and PEP use. Forty-four customers' change in knowledge was measured with pre- and post-survey assessments administered 3 months apart by their stylists. The Wilcoxon test assessed the difference in pre- and post-scores to measure improvement in knowledge.

Results: 29.55% of customers' HIV/AIDS knowledge scores decreased while 47.73% of scores increased, $z = -4.023$, $p < 0.001$. 20.45% of customers' mental health knowledge scores decreased while 65.91% of scores increased, $z = -1.506$, $p = 0.132$.

Conclusion: The Arthur Ashe Institute for Urban Health and Gilead Sciences, Inc, HIV/AIDS, and Mental Health Stigma Education Initiative may be effective in reducing HIV/AIDS risk and increasing mental health awareness among beauty-salons customers in NYC. This can lead to a higher willingness to use PrEP, reducing HIV transmission.

Session/Poster#

Presenter

C28

Mary Valmont

Associate Executive Director Health Science Academy, Arthur Ashe Institute for Urban Health

Advisor(s): Dr. Marilyn Fraser, Arthur Ashe Institute for Urban Health

Assessing the effectiveness of Gilead HIV/AIDS and Mental Health Stigma Education Program among Barbers and Stylists in Brooklyn, NY

Background: This research evaluates the Arthur Ashe Institute for Urban Health (AAIUH) and Gilead Sciences, Inc, HIV/AIDS, and Mental Health Stigma Education intervention designed to increase knowledge and reduce the stigma associated with HIV/AIDS and promote mental health awareness among barbers and stylists in Brooklyn, NY.

Methods: High school and college students enrolled in the AAIUH's Doris Duke Charitable Foundation Clinical Research program analyzed data collected during the intervention. Thirty-three Central Brooklyn barbers and hairstylists completed a pre-survey prior to a virtual training session and were recruited and trained as advocates to educate clients on mental health and HIV risk reduction through PrEP/PEP use and completed a post-survey three months after the training. Frequency distributions summarized the socio-demographic variables. The Wilcoxon test assessed the difference in pre- and post-scores to measure improvement in knowledge.

Results: Most participants were between the ages of 40-49 (39.4%), men (51.5%), identified as Black (90.9%), and had a high school diploma (36.4%). About 30% had an increase in their HIV/AIDS knowledge score, while 57.6% had a decrease in their score ($z = -2.505$, $p = 0.012$). In terms of mental health knowledge score, 51.5% of barbers and stylists had an increase in their score, 24.2% scores remained the same and decreased, respectively ($z = -2.400$, $p = 0.016$).

Conclusions: The Arthur Ashe Institute for Urban Health and Gilead Sciences, Inc, HIV/AIDS, and Mental Health Stigma Education interventions intervention may be effective in reducing mental health stigma while promoting HIV/AIDS risk reduction to increase the uptake of PrEP/PEP in Central Brooklyn communities.

Session/Poster#

Presenter

C29

Khawar Nawaz

School of Public Health Student

Advisor(s): Dr. Christina Guillen, Pediatrics

The Quest for Health care access for children with Special Health care Needs: Is Medicaid expansion a way out?

Children with Special Health Care Needs (CSHCN) are children that require medications (other than Multivitamins), medical care, have mental health issues or activity limitations caused by physical, mental, or emotional problems and use special therapies such as physical, occupational and speech therapy. An estimated 14.2 million children in the U.S., have special health care needs and 5 million CSHCN need to transition from a pediatric-based to adult-based health care setting yearly. To ensure appropriate care, the health care transition should be done as a planned process. Health care costs and lack of insurance can be a limiting factor and affect the efficiency of the transition. The Affordable Care Act, through its Medicaid expansion, led to increased health insurance enrollment and access to care, and decreased out-of-pocket costs on health care among all young adults, including those with disabilities.

In this study we investigated the impact of Medicaid expansion in the transition of care for CHCN, focusing on the effect pre and post covid-19 pandemic by analyzing National Survey of Children's Health 2016-2021.

Data were obtained from the NCHS from 2016 to 2021; for fifty states and DC. and the status of each state was verified through the Kaiser Family Foundation database. A logistic regression with repeated measures for State using generalized estimating equation and an unstructured correlation matrix was performed.

After controlling for state-level effects and time, the odds that a CSHCN will get adequate care is 32% higher in states that have Medicaid expansion ($p=0.01$). During raw analysis, it was noted that during COVID-19 pandemic states with Medicaid expansion had higher percentage of kids getting their needs met.

Medicaid plays a key role for CSHCN and improves quality of care. The effect was more significant when comparing pre and post pandemic era, which is expected given the pandemic disrupted the health care transition for CSHCN.

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Presenter

C30

Alecia James

School of Public Health Student

Advisor(s): Dr. Elizabeth Helzner, Epidemiology and Biostatistics

Descriptive Epidemiology of Adverse Childhood Experiences in New York City Children: An Analysis of the 2019 New York City KIDS Survey

Background: While the descriptive epidemiology of adverse childhood experiences (ACEs) has been characterized in U.S. children, not much is known about the prevalence, distribution, and correlates of ACEs in New York City children.

Examining ACEs in this study population can potentially advance urban health and improve socio-economic outcomes, given the pressing disparities that exist within New York City.

Methods: This is a cross-sectional study of 8,289 children aged 1 - 13 in the 2019 NYC KIDS Survey. Parents or guardians provided information related to their child's health, education, family, and neighborhood characteristics, and exposure to 9 adverse childhood experiences. Quasi-Poisson regression models were used to evaluate sociodemographic correlates of ACEs.

