A1: Niloofar Anooshiravani   Advisor(s): Rauno Joks

The Association between Asthma and Cancer Diagnoses in the National Health Interview Survey

Rationale: Previous studies have investigated the relationship between asthma and allergies with cancer, but the direction and magnitude of association remains unclear. The aim of this study was to examine the association between personal histories of asthma and cancer, as diagnosed by a physician, in the National Health Interview Survey (NHIS) from 2015.

Methods: For this retrospective cohort study, NHIS data was analyzed using bivariate analysis between demographic variables, asthma and cancer (defined as ever being told subject has asthma or cancer, by a doctor, respectively). Covariates were identified from the literature and included age, sex, race and duration of cancer. Nested multivariate logistic regression models were then conducted. All statistical analysis was done using SAS v9.4.

Results: Data for 33,672 adults was available from this study, most aged between 18-44 years with equal male and female participants. The Odds of cancer diagnosis with a history of ever having asthma was 0.73 (95% CI 0.67-0.81), p<.0001. After adjustment for age, sex, race and smoking status, the odds dropped to 0.64 (95%CI 0.58-0.71) p<.0001.

Conclusions: This study found that a personal history of asthma was a strong and significant protective factor for cancer diagnosis. These findings suggest the altered immune responses of asthma may allow for increased tumor surveillance.

A2: Maryam Siddiqui   Advisor(s): Ketan Shevde

No Change in CardiacTroponin I (cTnI) Levels in Patients with End-stage Renal Disease (ESRD) Undergoing Arteriovenous (AV) Access Surgery

Recent literature has shown elevations in cTnl during high-risk surgical procedures, possibly due to surgical stress and hypoperfusion to the myocardium in the perioperative period.1,2 An increase in cTnl is associated with greater postoperative incidences of major adverse cardiac events and mortality, therefore cTnl represents a good prognostic indicator. The primary aim of our study is to evaluate if there is a significant elevation in cTnl in ESRD patients after A-V access surgery and the secondary aim is to evaluate if a difference in mean increases is associated with choice of anesthesia (general, regional, or monitored). One hundred and ten patients were enrolled over a seventeen-month period and 70 complete records were analyzed (32 male and 38 female; 30 GA, 37 MAC, 2 regional, and 1 MAC converted to GA). Mean (standard deviation) age was 58.38 (14.88); 17 patients had a history of heart disease, 67 of HTN, and 40 of Diabetes Mellitus. Consented patients provided two blood samples to evaluate cTnl prior to and three hours after surgery. Hemodynamic/demographic data were collected prior to surgery and intraoperative data were obtained from the anesthesia record. Paired samples t-test was used; mean difference (95% CI) was -0.01 (-0.026, 0.006), p = 0.22 (for general anesthesia the mean difference was -0.022 for monitored anesthesia it was -0.002). The results showed that all included types of anesthetic management (MAC, regional and GA) were not associated with significant postoperative increase in cTnl in ESRD patients undergoing A-V access surgery. Additionally, the current literature supports that hemodialysis is more stressful than surgery for A-V access.

A3: Tzivya Weiss-Lustiger   Advisor(s): Ellen Berkowitz and Shirley Eisner

A Resident as Teacher project designed by Medical Education Pathway Medical Students: Needs Assessment Survey #1

The ACGME requires that residents "participate in the education of â€¦ students, residents and other health professionalsâ€ , and directs programs to detail activities that build teaching skills. At SUNY Downstate, the GME leadership supports the creation of standardized activities that foster resident teaching skills. Furthermore, some medical students report that they are not receiving appropriate feedback, dedicated teaching, or assessment from residents during clinical rotations. Therefore, several members of our Medical Educators Pathway (MEP) are collaborating with faculty to create a targeted Resident as Teacher (RaT) curriculum that will be applicable to multiple residency programs.

We distributed our first Needs Assessment survey (on medical student teaching/feedback) to all SUNY Downstate Residents/fellows via New Innovations, in order to determine resident views regarding the need for a RaT curriculum at SUNY Downstate. 77.6% of our respondents indicated that residents in their programs would benefit from skill training sessions on how to teach medical students, and more interactive modalities were preferred. We also found that of 198 respondents, 88% felt that all residents in their program were expected to teach medical students, while 76.8% of respondents reported spending only 1-5 hours per week teaching medical students. Residents' time limitations and lack of training in medical student education were identified as barriers to clinical teaching. The literature has demonstrated rising inclusion of RAT efforts in residency programs, but many are limited to a single residency program, rather than endorsed by an institution. Our survey may be unique in targeting multiple residencies simultaneously, and is significant in that it demonstrates the needs and preferences of the majority of Downstate Residents. Additionally, we hope to compare these results with results from surveys of medical students prior to finalizing our RaT curricular component proposals.

A4: Christian Abrahim   Advisor(s): Adam Budzikowski

Predictors of appropriate defibrillator therapy in patients with systolic heart failure.

Background: The risk for Ventricular Tachycardia (VT) and ventricular fibrillation (VF) is increased in patients with heart failureand defibrillator (ICD) therapy has proven to improve survival in this population of patient. Very little data is available with regards to risk factors for ICD therapy in minority populations.

Purpose: The purpose of the study was to identify risk factors for appropriate ICD shock in a cohort of patients receiving ICD therapy for primary prophylaxis of sudden cardiac death.

Methods: A retrospective chart review was performed of patients followed at our institution. Only patients with implanted ICD for primary prevention were included in the study. Patients implanted for secondary prevention of sudden cardiac death or hereditary arrhythmias were excluded.

Results: We analyzed 160 patients of predominantly of Afro-Caribbean or African-American ancestry (90%). 59 % male and 41 % female. Average ejection fraction was 24.3%±7.8%, 48% of patients had coronary disease and 52% non-ischemic cardiomyopathy. 58% of patients received cardiac resynchronization ICD. Average follow up was 27.2±1.37 months. Appropriate therapy was defined as appropriate device shock or anti-tachycardia pacing (ATP). 29 patients (18%)received appropriate therapy, 5 (3.1%) inappropriate therapy. The average number of ATP/shock was 1.9±2.85. Logistic regression analysis that induced medications, etiology of heart failure, heart failure class, BMI and presence of non-sustained VT, and gender identified lack of β-blocker therapy (p=0.002) and male gender (p=0.049) as a significant predictors of appropriate ICD therapy.

Conclusions: Our patients have experienced low rates of appropriate ICD shocks and very low rates of inappropriate shocks. Male gender and absence of β-blocker therapy predicted appropriate ICD therapy highlighting importance of pharmacotherapy in this population of patients..

A5: Hymie Chera   Advisor(s): Ronald Pedalino and Haroon Kamran

Determining the pre-test and post-test probability values for obstructive coronary artery disease in patients who underwent cardiac stress tests and coronary angiography

Coronary artery disease (CAD) is one of the most frequent diseases that can be observed in our patients and causes significant morbidity and mortality worldwide. Coronary angiography (CA) is considered the gold standard method in the diagnosis. In our study, we investigated patients who had positive findings on cardiac stress tests with their cardiac angiography results.

The indication for a cardiac stress test were divided into 3 groups: 76 patients (78.3%) underwent cardiac stress test for unstable angina, 14 patients (14.4%) for NSTEMI and 7 patients (7.2%) for new onset CHF. There were 3 different types of cardiac stress tests that the patients underwent. The majority was nuclear stress test; 87 patients (89.7%) underwent nuclear stress, 9 patients (9.3%) underwent stress echocardiogram and 1 patient (0.1%) underwent dobutamine stress test. The stress test results were compared to the angiographic findings.

Overall the stress test at out institution was consistent with the national values and is a useful screening test to detect significant stenosis. Overall the cardiac stress test had a sensitivity of 46.7%; specificity of 66.7%; positive predictive value (PPV) 95.5% and negative predictive value (NPV) of 7.7%.

The left anterior descending (LAD) had the highest sensitivity of 90.62%; specificity of 20.3%. The PPV was 36.3% and the NPV was 81.3%.

The right coronary artery (RCA) had a sensitivity of 57.7%, specificity of 30.0%, PPV of 30.0% and a NPV of 57.7%.

The left circumflex artery (LCx) had a sensitivity of 55.7%, specificity of 64.9%, PPV of 27.0% and a NPV of 86.2%. The lateral wall was labeled LCx.

Our study investigated and compared cardiac stress tests to cardiac angiography, which is the gold standard. Our study highlights the important clinical aspect of pre-test probability.

A6: Nicholas Cacciola-Price   Advisor(s): Shirley Giroud and Michele Solloway

The STROKE Program: Bridging Gaps between Inpatient & Outpatient Resources: An EBP Project Proposal

Introduction: The CDC reports that 140,000 Americans die of stroke every year with an average annual cost of $34 billion (CDC, 2017). Patients & informal caregivers, who at discharge do not possess the knowledge and skills nor have support, are at risk for poor outcomes. Nurses & others in the hospital setting are often unable to provide adequate transition services. The Survivor Transition & Recovery to an Outpatient Kind Environment (STROKE) program is an effort to give providers & informal caregivers knowledge, resources & support. To improve outcomes.

Methods: This project uses a longitudinal study design. 50 patients over 18 years old who have experienced their first stroke & are discharged from a large urban academic hospital will comprise the convenience sample. An intervention-the STROKE team-consists of a care coordinator/RN for patient education & to facilitate coordination of outpatient services, a social worker to provide ongoing social & emotional support for the patient & family, a director of the patient's sub-acute care facility & the stroke victims' family members who will be involved directly in the patient's care. Monthly contact will be made with the survivor and informal caregiver. At discharge, a patient/caregiver survey will be used to assess baseline knowledge of disease process, medications, community resources, care expectations & outcomes. The same survey will be administered at 6 and 12 months after discharge. Descriptive statistics will be used to assess demographics, knowledge, expectations, changes in health status & stroke readmission rates. Statistical tests will be used to assess changes in knowledge, expectations, changes in health status & stroke readmission rates over the 12 month study period.

Implications: If the STROKE intervention improves knowledge, expectations, changes in health status & stroke readmission rates, it will be shared with others & efforts made to incorporate it into practice.