Results: More than half of the population (52.5%) reported exposure to at least 1 ACE. The most common ACEs were economic hardship (40%) and parental separation or divorce (17%). A history of 3 or more ACEs was reported among 9% of Black children, but only 3% of White children. Among those with no ACEs, most lived in a household with both parents (78%) while for those with 3 or more ACEs, most of the children lived in single parent households (46%). In adjusted analyses, Black and Latino children had a 29% (PR: 1.29; 95% CI: 1.15 - 1.45) and a 24% (PR: 1.24; 95% CI: 1.11 - 1.39) greater likelihood of ACEs exposure, respectively, compared to White children. Children in the low (<200% FPL) and middle-income group (200 - 399% FPL) were 56% (PR: 1.56; 95% CI: 1.40 - 1.75) and 55% (PR: 1.55; 95% CI: 1.37 - 1.75) more likely to be exposed to ACEs, respectively, than those in the high-income group (400+ FPL).

Conclusions: The racial and social patterning of ACEs in New York City children underscores the impact of broader systemic factors and is informative for needed system-level changes. This study has identified contributory factors to ACEs exposure which can help to guide early detection and intervention.

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Presenter

C31

Bradley Amazan

College of Medicine Student

Advisor(s): Mrs. Betty Jung, Nursing

Insurance status in Flatbush Health Fair Attendees

Introduction: Health fairs are an important resource for uninsured populations who may not have access to regular medical care. This study aims to shed light on healthcare disparities and inform strategies to better serve uninsured populations. The aim of this study is to 1) analyze the demographic data of health fair attendees and 2) assess insurance status as a factor in health outcomes.

Methods: At the 2016 Downstate Health Fair, patient demographics and health measures were collected at a free screening booth. The information recorded includes sex, age, ethnicity, insurance status, primary care provider (PCP) status, and health measures such as diabetes status. Patient data were de-identified and stratified according to sex and age. Age was secondarily stratified using significant insurance ages. Odds ratios were calculated using Excel. Individuals with missing information were excluded. A p-value of 0.001 was the significance threshold.

Results: 132 total participants were screened. 126 participants disclosed race, a majority of which were black (103, 81.75%). The three most common groups were black/unspecified (25, 19.84%), Trinidadian (20, 15.87%), and Haitian (17, 13.49%).

131 participants disclosed ages and sex. Participants were more likely to be female (79, 60.31%) and the most common age group was 51-60 years old (36, 27.5%). 39 (29.77%) of all attendees were uninsured. The uninsured rate was highest for individuals aged 26-64 (31/81, 39.51%). Insured patients were 6.73 times more likely to have a PCP (OR = 6.73 [2.9-15.5], $p < 0.0001$).

Discussion: The high rate of uninsured individuals suggests that there may be significant barriers to accessing care in this population. Health fairs serve as an important resource for uninsured individuals by providing screenings, vaccinations, and health information they would not otherwise receive. In addition, health fairs provide assistance in registering for insurance and setting up appointments with PCPs.

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Presenter

C32

Mahmoud Dweik

School of Public Health Student

Advisor(s): Dr. Thomas Mackie, School of Public Health

A National Survey to Characterize Implementation of Child Psychiatry Access Programs

Child Psychiatry access programs are the primary form of telehealth services to improve pediatric behavioral healthcare access and quality and are currently implemented or under development in all 50 states. Widespread adoption of child psychiatry access programs reflects demonstrated evidence of effectiveness in individual studies and evidence reviews. However, programs hold highly heterogeneous design features. These programs fundamentally provide psychiatric consultation to pediatric providers but can also serve as a platform for multiple other services. The present study aims to characterize the key design features and program components for each of the statewide Child Psychiatry Access Programs. The present study leverages opportunities to examine the variation across our 50 states and DC in responding to our nation's pediatric mental health crisis.

The present survey includes a series of close ended questions to characterize the services offered across the nation's Child Psychiatry Access Programs. In this presentation, I will present on data collected on the strategies implemented by the programs to advance health equity. Strategies to advance health equity fall into four domains: (1) equity-focused capacity building within the Child Psychiatry Access Program, (2) investment in a learning healthcare system to advance health equity, (3) development of cross-cutting program strategies to advance health equity, and (4) investment in component-specific initiatives in (a) psychiatric consultation, (b) training, and (c) resources and referral. Strategies were derived from the extant literature and in partnership with leaders from a national network of Child Psychiatry Access Programs. Data collection is anticipated to be completed by March 30, 2023. The survey will be sent to one representative from each of the 50 states and DC engaged in the National Network of Child Psychiatry Access Programs.

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Presenter

C33

Janille Williams

School of Public Health Student

Advisor(s): Dr. Rose Saint Fleur-Calixte, Department of Epidemiology and Biostatistics, School of Public Health

Disparities in Human Papillomavirus Knowledge and Awareness Among Sexual Minorities in the United States

Background: HPV, a vaccine-preventable infection and the most common STI, can cause penile (PCa), anal (ACa), oral (OCa), and cervical cancers (CCa). Knowledge/awareness of HPV can prevent HPV-related cancers. Sexual minorities are less likely to be screened and have a higher risk of contracting HPV and HPV-related cancers. However, most HPV interventions and research focus on heterosexuals.

Methods: An analysis of HINTS-5 data assessed the knowledge and awareness of HPV and HPV vaccination among sexual minorities. Regression models estimated the incidence rate ratio (IRR) of HPV awareness, HPV vaccine awareness, and knowledge of HPV-related cancers.

Results: Sexual minorities were unaware of HPV (30.2%), HPV vaccine (27.4%) and HPV caused ACa (70.3%), OCa (76.9%), PCa (73.1%). Participants most likely to have HPV knowledge were men (IRR=1.26, 95% CI=1.16-1.37, $p<0.001$), college-educated (IRR=1.52, 95% CI=1.01-2.29, $p=0.04$) and earned over \$100,000 (IRR=1.22, 95% CI=1.00-1.48, $p=0.05$). Participants most likely to have HPV vaccine knowledge were men (IRR=1.44, 95% CI=1.32-1.57, $p<0.001$), college-educated (IRR=2.13, 95% CI=1.40-3.24, $p<0.001$) and earned over \$100,000 (IRR=1.21, 95% CI=1.06-1.39, $p=0.008$). Participants most likely to know about HPV-related CCa were men (IRR=1.46, 95% CI=1.27-1.68, $p<0.001$) whereas participants least likely to know were 45+ years (IRR=0.7, 95% CI=0.60-0.81, $p<0.001$) and had a regular care provider (IRR=0.87, 95% CI=0.76-0.99, $p=0.04$). Participants most likely to know about HPV-related PCa were men (IRR=1.42, 95% CI=1.05-1.91, $p=0.02$) whereas participants least likely to know were 45+ years (IRR=0.69, 95% CI=0.49-0.96, $p=0.03$). Participants 45+ years were least likely to have HPV related ACa knowledge (IRR=0.70, 95% CI=0.51-0.96, $p=0.03$).