A7: Joanne Saint-vil   Advisor(s): Shirley Girouard, Michele Solloway and Nellie Bailey

A Proposed Survey of Pediatric Nurses' Knowledge, Skills, and Attitudes about ACEs

Problem: Childhood experiences can have significant impact on the health & well-being of children with life-long ramifications. Abusive & traumatic childhood experiences have been linked to future risky behaviors, chronic health conditions, learning disabilities, decreased life potential, & even death (CDC, 2016). In nursing, although it is standard practice to assess for signs of physical abuse, there is little training done & few tools utilized to assess for other types of trauma, abuse, or household dysfunction among children. Thus, nurses typically do not assess or intervene for adverse childhood experiences (ACEs) in their practice.
Research Question: What knowledge, skills, and attitudes (KSAs) do hospital-based pediatric nurses have about ACEs?
Methods: A descriptive survey study design will be used. A convenience sample of 150 pediatric nurses in an urban medical center will be surveyed electronically using a 54-question survey tool developed by the University of Massachusetts to assess the KSAs of family practice physicians. Demographic data about the nurses will also be obtained. Descriptive statistics & correlations will be used to assess the KSAs of pediatric nurses & the relationship of their demographic data to their ACEs KSAs.
Implications: If pediatric nurses are found to have few KSAs about ACEs, as has been found among other health professions, educational programs will be suggested to raise awareness of ACEs & ACES KSAs with the goal of increasing screening, identification & early intervention to reduce childhood and adult impact of ACEs.

A8: Tina Rendini   Advisor(s): Shirley Girouard and Michelle Solloway

Painting a Picture - The "Art" of Building Resilience amongst Nursing Students with ACEs: An Evidence Based Practice Proposal

Problem Statement: Experiencing severe or chronic stress as a child, often referred to as adverse childhood experiences (ACEs), is a known risk-factor for poor health, social & economic outcomes, including lower work performance, as an adult (Felitti, 1998). Nurius (2016) further suggests that current stress can exacerbate existing vulnerabilities/symptoms caused by ACEs. Given the stress of nursing education & the expected incidence of ACEs among student nurses, student nurses may be at risk for diminished academic performance. Art therapy is an evidence-based intervention (EBI) known to reduce stress, mitigate ACEs symptoms & promote resilience (SAMHSA/NREPP, 2017). EBP
Question: Does a peer-led paint club reduce stress & promote resilience among nursing students with ACEs?
Methods: This EBI will use a quasi-experimental pre-posttest study design. Nursing students at an urban academic teaching hospital interested in joining the paint club will be screened for ACEs using the CDC's ACEs 10 question screening tool & additional ACE questions developed for urban minority populations (Pachter, 2017). Students with 2 or more ACEs will be invited to participate in the EBI which will be conducted during the academic year. Cohen's (1994) 10-item Perceived Stress Scale will be used to assess participant stress. Resilience will be assessed using a 6 item Brief Resilience Scale (Smith et al, 2008). Both validated tools along with demographic questions will be administered at the beginning & end of the club. Descriptive statistics will be used to describe participants; chi square will be used to identify differences in pre-post stress & resilience scores.
Implications: The EBI is expected to reduce nursing students' stress & improve

A9: Michelle Alstrom   Advisor(s): Cathryn Galanter and Michele Pato

The Impact Of Childhood Trauma In The Development Of Psychosis

Background: This is a comparative study, where attempts were made to highlight, analyze & bridge the 5 year gap between the meta-analysis research done by Varese et al in 2012, & the current literature. Research by Varese et al was entitled "Childhood Adversities Increase the Risk of Psychosisâ€ , & used a patient-control, prospective, cross-sectional cohort study to analyze data up to 2012.

Introduction: The question this study attempts to answer is "can it be determined which trauma directly precedes psychotic symptoms in children?" We focused on 4 areas of trauma: sexual, physical, emotional / psychological and childhood neglect, all of which appear to lead to Cognitive Emotional Dysregulation (CED) in children & adolescents.

Method: A meta-analysis of Observational & other studies of childhood trauma / adverse events that lead to psychotic symptoms, were analyzed. The search using MeSH revealed over 200 articles, which were narrowed down to 56 articles. Of the 56 articles, 10 were chosen and compared to the meta-analytical study done by Varese et al. Those 10 articles were chosen because they best highlighted new findings, since the article by Varese et al in 2012, about the relationship between childhood trauma and psychosis that develops later in life. The other articles were not chosen because they did not examine specific links between types of trauma and psychosis, or may have included other disorders such as mood disorders like MDD and/or Bipolar Disorder with psychotic features.

Results: The results from the collective data analysis showed that abuse is a direct precursor of psychotic symptoms in children. Discussion: This poster supports the notion that stress reactivity is a mechanism implicated in reality distortion in individuals who are exposed to childhood trauma. These findings suggest that cognitive emotional dysregulation is an important factor that influences the emergence of psychotic symptoms in patients with childhood trauma.

A10: Nayla Hariz   Advisor(s): Cathryn Galanter and Michele Pato

Transgender and Gender Nonconforming Youth: How Psychiatrists Can Help With Decisions and Transitions

Background: Despite recent advancements and growing public interest, information and guidelines on the assessment and treatment of transgender and gender nonconforming youth remain scarce. Similarly, most child and adolescent psychiatrists have limited experience in managing gender dysphoria. This review aims to gather the most recent studies and publications pertaining to the mental health of transgender and gender nonconforming youth.

Methods: A PubMed search was conducted using the MeSH terms "transgender persons" and "gender dysphoria" while filtering for age "birth to 18 years" and publication dates after 2011. Articles were then included if they pertained to mental health assessment, management and outcomes. Diagnostic classifications and criteria, as well as standard of care guidelines, were also reviewed.

Results: Children and adolescents may present with different degrees of gender nonconformity and/or gender dysphoria. As they grow up, they may revert to the gender assigned to them at birth or may further identify with the opposite gender. Others may reject the gender binary model altogether. Depending on the youth's age, developmental level, and aspects in which they are gender nonconforming, alleviating gender dysphoria may require medical or surgical interventions, social or lifestyle changes, psychotherapy or counseling, or any combination of those. The psychiatrist's role includes assessing and recognizing gender dysphoria, identifying and treating any comorbid mental health illness, and providing support, psychoeducation and psychotherapy to the child as well as the family.

Conclusions: Mental health professionals play an essential role in helping youth and their families accept gender nonconformity, identify how to best alleviate gender dysphoria, and live in a safe and affirming environment. Further steps should be taken to continue to destigmatize and depathologize gender nonconformity.

A11: Patricia Ayozie   Advisor(s): Maria Rosario-Sim

A Proposed Study of the Effects of Informal Caregiver's Knowledge on Asthma Control in Children

Background: Asthma is the leading cause of emergency room visits and hospitalizations, the leading reason for missed school days and the leading chronic condition seen in children. When asthma is triggered, the children most likely go to the clinic or emergency department. Studies show that asthmatic control can be improved by increasing knowledge and control of education and prevention. Informal caregiver's knowledge of asthma and asthma triggers could play a role in a child's asthmatic control. Awareness of informal asthma caregivers' knowledge can direct healthcare providers appropriate interventions for asthma control.
Purpose: To examine the relationship of informal caregiver's knowledge of asthma on asthma control in children ages 4-11 years old.
Conceptual Framework: Nola Pender's Health Promotion Model will guide this proposed study.
Question: Do children 4-11 years old whose informal caregivers demonstrate high knowledge on the asthma knowledge questionnaires will report increased asthma control than those informal caregivers who demonstrate less knowledge on the asthma knowledge questionnaires?
Methods: Design/ Cross-sectional, correlational, and comparative study to examine the effects between the informal caregivers' knowledge and asthma control in children ages 4 to 11 years in two pediatric clinics in Brooklyn, New York. Sample/Setting: Fifty informal caregivers of children 4-11 years old will be recruited for the study. Measures: Demographic survey, 11-item Parental Asthma Knowledge/11-item Asthma Triggers Knowledge Questionnaire and 7-Item Asthma Control Test for Children will be used to measure the variables. Data Analysis: Descriptive statistics will be used to analyze the data.
Conclusion/Implication: Findings can guide health care providers regarding increasing informal caregivers' knowledge about asthma, asthma triggers and asthma control measures.

A12: Xiaomeng Du   Advisor(s): Shirley Girouard and Michele Solloway

A Proposed Study of Stroke Survivor Perceptions about Support Group Participation & Benefits

Introduction: Stroke is a major health problem in the US, affecting nearly 800,000 people annually with 75% experiencing stroke for the first time. Most stroke patients have physical, functional, social & psychological effects following stroke. Although patient support groups, including stroke survivors, have been shown to improve outcomes, many patients do not participate. Reasons for lack of support group participation are not well documented. Also, little is known about perceptions of the psycho-social benefits of support groups.
Questions: Why do patients participate or not in support groups? What are the perceptions of patients who do & do not participate in stroke groups about the psycho-social benefits of them?
Methods: A qualitative study will be done to assess stroke survivor reasons for participation or not & to assess perceptions about the psycho-social benefits of support groups. A convenience sample of hospitalized stroke patients will be interviewed when first invited to participate in an academic health center based support group. Those who participate will be interviewed again after they complete 4 sessions. Open-ended interview will explore what patients perceive as the anticipated or experienced psycho-social benefits and their reasons for participation or non-participation. Data will be collected using note taking and taped interviews until saturation is reached, anticipated to be 25 patients. Data will be identified, categorizes & coded to uncover themes.
Implications: Understanding why stroke survivors do or do not attend support groups & their perceptions before and after participation about the psycho-social benefits will be helpful in designing support groups that better meet needs. This information will also be helpful to develop materials that address patients' concerns & encourage support group participation.

A13: Oneika Thomas   Advisor(s): Shirley Girouard and Michele Solloway

A Stroke Care Transitional Program to Reduce Hospital Readmissions: An Evidence Based Practice Project Proposal

Problem: Stroke is a leading cause of hospital readmissions. Research shows that stroke patients are more likely to be to be readmitted to the hospital due to comorbidities & a lack of knowledge & resources. Purpose: This evidence-based pilot project will help determine if implementation of a comprehensive transitional program can decrease readmission rates among first time stroke patients.
Research question: Does a comprehensive transitional program reduce readmissions among stroke patients?
Methods: A quasi-experimental design will be used. Over a six-month period, patients aged 18+ admitted to two large urban teaching hospitals with an admitting diagnosis of a first stroke & who are being discharged to home will comprise a convenience sample of 20 patients. The stroke care transitional program is comprised of three phases & includes the following: Pre-discharge patient education, standard discharge planning, medication reconciliation & appointment reconciliation. Post-discharge activities include PCP communication, follow-up phone calls, patient hotline & home visits. Transition activities will involve the use of a transition coach. Demographic & clinical data will be collected from medical records employing full HIPAA protections & patient confidentiality protocols. The study sample will be described using descriptive statistics. Using demographic data & first-time stroke status, the study sample will be retrospectively matched to a group of 20 first-time stroke patients who have not received the intervention. Fisher's test will be used to compare differences in readmission rates of the two groups.
Implications: If the comprehensive transition care model reduces readmissions, findings will be disseminated & recommendations made to other institutions to replicate the intervention. If the intervention proves unsuccessful, the study will be reexamined to identify gaps in stroke transition of care & study design.