Conclusion: Awareness of HPV and HPV vaccine was high for sexual minorities; however, knowledge of HPV-related cancers was low. These results demonstrate the ineffectiveness of HPV-related cancer education and call for interventions targeting sexual minorities.

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Presenter

C34

Justin Marson

Dermatology Resident

Advisor(s): Dr. Daniel Siegel, Dermatology

Teledermatology adoption patterns in the COVID-19 era: a national cross-sectional study and real-world healthcare implications

Background: Studies have raised concerns regarding heterogeneity in telemedicine adoption and healthcare inequity exacerbation.

Methods: A prevalidated anonymous survey was emailed to a purchased listserv of practicing US dermatologists.

Completed results were stratified by teledermatology-adoption timepoint(TAT). Data analysis performed using chi-square and odds ratios(OR) with 95% confidence intervals(95%CI) for categorical data and single-factor ANOVA with post-hoc Tukey-Kramer for continuous data.

Results: Data from 338 practicing US dermatologists was analyzed. Academic/Government dermatologists were 4.08-times more likely(OR 4.08, 95%CI 2.37-7.03) to adopt teledermatology pre-COVID(early-adopter,EA) than private-practice dermatologists. Dermatologists with ≥ 10 years of experience(YoE) were 1.8-times(95%CI 1.01-3.18) and 2.82-times more likely(95%CI 0.78-10.25) to be EAs or adopt teledermatology at all, respectively, compared to dermatologists with ≤ 20 -YoE. No significant relationship existed between TAT and practice location($\chi^2(14, n=338)=10.87, p=.70$). EAs/post-COVID-adopters(CAs) practiced more medical-dermatology($p<.0001$) than non-adopters(NAs), who reported more dermatologic surgery($p=.003$; Tukey-Kramer $\delta > .05$) and dermatopathology($p<.0001$; Tukey-Kramer $\delta > .05$).

EAs were 4.69-times more likely(95%CI 1.46-15.07) to use live-interactive(LI)-only teledermatology post-COVID-19. CAs were 6.09-times more likely(95%CI 3.36-11.06) to utilize LI than EAs. While EAs currently use teledermatology for a larger proportion of patient visits(19.6% v. 10.4%, $P<.0001$), they were 3.43-times more likely(95%CI 1.82-6.46) to report decreased future usage compared to CAs.

Limitations: Cross-sectional survey. Response bias.

Conclusion: Currently, teledermatology may be better suited for medical-dermatology practices compared to procedural practices. Future studies should investigate these financial and logistic barriers to maximize equitable access to dermatological care.

Session/Poster#

Presenter

C35

Hao Tseng

Pediatrics Resident

Advisor(s): Dr. Maria-Anna Vastardi, Division of Allergy and Immunology

Food Insecurity and Food Allergy in Children of an Urban Underserved Community: A Cross-Sectional Study

Rationale: Childhood food insecurity was exacerbated during the COVID-19 pandemic, with burdens falling disproportionately on racial and ethnic underserved children. Households with food-allergic children face unique challenges to access adequate food that is safe and nutritious. This study aims to describe the prevalence of food insecurity in food-allergic children of an urban underserved community and examine the association between food insecurity and food allergy.

Methods: We conducted a retrospective review of electronic medical records of all patients aged 6 months to 18 years seen in a primary care pediatric clinic at NYC Health + Hospitals/Kings County, from 10/2020 to 06/2022. Pediatricians at this clinic in Central Brooklyn routinely screen for food insecurity using the Hunger Vital Sign[®], a validated screening tool recommended by the American Academy of Pediatrics. Data was collected based on ICD-10 diagnosis codes for food insecurity (Z59.41) and food allergy (Z91.01). Logistic regression was used for analysis.

Results: Among 7,856 children included in the study, 84.9% were Black or African American, 6.0% Hispanic/Latinx, 1.2% white, and 1.1% were Asian/Pacific Islander. Of 275 children diagnosed with a food allergy by a primary care pediatrician, 4.7% screened positive for food insecurity. Of 7,581 children without a diagnosed food allergy, 2.6% screened positive for food insecurity ($p=0.029$). Children with food allergy (adjusted odds ratio: 2.14, 95% confidence interval: 1.19-3.85) were significantly more likely to be food insecure than those without a food allergy, adjusted for age, gender, and race/ethnicity.

Discussion: Childhood food allergy is associated with increased odds of food insecurity. This study highlights the importance of assessing and addressing food insecurity in children with food allergies.

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Presenter

C36

Stacey Saenz de Viteri
Postdoctoral Associate, School of Public Health

Advisor(s): Dr. Tracey Wilson, Department of Community Health Sciences, School of Public Health

Social Connections and Mental Health among Women Living with HIV

Healthy relationships, or social connections, are fundamental aspects of well-being. Research on social connections includes a range of constructs that encompass both perceived and actual connections to others. Loneliness, which focuses on perceptions of inadequate social connection, and social isolation, which involves a lack of, or infrequent, social ties, have been associated with substance misuse and depression. Loneliness and social isolation are associated but distinct constructs, with independent and sometimes synergistic effects on different aspects of health. Stronger social connections have been linked to better quality of life and lower mortality among women living with HIV (WLHIV). In turn, WLHIV may be at increased risk for social isolation and loneliness. Guided by theoretical frameworks of social connection and drawing on data from a highly characterized national HIV cohort study (MACS/WIHS Combined Cohort Study), we discuss background and aims of the Social Connections Study, a multilevel examination of predictors and health outcomes associated with loneliness and social isolation. Preliminary analysis among 1,737 WLHIV demonstrates modest correlations between loneliness (UCLA 3-item loneliness scale) and living alone ($r: 0.11, p < 0.001$), and moderate correlations between loneliness and higher depression symptoms (CES-D; $r: 0.54, p < 0.001$) and to a lesser degree, self-reported substance misuse (r 's range from 0.03-0.12, $p < 0.001$). These analyses provide the first steps to advance a mechanistic model of relationships between social connections and mental health outcomes in WLHIV that can advance prevention science in this important area.