A14: Gregory Thompson   Advisor(s): Shirley Girouard

A Proposed Case Study of the Stroke Continuum of Care in an Inner-City

Purpose: to describe the organization, delivery & financing of stroke prevention & treatment. Stroke, a major cause of disability in the US, annually effects more than 800,000 individuals & their families. The literature suggests that the latest & best interventions to prevent & treat stroke --such as primary prevention through coaching for managing hypertension and atrial fibrillation, coordinated care transitions for discharges and care management to support treatment adherence are not widely disseminated and that the organization, delivery & financing of stroke prevention & treatment is complex, uncoordinated & difficult for all to navigate & negotiate. Understanding the current system & comparing it to the best practices of a population health framework can help identify gaps.
Methods: a descriptive case study focused on providers & other stakeholders contributing to the stroke continuum of care in an inner-city community. The proposal is being prepared for IRB. Convenience & snowball sampling will be used to identify 15 people to interview. Data collection will include: 1) review of internet and public documents to identify resources for stroke prevention and care in the community; 2) semi-structured interviews about the stroke continuum of care. Interviews will be recorded via note-taking & audio-recording. Internet data will be organized & described & interview data will be analyzed for themes using Colaizzi's method.
Significance: In compiling data from the two methods into a case study, Robert Yin's criterion & tactics will be used for confirmability, dependability, credibility & transferability. The study findings can identify opportunities to improve systems of care & identify gaps in knowledge that could inspire further research.

A15: Maria Rosario-Sim   Advisor(s):

Nursing Faculty are Culturally Aware of the Lesbians, Gay, Bisexual and Transgender (LGBT) Population

Introduction: The LGBT community experiences disparities in healthcare. To mitigate these disparities, one recommended strategy is to increase knowledge, improve attitudes among the healthcare workforce. The purpose of this study was to assess knowledge, attitudes and cultural competency of nursing faculty on LGBT population and to determine the relationships between these variables.

Methods: Design: Descriptive correlational study. Faculty members from two regional universities participated. Sample: Eighty surveys were distributed to both universities. The Inventory for Assessing the Process of Cultural Competence among Healthcare Professional - Revised (IAPCC-R) by Campinha-Bacote was used to assess nursing faculty cultural competency. The 15-items T/F LGBT Knowledge Questionnaire by Strong and Folse was used to measure LGBT knowledge. The Attitudes toward Lesbians, Gay Men and Bisexual (ATLGB) Scale and the Attitudes toward Transgender Individual (ATTI) scale were used to evaluate attitudes towards LGBT individuals. The latest version of the SPSS statistical software was used to perform statistical analysis.

Results: Thirty-five returned the survey (44% response rate). The cohort consisted of 91% females, mean age of 51.5 (Â±12.5) years, majority were married and heterosexuals, and with 13 Â± 12 years of teaching experience. The mean score on the IAPCC-R survey was 53 Â±8 (score ranged 36-67), indicating that nursing faculty were culturally aware of LGBT population. Of the five constructs of cultural competency, cultural desire had the lowest score. There were no significant correlations between IAPCC-R and knowledge of LGBT, and between IAPCC-R and attitudes towards LGBT individuals.

Significance: The findings showed that nursing faculty are not culturally competent in regards to the LGBT population but are knowledgeable of LGBT however tended towards negative attitudes. Desire had the lowest score among the constructs of cultural competency.

A16: Sheryl Zang   Advisor(s):

Which Diabetic Therapy Produces the Best HgbA1c Outcomes for Children and Adolescents: Multiple Daily Injections or Continuous Subcutaneous Insulin Infusion? A Retrospective Study

Purpose: The Diabetes Control and Complication Trial (2005), indicates children and adolescents with Type 1 diabetes should be treated with multiple daily insulin injections (MDI) or subcutaneous insulin infusion (CSII) to obtain glycemic control. Some studies show insulin infusion in children and adolescents improves glycemic control. This study examined HgbA1c outcomes among a cohort of children and adolescents in an urban setting after switching from MDI's to CSII.

Methods: A convenience sample of the medical records of 58 children and adolescents (ages 1-21) who attended two outpatient clinics and who were switched from MDI's to CSII was selected. Two to 4 Hgb A1c values over the 1 year period prior to switching to CSII, and 2 to 4 HgbA1c values during the initial year of CSII use were collected and compared. The difference in HgbA1c values during MDI and CSII therapies were tested using paired t-tests.

Results: Overall, the difference 0.29 (95% CI -0.16 to 0.73, p=0.20) between the average measurements in MDI and CSII periods was not significant, indicating no change in HgbA1C measurements after the switch. However, HgbA1c values differed between groups under and over age 13. Reduction in mean HgbA1c of 0.79 (p=0.02) in the older group was statistically significant. The change in the younger group of -0.09 (p=.75) was not significant. The results suggest that adolescents over age 13 in an urban setting in Brooklyn have improved glycemic outcomes using CSII, while MDI's and CSII are equally effective in children under age 13. Since there is no significant difference in outcome, health care providers can recommend a choice of administration of insulin which meets the needs of the child/adolescent and family.

A17: Elina Badiner   Advisor(s): Shirley Girouard, Jacob Levy, Michele Solloway

The Prevalence of Adverse Childhood Experiences Among Student Nurses

Problem Statement: Adverse childhood experiences (ACEs) are events occurring before age 18 that result in trauma & stress. ACEs are associated with long term negative physical outcomes such as obesity, cancer, heart disease, asthma, chronic bronchitis or emphysema, and skeletal fractures. ACEs can also lead to negative health behaviors later in life including smoking, drinking alcohol, use of illicit drugs, unsafe sexual practices, and even suicide. ACEs can affect one emotionally and psychologically, causing feelings of anxiety, depression, and aggression. ACEs victims have difficulty building rapport and self esteem. Given the stress of nursing education & practice, it is likely that nurses who suffer from ACEs will have personal & professional effects.
Research Question: What is the prevalence of ACEs among student nurses? Methods: A quantitative, descriptive research design will be used with a convenience sample of 250 undergraduate & graduate nursing students in a large urban academic medical center. Demographic data will be collected. An ACEs survey developed & used by the Philadelphia ACEs Task Force that includes the 10 CDC items, with additional questions specific to urban, minority populations, will be used. Data will be analyzed using descriptive statistics.
Implications: If the results of our study are found to be comparable to or greater than that of the general population, it behooves the healthcare field to create resources that can help nursing students affected by ACEs such as paint clubs, music, aroma and trauma-informed therapies. This would minimize the negative effects that ACEs have on the nursing students and improve future interactions when the student nurse becomes a provider.

A18: Olanike Olorunoje   Advisor(s): Shirley Girouard and Michele Solloway

Utilizing Targeted Strategies to Reduce Missed Appointments among Stroke Patients: An Evidence-Based Practice Proposal

Background: Stroke kills 140,000 Americans annually; every 4 minutes there is a death as the result of a stroke. Keeping appointments is necessary to prevent long term physical, mental&social limitations while also decreasing the likelihood of readmission. Major causes for preventable hospital readmissions include inadequate discharge planning, lack of communication among health care providers, lack of timely follow-up visits&lack of clarity regarding who is caring for the patient after discharge.
Question: Do collaborative discharge planning (CDP)&post hospital discharge reminders improve appointment adherence&reduce readmission rates among stroke survivors?
Methods: Using a quasi-experimental, pre-posttest design, convenience samples of 50 stroke patients discharged in 2017 and 50 stroke patients discharged in 2018 will be selected. The 2017 group will have received usual & customary care. The 2018 group will receive CDP&follow-up. CDP includes a patient visit by a nurse liaison prior to discharge, who will provide education on diagnosis, importance of appointment compliance&medication compliance. The nurse will also institute a series of appointment reminders - letters one week prior, phone calls three days prior &text message one day prior.The nurse liaison will also collaborate with hospital social workers to address social, transportation&other barriers to appointment adherence. Demographic data, missed appointments, readmission rates&other relevant clinical data will be obtained from patient medical records for 2017 & 2018 groups. Data will be analyzed using descriptive statistics. A t-test will be used to compare the 2017 & 2018 groups.
Implications: If results are favorable, CDP may be used as a model for others to adopt where missed appointments are prevalent among stroke survivors. If the results are negative, additional research on intervention&patient experience&needs will be undertaken.

A19: Maria Correa   Advisor(s): Carl Cohen

Outcomes in Older Adults with Schizophrenia

The study of outcomes in schizophrenia has shifted over the years in tandem with changes in our perspectives on the disease structure, progression and management. As the number of older adults with schizophrenia has dramatically increased it has become important to appreciate the outcome of the disorder in later life. Therefore, our aim is to examine cross-sectional and longitudinal data from a community sample of older adults with schizophrenia (OAS) with respect to 4 outcome measures: clinical remission, community integration, clinical recovery, and successful aging. The sample consisted of 250 persons aged 55 and over, who developed the disorder prior to age 45. Clinical remission was measured using the PANSS scale and defined as a score of 3 or below on each of 8 symptom domains and as well as no history of hospitalization within the previous year. To assess community integration, 12 item Community Integration Scale was developed consisting of 4 components: independence, psychological integration, physical integration and social integration. Scores of 9 or higher were defined as successful community integration. Subjects who met the criteria for both clinical remission and community integration were deemed to have attained "clinical recovery", To evaluate successful aging we developed a scale (range 0-6) comprising 3 domains: Avoiding disease and disability, High cognitive and physical function and engagement with life. Cross-sectional data revealed a prevalence rate of 46% for clinical remission, and 37% prevalence of community integration; 22% of the participants achieved criteria for clinical recovery; only 2% achieved criteria for successful aging. Longitudinally, we found 25%, 26%, and 12% maintained persistent clinical remission, community integration , and clinical recovery, respectively. There was also considerable flux between categories with 40%, 45%, and 70% for clinical remission, community integration, and clinical recovery, respectively.

A20: Ali Haidar   Advisor(s): Michael Garrett

Do Staffing Patterns Allow Clinics to Implement a Full Range of Evidence-Based Practices in the Treatment of Schizophrenia?

Evidence-based guidelines specify psychosocial treatments, including individual psychotherapy for psychosis (PfP). For example, the UK requires that all first-episode patients be offered CBT for psychosis. However, US literature has limited investigations on staffing needs for conducting appropriate therapy. Recently, German scholars attempted to do so and found a significant gap between the calculated necessary ratios and common practice. Psychotherapy sessions (30-45 min) are a more time-intensive treatment than medication management (15-30 min/month), and accordingly would require more staff to implement. We set out to determine what patient/staff ratio would be necessary to implement evidence-based program of PfP, and whether clinics are currently adequately staffed to offer this treatment modality. We examined the existing literature linking staffing patterns to modalities of treatment, and we developed an Excel file that calculates the maximum number of patients that clinicians can carry on their clinic census given a varying mix of weekly therapy appointments and shorter contacts, plus activity like charting and administrative meetings not involving patient encounter. We surveyed staff time demand in a busy inner-city public outpatient clinic and determined that a minimum of 4 hrs/day was devoted to activities other than patient appointments leaving 4 hrs for patient visits. The maximum caseload per provider would be roughly 20 patients, as compared with the UK standard of 15. Providers in the clinic we sampled had caseloads 4 times larger than a census that would allow weekly psychotherapy. We found no evidence in the literature or in our clinic sample that administrators were using a workload calculator to tailor staffing patterns supporting evidence-based psychotherapy treatment. Despite a current emphasis on evidence-based treatment, PfP at present appears to be an unfunded mandate that has not been implemented in clinic practice.

A21: Tia Mansouri   Advisor(s): Ramaswamy Viswanathan

Self-induced abscesses and repeated septicemia: care at what cost?

Self-induced infections are frequently thought to be a form of factitious disorder, associated with case reports in literature of patients creating a disease state by injecting themselves with contaminated substances to produce cutaneous infections, bacteremia, skin graft failures, and wound healing disorders. A case is reported of a 40-year-old female with a medical history of diabetes mellitus type 1, and a past psychiatric history of depression, anxiety, intravenous drug abuse, as well as chronic pain, who presents after a series of admissions for abscesses on her outer thighs requiring recurrent incision and drainage. Factitious disorder was suspected and psychiatric consultation evaluation was requested. She underwent incision and drainage of multiple bilateral abscesses of the thighs, while receiving broad-spectrum antibiotics and being monitored for septicemia and elevated blood glucose levels. The patient reported developing abscesses approximately once monthly and emphasized that she had not seen a psychiatrist in a "long time" because of a number of reasons such as insurance changes, multiple hospitalizations, and receiving refills of her medications (Paxil, Klonopin, Trazodone) from the hospital when she is discharged. She reported injecting herself at least 5 times a day with insulin, only developing infections where she injects herself (flank, arm, etc), though she reported using clean equipment. However, when the patient was placed on continuous monitoring for self-harm behaviors, both on prior admissions and during recent encounters, she threatened to leave against medical advice, and in some instances, was successful in doing so. Prior evaluation notes that she was found to be self-injecting with contaminated materials, presenting a challenge for providers. Criteria for factitious disorder and malingering are reviewed, as well as other clinical considerations related to this case such as capacity to refuse treatment and collaborative strategies.

A22: Muniza Majoka   Advisor(s):

The Role of Anti-Depressants in the treatment of agitation in the elderly: A review of literature.

Background: Up to 14 % of the geriatric population above the age of 71 is estimated to have dementia [1] and the number of people suffering from dementia is expected to rise up to 88 million by 2050[2]. Agitation is an important part of the behavioral and psychological symptoms of Dementia (BPSD) and is present in up to 30% of the patients. Pharmacologically it is treated mainly by the use of antipsychotics(AP), both typical AP such as Haloperidol & atypical AP such as Risperidone, however, there is a clear evidence of increased mortality risk associated with antipsychotics. This leads to an increasing need for the use of alternative medication for the use of the treatment of agitation in the elderly
Method: A comprehensive search was carried out using Pubmed, Google scholar, CINAHL, Cochrane and EMBASE databases.
Result: At the end of the literature review, a total of 19 studies on the use of antidepressants(AD) for the treatment of agitation in the geriatric population were identified. Citalopram was the most commonly studied medication with a total of 8 studies. Overall, 3 RCTs with adequate power showed a very significant improvement in agitation while on Citalopram. Two studies with smaller sample sizes & another with a focus on emotional disturbances also showed the efficacy of Citalopram. Escitalopram was effective in one large RCT, however, these findings could not be replicated in another low power study. Sertraline showed positive results in 1 trial, when used in addition to Donepezil & had positive but not statistically significant results in another. Trazodone proved to be ineffective in two trials and fluoxetine was also ineffective in one study. Fluvoxamine was found fluvoxamine to be as effective as Risperidone in decreasing agitation.
Discussion: There is an overall dearth of literature dealing with the efficacy & tolerability of AD on agitation.. Further research is warranted given the promising results on this use of SSRIs.

A23: Daniela Makembe   Advisor(s): Simone Reynolds

Virally Unsuppressed and Unmonitored HIV+ Ryan White Patients, Where Are They Now & What Do They Look Like

Since the establishment of the Ryan White Care Act, great strides have been made in the care and treatment of people living with HIV/AIDS Community based organizations, local clinics, hospitals and state government run programs all play a key role in the management of HIV/AIDS care in the US. Though the federally funded HIV/AIDS programs are growing rapidly and expanding access to care, the health outcomes of all people living with HIV/AIDS are not improving in a consistent matter. Pockets of health disparities have emerged in the US, and women of color, men who have sex with men and the LGBT community have seen consistently lowered rates of viral load suppression and subsequent poor health outcomes. As a major indicator of HIV disease management, viral load suppression is a great estimate of population health. Through this analysis, we will attempt to describe the relationship between varying levels of participation in Ryan White-funded supportive counseling program and viral load suppression rates among previously unsuppressed HIV+ participants. We will also describe the characteristics of PLWH/A enrolled in Ryan White-funded supportive counseling programs who participated in our study.

A24: Sadat Iqbal   Advisor(s): Shivakumar Vignesh

Racial Disparities For Screening Colonoscopies: Differences in the Adenoma Detection Rates (ADR) Across Three Institutions

Background: African-Americans (AA) continue to have a higher incidence and mortality of colon cancer. This study seeks to compare the adenoma detection rates between an urban safety net hospital (USNH), urban university hospital (UUH), and a suburban university hospital (SUH).
Methods: A retrospective chart review (patients between ages 45-75) was performed on all average risk initial screening colonoscopies performed in 2012. Adenoma detection rates (ADR) were calculated on all complete initial screening colonoscopies with at least good bowel prep. Univariate analysis was done comparing ADRs between the 3 institutions and then comparing ADRs of teaching faculty gastroenterologists with community physician gastroenterologists.
Results: 2225 patients met the inclusion criteria. Patients at the USNH and the UUH were more-likely to be AA compared to the SUH which was dominantly White. The majority of colonoscopies at the USNH were performed by community physicians compared with the other hospitals and ADRs were noted to be significantly lower among this group of community physicians when compared with teaching faculty (16%vs 26%, p=0.034). In 2017, a higher proportion of screening colonoscopies were performed by teaching faculty at the USNH and the ADR improved to 29% (p<0.0001)
Discussion: In our study, the ADR was lower in patients receiving colonoscopies at the USNH where the majority of the screening colonoscopies were performed by community physicians who had lower ADRs. This lower ADR does not appear to be due to inherent racial differences as the USNH and the UUH had similar racial profiles. Furthermore, in 2017, the adenoma detection rate was significantly higher at the USNH and was attributed to improved feedback to all endoscopists and a higher percentage of colonoscopies being performed by teaching faculty. When improving access to colon cancer screening for at risk populations, the quality of the colonoscopy must be monitored.

A25: Gordon Taylor Moffat   Advisor(s): Iuliana Shapira and Edwin Chiu

Burden of BRCA1, BRCA2, and PALB2 Gene Mutations in Caribbean Women with Breast Cancer

Purpose of Study: Identifying mutations in breast cancer genes (BRCA1, BRCA2, PABL2) has important clinical implications on a woman's lifetime susceptibility to breast cancer development. Nearly 10% of immigrants to the United States come from the Caribbean and few studies exist that examine breast cancer gene mutations in African-Caribbean women with existing breast cancer. The purpose is to review breast cancer epidemiology statistics and prevalence of breast cancer genetic mutations in this cohort.
Methods: Epidemiologic data on select Caribbean countries and USA was abstracted from GLOBOCAN 2012, a database of estimated global cancer statistics produced by the International Agency for Research on Cancer and World Health Organization. A Literature Search was also conducted through PubMed database using following terms: Caribbean , (familial breast cancer), (hereditary breast cancer), and (BRCA breast cancer) that was subsequently narrowed to epidemiologic relevance resulting in five citations.
Summary of Results: Although Breast Cancer cumulative incidence risk of Caribbean women (5-9%) appear to be less than that of the US women (10%), the cumulative mortality risk in the Caribbean cohort (up to 2.7%) appears greater than that of the US (1.6%) with larger incidence of genetic mutations occurring in the Bahamas (27%) and Trinidad/Tabago (10.4%).
Conclusions: This study summarizes the estimate of breast cancer incidence and mortality in Caribbean women and known prevalence of BRCA1/2 and PALB2 breast cancer gene mutations in this cohort. This is critical as part of a formal genetic risk assessment and counseling of patients with breast cancer. Further research and understanding the contributions of inherited gene mutations will guide the optimal health policy in breast cancer screening and risk management.

A26: Vishali Ramsaroop   Advisor(s): Mohamed Nakeshbandi

An Unusual Presentation of West Nile Encephalitis in a Brooklyn woman with AIDs

In this presentation we describe a case of West Nile Virus (WNV) infection in an HIV-infected female patient who initially presented with progressively worsening headaches, weakness, falls, and inability to ambulate. Her mental and physical status continued to deteriorate during her hospital stay, and diagnosis of WNV was not made until hospital day 19. To our knowledge, there are only five previously reported cases of WNV in an HIV infected individual. In the general population, WNV presents with CNS involvement in <1% of patients. CNS involvement can present in three ways: encephalitis, meningitis, and acute flaccid paralysis. Because of the multiple CNS syndromes suspected in HIV seropositive patients, WNV is underdiagnosed and underreported. This case illustrates the rare presentation of West Nile Encephalitis manifested as focal neurologic deficits with psychiatric undertones in a patient with advanced HIV/AIDs..

A27: Jeetendra Sah   Advisor(s): Adrian Marchidann, Yazan Radaideh, and Vinodkumar Velayudhan

Carotid- Jugualr Fistula: A Diagnostic Pitfall

Background: Abnormal blood flow in the jugular veins can be seen as hyper-intense signal on MR angiography (MRA). This is caused by several important cerebral vascular anomalies. Our case was due to a proximally located dialysis arterio-venous fistula (AVF). Awareness of this differential diagnostic helps prevent misdiagnosis or unnecessary invasive investigations. Case report: Our patient is a 58 year-old man with acute ischemic stroke. He received a renal transplant 5 years before. MRA of the neck showed abnormally high signal in the left jugular vein. This pattern was caused by the reversal of blood flow in the jugular vein from the residual, yet still patent arterio-venous fistula from the left arm, used for hemodialysis before the renal transplant was received.

Discussion: Usually, the venous blood flow is not seen on MRA. Sometimes, venous flow is visible in normal patients due to compression of the brachiocephalic vein between sternum and an elongated aorta or due to unknown technical factors which vary among scanners. However, when high signal is seen in the jugular vein, abnormal venous circulation is suspected. Causes include carotid-cavernous fistula, carotid-jugular fistula, cervical arteriovenous malformation, cervical dural venous fistula and compression or stenosis of the left brachiocephalic vein. Almost 7% of patients with long term dialysis catheters develop central venous stenosis which may redirect the flow toward the jugular vein. Only one similar case of dialysis AVF-related jugular vein blood reflux was published.