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Presenter

C37

Lisa Calvo

Child Neurology Resident

Advisor(s): Dr. Geetha Chari, Child Neurology

Quality Improvement: Using Epilepsy Clinic Template to Improve Documentation and Quality of Care

Background: Epilepsy is a chronic neurological disorder estimated to affect 3.4 million people in the United States. Patients with epilepsy can often experience poor physical and mental health, among other hardships that can affect their overall quality of life. Not only does epilepsy affect the child's quality of life in the present time, but the quality of epilepsy management can also significantly affect the child's future.

Purpose: To improve the quality of patient care and EMR documentation in pediatric epilepsy clinic by using a templated note.

Methods: We have created a templated note which includes 4 different quality measurements, 2 of which were obtained from the 2016 AAN Child Neurology Quality Measurement set (Rescue medication and neuropsychological/neurodevelopmental screening) and 2 from the 2017 AAN Epilepsy Quality Measurement Set (seizure frequency and anxiety/depression screening). Templates were used by child neurology fellows in the pediatric epilepsy clinic. Data was obtained from August to December 2022.

Results: Using our epilepsy clinic template, seizure frequency and rescue medications were documented 100% and 96% of the time, respectively (vs 70% and 55% using other templates). Screening of depression/anxiety was done in 58% of the cases (compared to 0% using other templates).

Conclusion: One of the many advantages of using EMR is the ability to use templated notes to document patient care. Even in the short duration of this intervention, the epilepsy clinic template has proven to be a promising method to improve documentation in a way that can help us appreciate a patient's seizure burden and ultimately aid in the management of the patient's condition, as well as improving the screening for anxiety and depression in patients with epilepsy, a population with a high prevalence of mental health problems.

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Presenter

C38

Lekshmi Peringassery Sateesh
Child Neurology Resident

Advisor(s): Dr. Geetha Chari, Child Neurology

Application of plan-do-study-act method in seizure rescue medication practices: A single pediatric neurology clinic quality improvement study

Objective: To assess if seizure rescue medications are prescribed appropriately with documentation in the EMR

Background: Administration of appropriate rescue medication is crucial in management of prolonged seizure and cluster seizures to avoid progression to status epilepticus.

Methods: The study is a retrospective single clinic analysis of pediatric patients with convulsive seizures employing the 'plan-do-study-act' (PDSA) method for quality assessment. Two separate cohorts-PDSA1 and PDSA2 were compared at two separate time frames spanning three months each with educational session in between.

Results: 38 and 30 patients were enrolled in PDSA1 and PDSA2 cycles respectively. In PDSA1, 25 patients (65.8%) had appropriate rescue prescriptions. Out of the rest, 8 (21.2%) were not prescribed medications due to unclear reasons and 5(13%) were seizure free for more than 2 years. In PDSA2, the percentage of rescue medication prescribed improved to 73%. Clonazepam ODT was the most prescribed rescue medication in both cohorts. There was an increase in prescribing trend of Valtoco and Nayzilam noted in the PDSA2. Increase in intranasal rescue medication from 11% to 32% and decrease in rectal rescue medication from 21% to 9% were noted in PDSA2. The analysis of appropriate dosing of medications and proper documentation in PDSA2 cohort was high, 95% and 89% respectively.

Conclusions: Our study showed improvement of seizure rescue medication prescription practices in PDSA2 compared to PDSA1 cycles. The role of educational session for fellows, attending physicians and patient family regarding the timing of rescue medication, appropriate options, and correct dosing after the PDSA1 was significant. Effective strategy of implementing systematic and rigorous standards in PDSA cycles sequentially could improve the prescription rate to 100% for convulsive seizures and consequently result in reduction in number of ED visits for breakthrough seizures and status epilepticus admissions.

Session/Poster#

Presenter

C39

Abhayvir Singh

College of Medicine Student

Advisor(s): Dr. Montgomery Douglas, Dept of Family and Community Medicine

Improving Colorectal Cancer Screening Rates at the Brownsville Multi-Service Family Health Centers

Colorectal cancer is among the leading causes of premature deaths in Brownsville, Brooklyn and residents die at a disproportionately higher rate compared to the rest of NYC. The Brownsville Multi-Service Family Health Center (BMS) is a Federally Qualified Health Center (FQHC) with 5 clinical sites located throughout the community, providing primary and specialty care services for uninsured and underinsured people. The colorectal cancer screening rate at BMS for 2021 was 51.7%, while the national average among the FQHCs was 41.9%. The purpose of this performance improvement project was to follow-up with patients in order to improve screening rates throughout BMS clinic sites. Data from patient conversations was used to explore reasons for nonadherence with screening recommendations. A total of 150 patients were contacted for this study from a list generated by the electronic health record system. Analysis of patient follow-up revealed the primary reasons for nonadherence with colorectal cancer screening include lack of understanding of screening process, missed clinician referral, workflow errors, and fear over colonoscopy procedure. Proposed solutions to increase screening rates apply multicomponent interventions that recognize the role of city, state, national policies to ensure accessibility of preventative care to all adults. Data suggests enforcement and optimization of the protocols in place to improve screening metrics at the clinic level. A comprehensive approach can save lives and improve prognosis of a disease that disproportionately affects Brownsville residents. The success of proposed interventions will be evaluated from the annual clinical measures, gathered by the BMS clinical quality coordinator. These measures are submitted to the Uniform Data System of the Health Resources & Services Administration as a requirement of FQHC status.