Conclusion: Considering the relatively high prevalence of AVF used for dialysis and associated central venous stenosis following use of dialysis catheters, awareness of this diagnostic differential helps prevent exposing the patients to unnecessary invasive and costly investigations or interventions while at the same time minimizing misdiagnosis of potentially disabling vascular anomalies..

A28: David Mao   Advisor(s): Geetha Chari and Alex Choi, Katherine Mortati

Interest in use of mobile technology by patients with epilepsy

Background: Mobile technology such as smartphones and phone applications are commonly used by patients to assist with daily tasks. They have been shown to improve health outcomes in multiple chronic diseases such as diabetes and cardiac disease. Epilepsy patients have unique psychosocial barriers and cognitive deficits which make maintaining their treatment challenging. While there are many phone applications on the market with variety of features including medication reminders, seizure journal, and social networking, there is little data on patient's perception regarding these tools. We hypothesize that using survey data, we can identify specific patient interests in using mobile applications to improve epilepsy care.

Methods: Survey data were collected over a 6 week period as part of a quality improvement project in the epilepsy specialty clinic at SUNY Downstate. Patients were asked about their access to smartphones and their perceptions regarding mobile technology.

Results: There were total of 80 patients and 67 patients completed the survey. 49 respondents had smartphones. Of those with smartphones, 34 said they are comfortable downloading applications. 24 of them stated that applications can be helpful for epilepsy care. 33 patients were willing to answer questions regarding their interest in mobile technology features. 16 patients said that they would use these apps for further education. 13 would use the app to remind themselves to take medications. 21 patients would use it to communicate with their physician. 16 would use it for journals. Only 7 were interested in social media features.

Conclusions: Our study found that there are significant barriers in our patient population for using smartphones to help them take care of epilepsy as chronic disease, and these include lack of access and technology fluency. Further, our patients consider improving communication with their doctor to be most desired feature of mobile technology.

A29: Alexander Choi   Advisor(s): Katherine Mortati and Geetha Chari

Putting depression on the map: following AAN guidelines for epilepsy at SUNY-Downstate

Introduction: Depression is seen in a high proportion of epilepsy cohorts, estimates from 20-50%, and epilepsy is also seen at a higher rate among cohorts with depression, suggesting correlation and genetic factors. Depression is robustly underdetected and underappreciated in epilepsy clinics. Screening for depression is an AAN guideline for epilepsy, and screening with longitudinal follow-up or referral are further actionable steps to address the condition.
Objective: Screening was initiated at Downstate Epilepsy Clinic and private clinics of two epileptologists over a 6 week period Jan-Feb 2018, and initial data are presented highlighting areas for further work.
Methods: PHQ-9 screening for depression were handed out to epilepsy patients in the waiting room for their appointment (post-screening cohort), and scored by residents/fellows as well as attending epileptologists the clinic. Inclusion criterion: all epilepsy patients seen at SUNY Downstate General Epilepsy Clinic and private epilepsy clinics Jan-Feb 2018. Additional screening were "suicidal ideation/homicidal ideation" and "referral to Psychiatry if positive screeningâ€ .
Primary outcome: %Referral to Psychiatry
Results: 35/66 (53%) of participants who filled out the PHQ-9 survey scored positive for mild to severe depression, and 17/66 (26%) screened positive for moderate, moderately severe, to severe depression. Of 66 participants who filled out the PHQ-9 survey, 23% (n=15) were referred to Psychiatry vs. 4% (n=1) in pre-screening cohort. Of the subject wise comparison, 26% (n=9) who filled out the PHQ-9 survey were referred to Psychiatry vs 6% (n=2) in the pre-screening cohort.
Conclusion: Depression screening rates among epilepsy patients at Downstate were found to be similar to rates at other reported institutions. PHQ-9 screening led to more referrals to Psychiatry based on positive screening results

A30: Oluwatosin Akintola   Advisor(s): Paul Maccabee

Primary Familial Brain Calcification

Primary familial brain calcification (PFBC) also known as Fahr's disease), is a rare neurologic disorder characterized by the presence of bilateral symmetric basal ganglia calcium deposits in the brain. Pathology can be extensive and may involve other parts of the cerebrum including the cortex, thalami, hippocampi, and subcortical white matter as well as the cerebellum. The disease is explained on a genetic basis with mutations involving a phosphate transporter. An autosomal dominant inheritance pattern has been described in most cases. Presentation is varied and includes neuro-psychiatric manifestations such as aggression, memory loss, seizures and movement disorders (tremors, dystonia and dyskinesia). The condition remains incurable and mainstay of treatment is symptomatic control of complications. We present two brothers with multiple neuro-psychiatric complaints found to have extensive calcification in the cerebrum and cerebellum. The aim of this presentation is to draw attention to this rare familial disease that has a rather common set of presenting symptoms.

A31: Clotilde Balucani   Advisor(s): Steven Levine

The Role of Gender in Aneurysmal Subarachnoid Hemorrhage Outcome: A Nationwide Sample Analysis.

Background: Aneurysmal subarachnoid hemorrhage (aSAH) represents a significant cause of morbidity and mortality worldwide. Although incidence of aSAH has been reported higher in women, conflicting evidence exists regarding the role of gender on aSAH outcomes.
Objectives: To report temporal trends of frequency of aSAH, and explore the role of gender in aSAH outcomes in 2009 and 2015.
Methods: Defined cases of aSAH were extracted from the Nationwide Inpatient Sample database in the years 2009 and 2015. Outcomes were (1) in-hospital death and (2) discharge disposition (home vs. other). Frequencies of in-hospital admissions, aneurysm treatment procedures and outcomes for aSAH were reported by gender. Chi-squared test was used for statistical analysis (SAS 9.4 software).
Results: Reported in-hospital admissions for aSAH were 5115 in 2009 and 5022 in 2015. Thirty-nine percent were males (M) vs. 61% females (F) in 2009, and 40% M vs. 60% F in 2015 (p <0.001). Mean age was 56.8 ± 16.4 (SD) for M vs. 59.8 ± 16.6 for F in 2009, and 57.5 ± 16.7 for M vs. 60.6 ± 16.4 for F in 2015. In the overall cohort white, black and other races were 64%, 14% and 22% in 2009 and 61%, 16% and 23% in 2015 respectively. In-hospital death occurred in 20% M (n=1971) vs. 22% F (n=3137) in 2009 and 18% M (n=2029) vs. 19% F (n=2990) in 2015. Thirty-eight percent M (n=1971) vs. 33% F (n=3137) were discharged home in 2009, and 40% M (n=2029) vs. 34% F (n=2990) in 2015 (p <0.001). A total of 16% M (n=1974) vs. 21% F (n=3141) in 2009 and 11% M (n=2030) vs. 14% F (n=2992) in 2015 underwent aneurysm treatment procedures.
Conclusions: In this contemporary nationwide database, incidence of aSAH was higher in women than men. In-hospital mortality decreased over time however remained higher in women as compared to men. Women were significantly less likely to be discharged home. Our findings support the need for further investigations to elucidate causes behind gender-related differences in aSAH outcomes.

A32: Chi Doan Huynh   Advisor(s): Ernest Garnier

Reasons for Influenza Vaccine Hesitancy in an Urban University Hospital Primary Care Practice.

Introduction: The annual influenza (flu) vaccine is considered to be one of the most effective to reduce the risk of contracting the influenza disease. However, in the 2016-2017 season, only 43.4% of adults in the US received it despite wide availability of the vaccine. Patient hesitancy which is defined by WHO as 'the delay in acceptance or refusal of vaccines despite availability of vaccinations services' is one of the major reasons for suboptimal rates of influenza vaccination.
Objective: To identify the reasons for flu vaccine refusal in an Urban University Hospital Primary Care Practice.
Method: This was a cross-sectional study conducted at an Urban University Hospital Primary Care Practice. It included all patients seen at this clinic who were offered the flu vaccine and declined it during the flu season from January 26th to March 15th 2018. These patients were given a self-administered questionnaire addressing possible reasons for refusal of the flu vaccine.
Results: From January 26th to March 15th 2018, 60% of patients seen in the clinic received the flu vaccine. 79 patients declined flu vaccination and completed a survey addressing reasons for their refusal. Of these 34% reported believing that the flu vaccine would make them sick, 19% did not trust vaccines, 15% believed they never got the flu so didn't need the vaccine, 6% believed the flu vaccine did not work, 5% stated the flu vaccine made someone they knew sick, and 19% declined for other reasons.
Conclusion: There appear to be multiple misperceptions within this primary practice regarding the effectiveness and safety of the flu vaccine. The second phase of this project will focus on an intervention to improve patient education specifically addressing the concerns that these patients raised regarding the flu vaccine. Patient knowledge and flu vaccine uptake rates will then be measured to assess effectiveness of the intervention.

A33: Hugo Gonzalez Gomez   Advisor(s): Susan Law and Aaron W. Abrams

Atypical case of Intracranial Arterial Dolichoectasia presenting with bilateral cranial neuropathy: a case report

Introduction: Intracranial Arterial Dolichoectasia (IADE) is a dilation and elongation of at least one intracranial artery, with 80% of the cases affecting the basilar artery (BA). IADE usually presents as a lacunar stroke, although it can present as a cranial neuropathy from compression of the brainstem and cranial nerves (CN), most commonly CN V, VII and VIII with CN VI being less frequently involved.

Case description: A 52 year old woman with hypertension, prior left MCA stroke, hypertensive intracerebral hemorrhage, right trigeminal neuralgia and central serous chorioretinopathy presented to the ED due to sudden-onset blurry vison for 3 weeks. She denied other symptoms. Neurological exam was notable for new mild left esotropia and right > left lateral gaze palsy in addition to chronic right-sided spastic hemiparesis. Initial laboratory tests revealed mild anemia and leucopenia. Non-contrast Head CT and CT angiogram showed IADE of the BA measuring up to 11 mm (Fig. 1-3). Patient was admitted to Neurology for further work-up. A 3D TFE MRI of brain and temporal bone demonstrated compression of left CN VI, right CN V, VI, VII, VIII by the BA and ventral medulla by the left vertebral artery (Fig. 4). Due to patient's young age, a workup for alternative causes of stroke was completed and revealed a positive Anti-RNP, ANA, Anti-dsDNA, low C4 level, Î²2 glycoprotein and Cardiolipin IgM antibodies. No other vascular anomalies were noted on CT angiogram of the thoracic and abdominal aorta. Based on above findings, patient was diagnosed with Systemic Erythematous Lupus (SLE) and Antiphospholipid Syndrome.

Discussion: This case highlights the importance of an integrative approach in patients with bilateral cranial neuropathy and history of stroke. Additional work-up is warranted in young patients as IADE could be the initial finding of a vasculopathy from an autoimmune disease. This case raises a question of a possible causative relationship between SLE and IADE.

A34: Yoshimi Hisamoto   Advisor(s): Radha Giridharan and Joan Cracco

Genetic Testing has taken out Guesswork: Cases of Familial and Non-familial Benign Infantile Epilepsy Associated with PRRT2 gene mutations

Objective: We report two cases of benign infantile epilepsy (one familial and one non-familial) with mutations in PRRT2.
Background: PRRT2 mutations are known to be associated with both familial and non-familial benign infantile epilepsy, conditions where afflicted infants typically present with clusters of seizures that are self-limited and usually have benign neurodevelopmental outcome. Genetic studies of clinically suspected cases are useful in confirming diagnosis and aid in management of such patients.

Case Presentations: Case 1 is a 4 month old girl who presented with clusters of unprovoked seizures. The seizures were refractory to levetiracetam and responded to fosphenytoin. The patient had an older sister with history of self-limited infantile seizures. Birth history and development was normal. MRI of the brain was normal. Routine EEG was abnormal for focal slowing. The genetic study found pathogenic mutation in the PRRT2, confirming diagnosis of familial benign infantile epilepsy.
Case 2 is a 6 month old boy who presented with a cluster of unprovoked seizures. The seizures were refractory to levetiracetam, thus carbamazepine was added to the regimen. The patient did not have family history of seizures. Birth and developmental history was normal. MRI of the brain was normal. EEG showed focal spikes and a focal onset electrographic seizure. The genetic studies were positive for pathogenic mutation in the PRRT2, leading to diagnosis of non-familial benign infantile epilepsy.

Conclusions: We described two cases of benign infantile epilepsy with mutations in PRRT2. While one case had family history of self-limited infantile seizures which helped in diagnosis, the other case did not have family history. In both cases, genetic testing played a significant role in diagnosis, management and prognostication.

A35: David Kim   Advisor(s): Carl Paulino

Should Surgical Planning for AIS Surgery Include Anatomical or Scoliosis-Driven Leg Length Discrepancies?

Purpose: This study compared anatomically-driven LLD (LLD-A) and scoliosis-driven LLD (LLD-S) in patients undergoing posterior spinal fusion for AIS to determine the impact of LLD on postoperative correction.
Methods: 52 AIS primary patients were evaluated for baseline LLD from Jan 2010 to Dec 2015 from one institution. Each patient underwent scanogram imaging of both lower extremities. LLD-A was defined as >1 cm difference between both limbs lengths (length between proximal femoral head and center of tibial plafond). LLD-S was defined as >1 cm difference between the apices of the iliac crests. Sagittal and coronal radiographic analysis was obtained at baseline, with mean 2-year follow-up. Magnitude of correction and 2-year alignment was compared between patients with and without LLD-A and –S. A classification of 4 categories based LLD-A and LLD-S of <1cm or >1cm was suggested: No LLD (LLD-A and S <1cm), Pure LLD-A (Only LLD-A >1cm), Pure LLD-S (Only LLD-S >1cm), LLD-A,S (Both LLD-A and S >1cm).
Results: 52 patients with mean age of 18.6 years and 71% of females. Mean LLD-A was 10.2±2.4mm and mean LLD-S was 9.2±7.9mm. 10 (19.2%) had LLD-A, and 20 (38.5%) had LLD-S. 29 (55.8%) had No LLD, 3 had Pure LLD-A (5.8%), 13 had Pure LLD-S (25%), and 7 had concomitant LLD-A,S (13.5%). Patients with and without LLD, as well as those with LLD-S vs LLD-A, had comparable prevalence of Lenke Types.
All 4 groups had similar baseline coronal deformity and magnitude of correction at 2-year follow up. Those with and without LLD-A and LLD-S had comparable baseline and 2-year sagittal profile including PI, PT, SS, PI-LL, TK and SVA.
Conclusion: Scoliosis-driven LLD patients achieved similar radiographic outcomes at mean of two years following posterior spinal fusion for AIS, suggesting LLD-S as a compensatory mechanism to the coronal deformity. LLD-A patients (>1cm) had comparable outcomes to those without LLD. There is no apparent benefit to incorporation of LLD into surgical planning for AIS.

A36: Michael Sabarese   Advisor(s): Carl Paulino

Predictive Patient Factors For Developing Postoperative Dysphagia following Anterior Cervical Discectomy and Fusion

Background Context: Dysphagia is a known potential complication of anterior cervical discectomy and fusion (ACDF). However, there is little data analyzing what preoperative factors may predispose patients to developing dysphagia following ACDF. By discovering potential predictive factors for postoperative dysphagia, surgeons may be able to preoperatively optimize and risk-stratify their patients.
Methods: The New York Statewide Planning and Research Cooperative System (SPARCS) database was used to identify all patients who underwent ACDF from 2009-2013. This cohort was divided into two groups if they were diagnosed with dysphagia postoperatively or not. Patients with dysphagia preoperatively were also identified. Demographics were compared between these groups. Logistic regression was used to identify predictive factors for developing dysphagia.
Results: 34,975 ACDF patients were included in this study. 34,060 patients did not develop dysphagia postoperatively and 795 did. 140 patients who had preoperative dysphagia and only 20 (14.3%) of them had dysphagia postoperatively. Patients with preoperative dysphagia and diagnosis of postoperative dysphagia represented 2.5% of individuals who were diagnosed with dysphagia postoperatively. Those who developed dysphagia were often older (59.7 vs 50.9 yrs, p<0.001), male (59.2 vs 49.7%, p<0.001), black (17.4 vs 12.3%, p<0.001), and had Medicare or Medicaid when compared to patients who did not develop dysphagia (all p<0.001). Regression analysis showed that preoperative dysphagia was a significant predictor for postoperative dysphagia, increasing a patient's odds by 285% (OR=3.85; 95%CI, 3.26-4.54, p<0.001). Female gender (OR=0.761; 95%CI 0.714-0.811, p=0.004) was the only protective factor to reach statistical significance.
Conclusion: This study found that patients who developed dysphagia were often older, male and black, but preoperative dysphagia was the most significant predictor of postoperative dysphagia after ACDF.

A37: Dylan Wolff   Advisor(s): Emmanuel Illical and Jared M. Newman

Antibiotic-Loaded Calcium Sulfate Cement Use in Orthopaedic Surgery: A Systematic Review

Introduction: Infections in orthopaedic surgery are costly debilitating complications. The search for new treatments and prevention strategies has led to the use of antibiotic filled calcium sulfate (CaS) as a bone void filler that is both safe and effective. The purpose of this study is to examine the available data on the efficacy of this technology.

Methods: A literature search was performed for studies that evaluated the use of antibiotic-loaded CaS cement in orthopaedics published between inception of the databases to 2017. Selected studies included randomized controlled trials (RCTs) and observational studies published in the English language, and met the following criteria: 1) patients underwent an orthopaedic procedure; 2) CaS cement with an antibiotic was used; and 3) at least one of our outcomes were mentioned. Outcomes included resolution of infections, complications related to treatment, subsequent surgeries, overall infection rate, fracture union rates, clinical outcomes, and wound complications. A total of 17 studies were included

Results: Ten studies examined the use of CaS eluting antibiotics with surgical debridement for treating osteomyelitis with resolution rates ranging from 80-100%. Two studies examined CaS for prophylaxis of open fractures with infection rates ranging from 0-22%. Two studies examined infected non-unions with CaS used as an adjunct to surgery with an 87.5% infection clearance. Three studies examined the use of local antibiotic release from CaS in the repair of infected TKAs or THAs, with success rates ranging from 52-93.3%.

Conclusion: Initial results support the use of CaS with surgical debridement for osteomyelitis and infected non-unions. Results are mixed for CaS use in the prophylaxis of open fractures and for PJIs, thereby, necessitating further research. Overall the studies were small, retrospective, and lacked controls. Further research should focus on RCT's to eliminate any bias and provide non-inferiority results.

A38: Charles Conway   Advisor(s): Jared Newman

Epidemiology and Trends of 39,296 Fractures of the Lumbar Spine from 2007 to 2016 in the United States

Fractures of the lumbar spine are often associated with bone insufficiency or high-energy traumatic mechanisms. However, studies reporting lumbar spinal fracture epidemiology often lack power or are not recent. This study sought to explore the epidemiology over a 10-year period in the United States including fractures by level as well as trends in number of fractures, fractures by gender, and disposition. The National Electronic Injury Surveillance System (NEISS) was used to identify patients who visited the emergency department from January 1, 2007 to December 31, 2016 and were diagnosed with a lumbar spine fracture. Frequency and incidence rates were determined using NEISS weight calculations and US Census data. Trends were analyzed using descriptive statistics and linear regression. A total of 36,296 lumbar spine fractures were identified. 82.5% were single-level fractures. The estimated number of fractures increased from 2,148 in 2007 to 4,301 in 2016 (β=0.83, p=0.003). The mean age was 60.9, and 22.6% occurred between ages 80 and 89. 59.3% of injuries occurred in females, and 40.7% occurred in males. Trends showed increases in number of fractures for males (β=0.37, p=0.29) and females (β=0.82, p=0.004). 69.2% of injuries occurred in whites (incidence rate, 0.103 of per 10,000 person-years) and 2.7% occurred in blacks (0.024 per 10,000 person-years). The percentage admitted for lumbar spine injuries decreased slightly, but this was not significant (β=0.16, p = 0.67). 82.1% of injuries were due to falls. Over the last decade, the incidence of lumbar spine fractures has doubled in the US. Most were single-level fractures. Fractures occurred most often between ages 80-89 and more often in females. Moreover, there was a significant increase of lumbar spine fractures for females. Hospital admissions remained constant and falls were the most common cause of lumbar fractures. Understanding these patterns can help improve recognition of lumbar spine fractures.