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Presenter

C40

Pavani Chitamanni
Pediatrics Resident

Advisor(s): Dr. Ivan Hand, Pediatrics, Neonatology

Quality Improvement Project to Improve Adherence to Hand Hygiene in a Level III NICU

Background: Hand hygiene (HH) is a simple and effective measure to decrease Healthcare-Associated-Infections.

Aim: To improve adherence to HH in the NICU at NYC Health + Hospitals, Kings County, by 20% within a six-month period.

Methods: HH compliance in the unit was assessed by covert observations of the Health Care Workers (HCW) including physicians, nurses and respiratory therapists at nine HH opportunities: a) before touching patient b) after touching patient c) before a clean/aseptic procedure d) after body fluid exposure e) after touching patient surroundings f) at entry into unit g) at exit from unit h) before wearing gloves i) after removing gloves. Low baseline compliance was noted at the last 5 HH opportunities, which was addressed by HCW education. The importance and misconceptions of HH, the “five-moments” model, the glove and nail policies were also discussed. Second intervention done was repeat HCW education. NICU staff's knowledge, perceptions, and barriers to HH were assessed by individual surveys. The outcome measure for this QI project was the compliance percentage, the process measure was the number of educational interventions and the balancing measure was perceived increase in work burden and interference with patient care. The chi-squared test for proportions was used for analysis.

Results: We had a total of 377 observations at baseline, 319 for the first PDSA cycle and 265 for the second one. The baseline overall compliance was 31.6%, which rose by 6% after the 1st intervention, with increases of 5.96% to 20% at the 9 HH opportunities. There was no change after the 2nd intervention. Common barriers to HH noted were the work burden (83.3%), skin irritation (66.7%) and empty/broken dispensers (66.7%).

Conclusion(s): This QI initiative increased HH compliance in our NICU by 6% after two PDSA cycles. Further interventions include immediate feedback to the staff by NICU leaders and giving individual rewards, to bring about a change in HH behavior.

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Presenter

C41

Aarthi Sriram

Pediatrics Resident

Advisor(s): Dr. Ivan Hand, Department of Pediatrics - NYC Health & Hospitals, Kings County

Implementation of a NEC prevention bundle to decrease the incidence of NEC in preterm and/or VLBW infants in a level III NICU

Background: Necrotizing Enterocolitis (NEC) is one of the most common gastrointestinal emergencies in preterm infants. The incidence of NEC is reported to be 2-7.5% in very low birth weight (VLBW) infants. Standardized protocols and checklists have been shown to decrease the incidence of NEC.

Objective: A Quality Improvement (QI) initiative at a Level III NICU that aimed to reduce the incidence of NEC by 20% over a 2-year period, from January 1st, 2021, to December 31st, 2022.

Methods: Infants with gestational age <32 weeks and/or weight <1500g at birth were included. The QI Model for Improvement and Key Driver Diagram were used to build the NEC prevention bundle that comprised of a 9-point checklist. We studied 5 interventions: 1) Use of mother's own milk or donor human milk, 2) Adherence to the unit feeding protocol, 3) Discontinuation of antibiotics within 48 hours of negative blood cultures, 4) No routine checking of gastric residuals, 5) Removal of central lines at 100 ml/kg/day of feeding volume. The primary outcome measure was the incidence of clinically proven NEC and the process measure was adherence to the NEC bundle.

Results: 2 PDSA (Plan-Do-Study-Act) cycles comprising of 74 infants were conducted. The adherence rates to our process measure improved from 97% to 100% for use of human milk, 68% to 83% for adherence to the feeding protocol, 81% to 88% for antibiotic discontinuation at 48 hours, 76% to 94% for not checking gastric residuals and 71% to 92% for central line removal. Our outcome measure of NEC incidence decreased from 7% to 5.3% and 5.3% to 2.8% at the end of the first and second PDSA cycles respectively. This was a 60% reduction from baseline.

Conclusion: The NEC prevention bundle reduced the incidence of NEC by 60%. Reduction in NEC rate improves overall morbidity and mortality and leads to improved long-term neurodevelopmental outcomes and quality of life in preterm and VLBW infants.

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Presenter

C42

Nada Akkari

Internal Medicine Resident

Advisor(s): Dr. Melissa Lee, Kings County Hospital Center- Primary Care

A Video Shot for Shots: Assessing a resident-created educational video on COVID & Influenza vaccination acceptance in an urban underserved primary care practice.

Purpose: To utilize a culturally sensitive, multilingual educational video addressing COVID and Flu vaccine hesitancy to address health inequities in adult vaccination rates in our primarily Afro-Caribbean resident-run safety net primary care practice.

Statement of Methods: An educational video featuring members of our diverse healthcare community was created to address the most common reasons for COVID and Flu vaccine hesitancy in our patient population. This brief multilingual video (Haitian-Creole, Spanish, English) video was played during scheduled primary care visits. A survey was administered before and after the intervention to assess barriers and readiness to receiving COVID/Flu vaccination. A paired t-test was performed to compare responses.

Results: 39 regularly scheduled patients in the resident primary care practice participated in this intervention. After watching the educational video, patients with prior who had previously been vaccinated against COVID vaccination were more ready to receive a booster, $t(34) = -5.667$, $p < 0.000$. On a 5- point Likert Scale (1=not ready, 5=very ready), readiness improved from 3.23 - 2.7 to 4.69 - 2.6. Similarly, readiness to receive a flu vaccination increased from 2.07 - 2.0 to 3.18 - 2.4; $t(27) = -3.389$, $p < 0.002$. Conversely, the video did not impact readiness for vaccination in individuals who had not received a dose of COVID vaccination; $t(2) = -1.337$, $p = 0.196$.

Conclusions: A multilingual, culturally sensitive educational video is effective in motivating patients to consider influenza vaccination as well as COVID booster shots. For patients who are hesitant to receive any COVID vaccination, our video was insufficient to impact readiness for vaccination. This highlights the complexity of COVID vaccine hesitancy, especially in underserved minority populations with historically founded reasons to be mistrustful of vaccination.