A39: Anthony Filipovic   Advisor(s): Jared Newman

Comparing 30-Day Outcomes after Anterior Cervical Discectomy and Fusion between Orthopaedic Surgeons and Neurosurgeons: An 8-Year Analysis

Orthopaedic surgeons and neurosurgeons both perform anterior cervical discectomy and fusions (ACDF), but there is little evidence comparing their outcomes. This study evaluated demographics and 30-day postoperative outcomes of patients following ACDF. We hypothesized that orthopaedic surgeons and neurosurgeons achieve similar outcomes following ACDF surgery. 77,701 ACDF patients from 2008 to 2016 were identified in the NSQIP database and grouped by surgeon specialty. Demographics, comorbidities, labs, perioperative factors, 30-day postoperative complication, reoperation, and readmission rates were collected. The groups were compared with univariate analysis and regression models were developed to identify potential predictive factors for postoperative outcomes. 33.1% of patients were treated by orthopaedic surgeons and 66.9% by neurosurgeons. Orthopaedic patients had longer operative time (170.3 vs 159.3 min, $p<0.001$), longer length of stay (2.7 vs 2.4 day, p=0.048) and higher postoperative blood transfusion rates (7.5 vs 4.4%, $p<0.001$), but had comparable 30-day complication rates (4.2 vs 3.9%, p=0.051) and reoperation (2.2 vs 2.2%, p=0.570) and readmission (4.2 vs 4.2%, p=0.754) rates. Patient age was found to be a significant predictor for 30-day complication (OR 1.037, $p<0.010$), reoperation (OR 1.021, $p<0.010$) and readmission (OR 1.018, $p<0.010$) rates. Orthopaedic surgeon specialty was a predictor for lower readmission rate (OR 0.766, p=0.032). This study compared outcomes between orthopaedic surgeons and neurosurgeons in ACDF patients. Neurosurgeons performed more ACDF surgeries than orthopaedic surgeons, but had comparable 30-day complications, reoperations and readmissions. Orthopaedic patients had longer length of stay, but also had a lower 30-day readmission rate. Orthopaedic surgeons may be under-performing ACDF surgeries despite largely comparable outcomes to neurosurgeons.

A40: Elizabeth Kasparov   Advisor(s): Jared Newman and Neil Shah

The Demographic Trends in Carpal Tunnel Release: A Nationwide Study Analysis from 2005 to 2013

Hypothesis: The literature has flourished on investigation into carpal tunnel release. However, little is known about the patient demographics and their trends over time. This study sought to study the temporal trends in demographics of patients who underwent carpal tunnel release; we
suspect that this analysis would yield identifiable changes in trends of these procedures.
Methods: This was a retrospective review using the National Inpatient Sample (NIS) from 2005-2013. Patients with CTR were identified via ICD-9-CM codes. Patients who received CTR as the only procedure during their visit were included; patients with multiple procedures in addition to CTR were excluded. Patient demographics, including age, sex, race, and insurance were collected, and temporal trends were evaluated utilizing linear regression analysis.
Results: 13,084 cases of carpal tunnel release were performed between 2005 and 2013. The mean patient age was 49.5 years, with 56.9% of patients being male. Regarding race, 72.8% of patients who underwent these procedures were White, while only 1.3% of these patients were Asian. The majority of patients had private insurance (37.7%), while only 1.4% of patients underwent the procedure at no charge (Table 1).
Considering trends over the study period, the number of Black patients increased over the study period (8.6% to 10.6%, Beta=0.75, p=0.017) (Figure 1). The number of patients who held private insurance decreased over the study period (Beta=0.81, p=0.009), while the number of patients with Medicare (Beta=0.74, p=0.024) and Medicaid (Beta=0.84, p=0.005) increased significantly over time.

A41: Rohan Maini   Advisor(s): Jared Newman

Predictors for Neck and Back Injuries in National Football League Athletes

Background Context: Injuries involving the cervical, thoracic, and lumbar spine represent common debilitating and career-altering injuries in many NFL athletes. With recent reports exposing the increased incidence of such injuries, the NFL Head, Neck, and Spine Committee continues to amend player safety protocols. However, limited data exists that analyzes predictive factors for these injuries.

Purpose: The purpose of the present study was to determine if age, position, previous injury, or participation in other sports at the high school level were predictors of neck and back injuries sustained in the NFL.

Methods: A retrospective database was constructed, and data from 506 first and second round NFL draft picks between 2008 and 2015 was collected. Primary data points included player age, player position, total neck injuries, total back injuries, and the number of high school sports played other than football. Neck injuries included herniated cervical discs, cervical stenosis, neck strains, and unspecified neck injuries. Back injuries included herniated lumbar and thoracic discs, back strains, fractured lumbar or thoracic vertebrae, and unspecified back injuries.

Results: Sixty-nine players sustained 32 neck injuries and 57 back injuries collectively, with 16 players having had multiple documented injuries. Regression analysis found that linemen who were multi-sport athletes had a 268% greater odds of sustaining a neck injury in the NFL (OR=3.68; 95%CI: 1.0-12.98; p=0.043).

Conclusion: Neck and back injuries represent a significant cause of morbidity in NFL players. The present study found that NFL lineman were at a 268% increased odds of sustaining neck injuries in the NFL if they played multiple sports while in high school.

A42: Cameron Moattari   Advisor(s): Jared Newman

Comparing Predictors of Complications following Anterior Cervical Discectomy and Fusion (ACDF), Total Disc Replacement (TDR), and Combined ACDF-TDR with Minimum Two-Year Follow-Up

This study sought to determine how complications varied among ACDF, TDR, and combined ACDF-TDR as well as what variables significantly impacted development of postoperative complications. The New York Statewide Planning and Research Cooperative System (SPARCS) was used to identify all patients who underwent ACDF or TDR from 2009-2011 with minimum two-year follow-up surveillance, and three cohorts were formed: ACDF, TDR, or combined ACDF-TDR. Primary data points collected included patient demographics, hospital-related parameters, mortality, and postoperative outcomes (complications, readmissions, and revisions). Multivariate logistic regression models identified independent predictors of these outcomes. Rates of complications significantly differed across the cohorts. ACDF-TDR patients had the highest rates of cardiac complications (1.3% vs. 0.4% ACDF and 0.9% TDR) and pulmonary embolism (0.4% vs. 0% for ACDF and ACDF-TDR) (both p<0.05), while TDR had the most individual surgical complications (2.4% vs. 1.7% ACDF-TDR and 1.4% ACDF) as well as the highest rates of complications related to the device, internal fixation, and prosthesis (1.8%, 1.8%, and 0.2%, all p≤0.014). Revision rates differed as well, with ACDF-TDR patients experiencing the lowest rate (5.2% vs. 6.4% ACDF and TDR 10.9%). Total disc replacement associated with increased odds of developing any surgical complications (OR 1.9, p=0.03). Deyo Index was found to predict any medical or surgical complications (OR 1.4 and 1.2, respectively), while Black race was found to predict any medical and total complications (OR 1.5 and 1.3) (all p<0.004). TDR patients could expect increased rates of surgical complications and revisions in comparison to the other cohorts, and the procedure was found to predict surgical complications. This study of a large cohort of patients can provide surgeons and their patients with evidence to better individualize and optimize procedure choice for each patient.

A43: Jay Rathod   Advisor(s): Jared Newman

An Epidemiological Study of 131,176 Fractures of the Cervical and Thoracic Spine from 2007 to 2016 in the United States

Introduction: This study investigated the epidemiology of cervical and thoracic spine fractures (CTSF) over a 10-year period in the United States (US). Specifically, we evaluated these fractures by location, levels injured, and mechanism of injury and temporal trends in demographics and disposition.

Methods: The National Electronic Injury Surveillance System database was used to identify all emergency department visits from 2007-2016 for diagnosis of cervical and/or thoracic spine fractures. Data were stratified by demographics and injury mechanisms. Estimation of frequency and incidence rates (IR) by age, sex, and race were determined using NEISS weighted calculations and US Census data. Injury trends were analyzed using descriptive statistics and linear regression, (IR) reported as per 10,000 person-years.

Results: An estimated total of 131,176 fractures were identified, with approximately 95.4% thoracic, 4.7% cervical, and 1.2% both. 91.1% were single-level and 8.86% were multi-level fractures. The annual estimated number of CTSF increased from 10,020 in 2007 to 18,168 in 2016 (β=0.89, p<0.001). CTSF incidence was estimated to be 0.419 per 10,000 person-years. The most common injury mechanisms were falls (77.4%), lifting (2.9%), twists/bends (2.0%), trauma (7.1%), and other (10.5%). CTSF occurred most often in patients between 20-29 years (IR=0.219). Patients ≥80 years had an IR=3.63, the highest among age groups. 57% were in women (IR=0.48), while 43% in men (IR=0.36). Race data was available for 71%, and IR's of these injuries were 0.33 whites, 0.08 in blacks, and 0.20 in all others. Hospital admission rates of CTSF increased from 37% in 2007 to 43.8% in 2016, but this was not significant (β=0.56, p=0.09).

Conclusion: The incidence of CTSF has increased, and the most common injury mechanism was falls. Most CTSF occurred in those aged 80-89 and in women. The IR was highest in whites. Hospital admissions tended to increase, but was not statistically significant..

A44: Ryan Scheer   Advisor(s): Jared Newman

Ankle Fracture Epidemiology in the United States

Introduction: This study looked at the epidemiology of ankle fractures that occurred over a 5-year period. Specifically, we evaluated: age, sex, race, mechanism of injury, and disposition in patients who had ankle fractures and presented to an emergency department (ED) in the United States.

Methods: The National Electronic Injury Surveillance System was used to extract all ankle fractures that presented to United States hospital EDs between 2012 and 2016. The US census data was used to determine the incidence rates of ankle fractures in terms of age, sex, and race.

Results: There were an estimated total of 673,214 ankle fractures that occurred during this period, which yielded an estimated incidence of ankle fractures to be 4.22 per 10,000 person-years. The mean age of ankle fracture patients was 37 years (SD, 22.86). The majority of ankle fractures occurred in those who were between the age of 10 and 19 years. For sex, 44% of ankle fractures occurred in men while 56% occurred in women. Based on race, the incidence rates of ankle fractures were 2.85 per 10,000 person-years in whites, 3.01 per 10,000 person-years in blacks, and 4.08 per 10,000 person-years in others. The most common mechanism of injury resulted from falls (35.68%), followed by sports (35.26%), exercise (19.29%), jumping (5.38%), trauma (4.06%), and other (0.33%). For disposition, 81.84% of patients were treated and released, 1.43% were transferred, 16.01% were admitted, 0.59% were held for observation, and 0.13% left against medical advice.

Conclusion: Ankle fractures were most common in those age 10 to 19 years, of which men had the highest incidence rate; however, women were more commonly affected in all other age groups. White individuals had the highest rate of ankle fractures compared to others. Falls were the most common injury mechanism, and while most ankle fracture patients were treated and discharged, 16% were admitted to the hospital.