Session/Poster#

Presenter

C43

Stella Fagbemi

Primary Care Internal Medicine Track

Advisor(s): Dr. Melissa Lee, Primary Care Internal Medicine

Small Bites: Setting Smart Goals One Step at a Time

Background: Many Afro-Caribbean primary care (PC) patients live with uncontrolled diabetes (32%, A1C<8) and hypertension (23%). Standard 20 minute visits with patients do not permit adequate conversations on lifestyle change. Group education for behavioral change works. We created a transferrable standardized low-literacy health curriculum using motivational interviewing readiness rulers and SMART (specific, measurable, achievable, relevant, timely) goals. Methods: A resident MD standardized slides/script: intro (5 min), topic (20 min), SMART goals (5 min), reflection (5 min). 4 public high school students (HSS) created "Small Bites" workshops based on the National Diabetes Prevention Program. Coached in content design and oral presentation, students piloted workshops in waiting rooms/classrooms during PC visits. Faculty provided individualized HSS feedback. Patients completed a questionnaire to assess confidence and motivation towards individualized healthy lifestyle SMART goals. Results were analyzed using a SPSS Pre-Post design for non-parametric analysis. Results: 68 patients participated. Wilcoxon Signed Ranks Test revealed statistically significant results for improved confidence after workshops on eating plants (n=11,Z=-2.410,p=0.016), eating well (n=22,Z=-2.856,P=0.004), shopping (n=14,Z=-2.200,p=0.028), energy (n=8,Z=-2.060,p=0.039) and diabetes (n=6,Z=-2.049,p=0.040); stress (n=4) and fitness (n=3) had too few participants to compare. Classes on eating well (Z=-2.683,p=0.007), shopping (Z=-2.070,p=0.038), energy (Z=-2.023, p=0.043) improved motivation. Eating plants (Z=-1.725, p=0.084) and diabetes (Z=-1.841, p=0.066) did not. HSS found transient waiting area teaching difficult. All improved visual and oral presentation skills. Discussion: Structured educational sessions are effective at promoting healthy lifestyles. 30-minute sessions work best in classrooms. HSS gained skills delivering health information to a diverse audience.

Session/Poster#

Presenter

C44

Sheetal Sriraman
Pediatrics Resident

Advisor(s): Dr. Ranu Sukhvinder, Department of Pediatrics, NYC Health and Hospitals, Kings County, SUNY Downstate Health Sciences University

Neonatal Pain: Perception, Practice of Monitoring and Management in a Level III Neonatal Intensive Care Unit.

Background: Neonates often experience pain from multiple procedures which can impact their cognitive and neurobehavioral outcomes. Effective pain management in neonates is critical but can be challenging to implement in the NICU.

Aims: To increase the use of neonatal pain management interventions by NICU staff to over 70% within three months.

Methods: We used the plan-do-study-act (PDSA) problem-solving approach. Interventions included staff education using presentations and flyers, interdisciplinary meetings with stakeholders, and improved access to pharmacological agents. Data was collected through individual surveys. Our outcome measure was the percentage of NICU staff who implement neonatal pain management interventions >70% of the time. Our balancing measure was a delay in patient care. Chi-squared test for proportions was used for the analysis of pre-and post-intervention outcomes.

Results: Pre- and post-intervention data were collected from 51 and 35 NICU staff respectively. The use of non-pharmacological measures and topical analgesics during >70% of skin-breaking procedures increased from 64% (33/51) to 82% (29/35; $p = 0.06$) and 5.8% (3/51) to 48.5% (17/35; $p = <0.001$) respectively. The percentage of NICU staff who reported being adequately trained in pain management increased from 17.6% (9/51) before to 62.8% (22/35; $p = <0.001$) after our interventions. Common barriers to implementing pain management were the availability of pharmacological agents (35/35, 100%) and the implementation time (19/35, 54.2%). Very few (4/35, 11%) reported delayed patient care because of pain management interventions.

Conclusion: We increased the use of procedural pain interventions in the NICU, using quality improvement methodologies and interdisciplinary cooperation. To further increase the implementation of pain management interventions, additional education along with increasing the availability of pharmacological agents are warranted.

Session/Poster#

Presenter

C45

Caroline Basta

Allergy/Immunology Resident

Advisor(s): Dr. Maria-Anna Vastardi, Allergy/Immunology

Rates of Outpatient Allergy Follow-Up In Patients with Emergency Room Visits for Anaphylaxis

Outpatient management is a crucial facet of care for patients with allergies, especially those who have had emergency department (ED) visits for anaphylaxis. This study assesses how frequently patients with ED visits for anaphylaxis adhere to outpatient allergy appointments after receiving allergy referral upon discharge from the ED.

This was a single-center retrospective chart review that evaluated the rates of outpatient allergy follow-up for pediatric patients that had been seen in the University Hospital of Brooklyn ED for anaphylaxis between 2016 and 2019. Number of outpatient allergist referrals were obtained and compared to number of outpatient allergist appointments made and adhered to.

There were 97 pediatric ED visits for anaphylaxis between 2016 - 2019. 27 patients (30%) were referred to pediatric allergy upon discharge from the ED. Of those patients with referrals, 17 (63%) made and adhered to outpatient allergy appointments. During the appointments, 3 patients (18%) had only skin prick testing (SPT), 10 patients (59%) had only specific IgE blood-work, and 5 patients (29%) had both methods of testing. Between both testing methods, most patients showed sensitization to nuts (75% of SPT and 55% of IgE testing). In 36% of patients, allergy testing via SPT or IgE confirmed the suspected allergic trigger that caused patients to initially present to the ED.

Outpatient allergist follow up after pediatric ED visits for anaphylaxis is lacking and should be more strongly emphasized prior to ED discharge for continued patient care and prevention of repeat ED visits for potentially life threatening allergic reactions.

Session/Poster#

C46

Presenter

Maissa Trabilisy

College of Medicine Student

Advisor(s): Dr. Joshua Feinberg, Division of Breast Surgery, Maimonides Health

Lack of Diversity in Textbook Images Depicting Diseases of the Breast

Black Americans have a higher cancer related mortality rate than any other racial group, yet they are underrepresented in medical education materials. We sought to determine the extent of skin tone representation depicted in images of breast cancer textbooks.

Textbooks were screened to include non-illustrated, color images of conditions with sufficient skin or breast tissue present to assign the Fitzpatrick skin phototype (FP) score. Included figures were independently reviewed and assigned a FP score (range: 1-6). Figures were grouped into 'light skin color' (FP scores 1-3) and 'dark skin color' (FP scores 4-6). Number of figures in each category were calculated, along with the percentage of patients with light skin color versus dark skin color. The Fisher Exact test was used to determine differences in representation across categories, with $P < 0.05$ as statistically significant.

12 textbooks with 557 eligible figures were included. Of the 363 operative images, 114 figures were pre-, 33 figures were intra-, and 216 were post-operative. Benign pathology encompassed 63 figures, of which 18 were categorized as infectious/benign and 45 as non-infectious/benign. Malignant pathologies were depicted in 115 figures. On a logistic regression model to evaluate the odds of a figure having dark skin color predicted by category, postoperative figures were 82% less likely (OR: 0.187, 95% CI: 0.049-0.718) to have dark skin color than the reference group, preoperative. Overall, 533 (95.7%) figures depicted patients with light skin color while 24 (4.3%) figures presented patients with dark skin color ($p < 0.05$). There was no association between FP score and year of textbook publication ($p = 0.69$). Patient images in breast textbooks are mainly of light skin tones. The dearth of images depicting dark skinned individuals did not improve over time. Adding images with patients of color in future textbooks can contribute to the improvement of disparities within breast cancer care.

Session/Poster#

Presenter

C47

Sylvia Zielinski

College of Medicine Student

Advisor(s): Dr. Cathryn Galanter, Psychiatry

Suicidal Ideation in the Youth of Brooklyn Across Three COVID Timeframes

Objective: Emergency department visits among youth for suicidal ideation (SI) have increased since the start of the COVID-19 pandemic, especially among females and Black or AA youth. Our earlier work examined rates of SI pre and during the pandemic and showed a nonsignificant increase in rates of SI. We extended the time frame of our analyses to test the hypothesis that rates of SI would increase in the second year of the pandemic.

Methods: This chart review included patients aged 3-18 evaluated in the Comprehensive Psychiatric Emergency Program in NYCHHC Kings County from Jan-Feb in 2020 (hereafter pre-COVID), and the corresponding months in 2021 and 2022 (hereafter COVID-1 and COVID-2 respectively). We compared SI measured by the Columbia Suicide Severity Rating Scale (C-SSRS), individual items and total, between cohorts using chi-squared and One-Way ANOVA.

Results: There were 523 patients with no significant differences in age ($M = 13.67$ $SD = 3.184$), sex ($M = 56.2\%$ female), and race ($M = 74.8\%$ Black or AA) between cohorts. 505 (97%) patients completed the C-SSRS with staff and were included in analyses (235: pre-COVID, 130: COVID-1, 158: COVID-2). While there were no between group differences in “wish to be dead” or “suicidal thoughts,” significantly more patients in COVID-2 compared to pre-COVID and COVID-1 endorsed SI with a method but no intent ($\chi^2(4, N = 158) = 17.94, p < .001$) and SI with a specific plan and intent ($\chi^2(4, N = 158) = 14.44, p < .006$).

Conclusion: Patients having a specific plan and method for SI was highest in 2022 compared to pre-COVID and the first year of the pandemic. Our current analyses did not permit investigation of causality. It is possible that youth returning to in-person school after quarantine in COVID-2 led to significant stress. Also, the rising destigmatization of mental health in the media may have empowered more youth to report their SI. Our further analyses will examine association of clinical characteristics and rising rates of SI.

Session/Poster#

Presenter

C48

Lennox Ksido

College of Medicine Student

Advisor(s): Dr. Robert Gore, Emergency Medicine

Social Needs and Medication Access in Brooklyn and Chicago Emergency Departments

Background: Social determinants of health (SDoH) affect health outcomes and can influence adherence to medication regimens. However, there is limited data on the linkage between SDoH and medication adherence in the Emergency Department (ED). The objective of this study is to identify social needs and assess medication adherence of ED patients in Brooklyn and Chicago.

Methods: This is a prospective cross-sectional and multi-site study to determine SDoH and medication adherence. We included adults (≥18 years), who spoke English, and took ≥4 prescription medications or ≥1 "high risk" medication (deemed "high risk" based on their long-term usage and side effects). Patients completed a survey regarding demographics, social needs, and medication adherence.

Results: To date, we enrolled 108 patients (50.9% female) across three Eds (mean age - 59yrs). Of this population, 11 (10.2%) reported unstable housing, 20 (18.5%) reported concern about having sufficient food, 34 (31.5%) reported always or sometimes having insufficient money to pay bills, and 29 (26.9%) neglected medical care due to distance or transportation. 37 participants (34.3%) reported running out of their medications sometimes or always, with 16 (14.8%) stating they sometimes would defer refilling medications due to cost and 10 (9.3%) noting that they sometimes took less medication to save money. 20 participants (18.5%) reported that paying for medications was somewhat or very difficult, while 17 (15.7%) reported that understanding the medication regimen was somewhat or very difficult.

Conclusion: Among patients presenting to the ED who were on ≥4 medications or taking "high risk" medications, over one-third had social needs that impacted their medical care. The most reported social needs were insufficient money to pay bills and difficulty accessing medical care due to distance or transportation. The most common medication adherence issue was running out of medication and difficulty paying for medications.

Session/Poster#

Presenter

C49

Isaiah Greene

College of Medicine Student

Advisor(s): Dr. Nickisa Hodgson, SUNY Downstate Medical Center, Department of Ophthalmology

Eyequality: Examining Social Justice Discussions in Ophthalmology Podcasts

Podcasting is a modern audio media tool that has become a critical component of education throughout many fields of study. Ophthalmology is a medical specialty that has an ever-growing presence in the world of podcasts. Yet, there is a lack of literature that explores the current state and subject matter of ophthalmology podcasts. This project sought to characterize the features of ophthalmology podcasts with an emphasis on their discussions of social justice issues. Apple Podcasts, Spotify, Google Podcasts, and Google Search were queried for English-language shows relating primarily to ophthalmology. 96 podcasts and 3594 episodes were analyzed. Analysis involved examining podcast-level characteristics, such as frequency of episode release, number of hosts, theme of the podcast, etc. Episode level analysis was also done to examine the specific content presented in each episode. Ocular health disparity episodes, of which there were no more than two per year prior to 2020, nearly tripled during 2020-2022 ($P = 0.003$). Similarly, the number of episodes relating to doctor or student wellness was zero prior to 2017. The proportion of such episodes increased over fivefold during the pandemic ($P < 0.001$). Episodes relating to diversity within the field of ophthalmology also underwent an over fourfold increase ($P < 0.001$). Global outreach was the most persistent standalone special topic across the years and nearly doubled during the 2020-2022 period ($P = 0.003$). The results show that the COVID-19 pandemic coincided with a shift in the focus of discussions within the field of ophthalmology. There is a need within ophthalmology for more equal racial and gender representation, as well as for better service of the underserved. Tools like podcasts may be particularly well suited for highlighting such issues that are often missed by traditional sources of information.

Session/Poster#

Presenter

C50

Carla Florencio

Pediatrics Resident

Advisor(s): Dr. Kay Beharry, Director, Neonatal-Perinatal Medicine Clinical and Translational Research Lab at SUNY Downstate Medical Center.

Influence of Neonatal Intermittent Hypoxia Paradigms on Inflammatory Biomarkers of Necrotizing Enterocolitis in the Rat Terminal Ileum.

Despite major advances in neonatal care, necrotizing enterocolitis (NEC) continues to be the leading cause of gastrointestinal (GI)-related death in extremely low gestational age neonates (ELGANs). During oxygen therapy, ELGANs frequently experience intermittent hypoxia (IH) episodes followed by hyperoxia episodes between events resulting in oxidative stress and inflammation which are hallmarks of NEC. Toll-like receptor (TLR)-4 and intestinal fatty acid binding protein (iFABP) have been identified as early diagnostic biomarkers of NEC.

We tested the hypothesis that neonatal IH resolving with normoxia is less injurious to the immature terminal ileum than IH resolving in hyperoxia between episodes. Injury was confirmed by a composite of histopathology, apoptosis, levels of inflammatory markers, and TLR-4 in the terminal ileum.

Newborn rats at birth (P0) were exposed to: Hyperoxia (Hx, 50% O₂) with brief hypoxia (12% O₂); Room air (RA) with hypoxia; Hyperoxia with RA (intermittent hyperoxia or IHx); Hyperoxia only; or RA only, from P0 to P14. Pups were studied at P14 for immediate effects, or placed in RA until P21 for recovery/reoxygenation. Terminal ileum samples were assessed at P14 and P21 for histopathology, apoptosis, cytokines (IL-1 β , IL-6, TNF α , TGF β), TLR-4, iFABP, and epidermal growth factor (EGF).

Hx, IHx, and both IH paradigms resulted in significant damage to the terminal ileum with many characteristics consistent with NEC. The histopathological changes persisted after recovery in RA. Similar outcomes were noted for apoptosis and elevations in the expression of NF κ B. TLR-4, iFABP, and all cytokines increased with the Hx, IHx, and both IH paradigms, while EGF significantly declined.

The immature terminal ileum is highly susceptible to changes in oxygen regardless of normoxia or hyperoxia recovery. TLR-4 and iFABP remain valid biomarkers of intestinal damage. Interventions to curtail O₂ variations should remain a high priority to prevent NEC.

Session/Poster#

Presenter

C51

Nimisha Jain

College of Medicine Student

Advisor(s): Dr. Martin Walsh, Icahn School of Medicine at Mount Sinai

Characterizing Dendritic Cell Subpopulations for Cancer Immunotherapy

Dendritic cells (DCs) are a lineage of hematopoietic stem cells that originate from CD34+ cells in the bone marrow and have been recognized as effective antigen-presenting cells (APCs) in the immune system. Current principles on using DCs for cancer immunotherapy include isolating DC subpopulations from blood, followed by activation and antigen loading, and reinfusion of DCs into patients for antigen-specific T-cell activation. Cancer is a leading cause of death among children; therefore, it can be expected that targeted immunotherapy through DCs will have an important role in pediatric patients. Here, we highlight our efforts to characterize DC subpopulations using umbilical cord blood as a reliable source of DCs in their nascent state. Fluorescence-Activated Cell Sorting (FACS) was performed to sort DCs from umbilical cord blood using cell surface markers for each DC subpopulation. Bulk ATAC-Seq and scRNA-Seq were done for verification of sorted populations and differential expression analysis. We demonstrated that common DC precursors can differentiate into three lineage trajectories: plasmacytoid DCs, classical dendritic cells 1 (cDC1) that activate CD8+ T cells, and cDC2 that activate CD4+ T cells corresponding to unique transcriptional trajectories. Using scRNA-Seq, we further demonstrated differential expression among these three branches that phenotype DC subpopulations, uniquely characterized by the TIM3 marker of T-cell exhaustion. We identified specific DC populations that carry the inhibitory TIM3 and further identified sialic acid-binding immunoglobulin-like lectin (Siglec) receptors. Expression of inhibitory Siglec receptors is a feature of specific DCs from cancer patient samples that can be used to further delineate the complex character of these subpopulations of DCs. Our goal is to further characterize these inhibitory TIM3 and Siglec-expressing subpopulations of DCs in their capacity to generate antigen-specific T cells.