A45: Jack Zhou   Advisor(s): Jared Newman

Epidemiology and Trends of Nursemaid's Elbow in the United States 2006-2016

Introduction: The aim of this study is to examine the epidemiology and secular trends of nursemaid's elbow cases presenting to hospital emergency departments in the US that occurred over a 11-year period.
Methods: The National Electronic Injury Surveillance System (NEISS) database was queried for all nursemaid's elbow injuries between 2006 and 2016. The data were stratified by demographic variables and injury mechanism. The nationwide estimation of frequency and incidence rates were determined using NEISS weight calculations and US census data. Secular trends of injuries were analyzed using descriptive statistics and a linear regression.
Results: From 2006 to 2016, there were an estimated 109,963 children <9 years of age treated for nursemaid's elbow. The annual estimated weights of these fractures increased from 8,337 in 2006 to 12,714 in 2016 (slope = 467.42, p = 0.014). The mean age was 2.65 years, and 94.3% of injuries occurred in children 2-4 years of age with an incidence rate of 4.73 per 10,000 person-years (95% CI, 4.57 to 4.89). The majority of the dislocations occurred in females (55.9%, N = 61,574) compared to males (44.1%, N = 48,388). Males and females had overall incidence rates of 1.17 (95% CI, 1.11 to 1.23) and 1.55 (95% CI 1.48 to 1.62) per 10,000 person-years, respectively. When sorted by mechanism of injury, the majority of nursemaid's elbow dislocations (54.0%, N = 59,980) occurred due to falls, followed by pulling/grabbing (27.6%, N = 30,891).
Conclusion: During the study period, the rate of nursemaid's elbow injuries increased significantly. It was also shown that this injury is more common in females than males, which is consistent with results of previous studies. The injury mechanism for nursemaid's elbow has been conventionally accepted to be due to a sudden pull of a child's arm by a caregiver. However, this study demonstrated that falls were a more common injury mechanism and highlighted their importance in causing nursemaid's elbow.

A46: Alexander Chee   Advisor(s): Jared Newman

Malnutrition Increases the Thirty-Day Postoperative Complications after Distal Radius Fracture Surgical Fixation

Introduction: The purpose of this study was to evaluate patients who had malnutrition and underwent open reduction internal fixation for a distal radius fracture to determine if they were at a greater risk for worse 30-day postoperative outcomes.
Methods: The America College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database was utilized to identify all patients who underwent open reduction internal fixation (ORIF) for distal radius fractures between 2008 and 2016. Only patients who had preoperative serum albumin levels were included. Those who had preoperative hypoalbuminemia (malnutrition), defined as a level < 3.5 g/dL (n=500), were compared to those who had albumin levels ≥ 3.5 g/dL (n=2,669) in terms of demographics and perioperative data. Multivariate regression models were developed to control for variables that had p-values <0.05 in the univariate testing to evaluate the effect of individual risk factors, including hypoalbuminemia, on the 30-day major and minor postoperative complications, re-operations, and readmissions.
Results: Patients in the hypoalbuminemia group were older (67 vs. 62 years, p<0.001) and more likely female (83.8 vs. 77.6%, p=0.004), but there were no significant differences in terms of BMI, race, or modified Charlson scores. The hypoalbuminemia group also had a longer mean lengths of stay (LOS) (3.2 vs. 0.75 days, p<0.001). Regression analysis found that compared to the normal albumin group, the hypoalbuminemia group had a 625% greater odds for developing a major complication (OR=7.25; 95% CI, 1.91-27.49; p=0.004) and a 162% higher odds for being readmitted to the hospital (OR=2.62; 95% CI, 1.57-4.37; p<0.0001) during the 30-day postoperative period.
Conclusions: Malnutrition, defined in the present study as hypoalbuminemia, is frequently seen in elderly distal radius fracture patients, and can be associated with more postoperative complications and readmissions.

A47: Marine Coste   Advisor(s): Carl Paulino

Comparing 30-Day Outcomes between Orthopaedic Surgeons and Neurosurgeons in Lumbar Total Disc Replacement

Orthopaedic surgeons and neurosurgeons both perform lumbar total disc replacements (LTDR). However, there is little evidence comparing outcomes between these two specialties for LTDR. This study evaluated the: demographics; complications; operative time; length of stay; reoperations; and readmissions of patients following LTDR. The National Surgical Quality Improvement Program (NSQIP) database was utilized to identify all elective lumbar total disc replacements performed from 2008 to 2016 by ICD-9-CM code. This cohort was grouped by surgeon specialty (orthopaedic surgeon and neurosurgeon). Demographics comorbidities, labs, perioperative factors, and 30-day postoperative complication, reoperation, and readmission rates were collected for all patients. The groups were then compared with univariate analysis. Regression models were developed and attempted to identify potential predictive factors for 30-day postoperative complication. A total of 581 LTDR patients were included. 42.9% of patients were treated by orthopaedic surgeons and 57.1% were treated by neurosurgeons. Orthopaedic patients were younger (p=0.008) and had lower rates of hypertension (p=0.010). Otherwise, the groups were largely comparable in comorbidities and lab values. Orthopaedic patients had comparable operative time but slightly longer length of stay (p=0.044) compared to neurosurgery patients. The orthopaedic patient group had comparable 30-day complication, readmission and reoperation rates compared to neurosurgery patients. Regression analysis revealed patient age was the lone significant predictor for higher overall complication rate (p<0.001). On the other hand, surgeon specialty was not a predictor for any 30-day complication rates (p≥0.352). This study compared 30-day outcomes between orthopaedic surgeons and neurosurgeons in lumbar total disc replacement patients. Orthopaedic surgeons may be under-performing lumbar total disc replacement surgeries despite similar outcomes to neurosurgeons.

A48: Brian Ford   Advisor(s): Jared Newman

Incidence of Postoperative Stroke after Anterior Cervical Discectomy and Fusion in Patients who have Carotid Stenosis

Background: Anterior cervical discectomy and fusion (ACDF) is a procedure used to treat cervical myelopathy and radiculopathy. During surgery, the sternocleidomastoid muscle and the carotid sheath are retracted laterally. To our knowledge there have been no studies that have evaluated carotid artery retraction and the development of a postoperative stroke in patients who have carotid artery stenosis.
Purpose: The purpose of this study was to determine the incidence of postoperative strokes after ACDF in patients with carotid artery stenosis. Methods: Patients with a preoperative diagnosis of carotid stenosis were identified, and were propensity score matched in a 1: 1 ratio to those without carotid stenosis based on age, sex, and Charlson/Deyo scores. We evaluated postoperative complications. There were 61 patients in the carotid stenosis cohort and 61 patients without carotid stenosis. In terms of the demographics, the carotid stenosis cohort was older (68 vs. 60 years, p<0.001); none of the other demographics were significantly different.
Results: The incidence of postoperative stroke in the carotid artery stenosis cohort was significantly higher than those without carotid artery stenosis (6.6 vs. 0%, p<0.042). In terms of the other postoperative complications, those with carotid artery stenosis had a higher rate of acute renal failure (27.9 vs. 4.9%, p=0.01), sepsis (18 vs. 4.9%, p=0.023), and blood transfusion (39.3 vs. 13.1%, p=0.001). Furthermore, the carotid artery stenosis patients had a slightly shorter LOS (4.8 vs. 5.8 days, p=0.736) and higher total charges (58,568 vs. 50,025 USD, p=0.561), but these were not statistically significant.
Conclusion: Patients with carotid artery stenosis who underwent ACDF had a significantly greater incidence of developing a postoperative stroke compared to patients without carotid stenosis. These patients could potentially benefit from medical or surgical optimization of their carotid stenosis prior to undergoing ACDF.

A49: Jack Barnett   Advisor(s): Jared Newman

From Theory to Data: Characterizing Imbalance Patients Using the CDC National Health and Nutrition Examination Survey

Introduction: Understanding global body balance is expected to be the next step in approaching and preoperatively optimizing spinal deformity patients. This study sought to characterize patients with reported imbalance and identify predictors of imbalance. **Methods**: The National Health and Nutrition Examination Survey database from 1999-2004 was queried to identify all patients who responded to questions regarding balance (n=9,964). Patients with imbalance were compared to those without imbalance for demographics, comorbidities, nutritional parameters, physical assessment and performance measures, and laboratory tests. Logistic regression was utilized to determine predictors of imbalance.
Results: A total of 2,638 (26.5%) had imbalance. Imbalance patients were older (65.4 vs 60.6 years), more females (60 vs 48%), had more with osteoporosis (14.4 vs 6.6%), arthritis (51.6 vs 31.9%), low back (54.4 vs 32.7%) and neck pain (10.8 vs 4.3%), depression/anxiety (1.5 vs 0.6%), had more difficulty walking up 10 steps (43.8 vs 21%), stooping/crouching/kneeling (74.3 vs 45.7%), standing-up from armless chair (49.6 vs 21%), inability to stand-up on their own (4.0 vs 0.9%), greater time-to-walk 20 feet (9.5 vs 7.1 sec). Imbalance group had significantly lower dietary caloric intake. Regression revealed that grasping small objects (OR=1.73), females (OR=1.43), difficulties standing for long periods (OR=1.29), difficulties stooping/crouching/kneeling (OR=1.28), and increased time-to-walk 20 feet (OR=1.06) were significant predictors of imbalance.
Conclusion: Imbalance patients were frail, undernourished, had identifiable comorbidities and most importantly were detectable using simple functional tests. Preoperative evaluation with medical, nutritional, and structural timed tests are important to optimize and stratify patients undergoing spinal deformity surgeries.

A50: Jia Jian Li   Advisor(s): Mariana Markell

Association of CAM Use and Adherence in Patients with CKD

Research into the relationship between CAM use and medication adherence showed mixed results. Our study aims to determine the prevalence of use and relationship between CAM and adherence in inner-city patients with CKD. We also looked at non-adherence with scheduled clinic visits as a form non-medicated non-adherence. 28 patients were randomly chosen from the outpatient CKD clinic in East New York, Brooklyn. Patients were interviewed face-to-face. Laboratory data and clinic attendance records for the preceding 6 months were extracted from the electronic health record. 21 patients (75%) admitted to using CAM and 22 patients (78.6%) admitted to altering their medications. 17 patients (60.7%) admits to using CAM and altering their medication. There was not significant difference between usage of CAM and alteration of medications (r=0.101, p<0.305). 64% of patients had missed at least 1 clinic visit (14), with 10% (3) missing 3 visits. Number of missed clinic visits were associated with total number of visits scheduled (r=0.5, p<0.005), creatinine (r=0.5, p<0.05), and systolic BP (r=0.5, p<0.05). The present survey provides data on the usage of CAM among CKD patients and adds to the supports evidence of increase CAM use. The survey also noted the prevalence of missed clinic visits which is of concern since follow up needs to be more frequent as kidneys fail.

A51: Jieun Limb   Advisor(s): Mariana Markell

Food Security, Stress and Nutritional Choices in Kidney Transplant Recipients (KTRs)

Introduction: Many factors contribute to the food choice and total caloric intake of KTRs, including counseling, income, and ability to access healthy food.

Methods: 16 long-term KTRs were randomly chosen in the Transplant Clinic. Patients were interviewed by face-to-face technique. Macronutrient intake was measured from 24-hour diet recall interview and analyzed using the USDA Supertracker. Pts were asked questions about influence of food cost on diet choices, who prepared their food and how often they ate fast food. Perceived stress was measured by the PSS Survey.

Results: Mean age of the population was 50.5+0.3 yrs. There were 11 men (69%) and 5 women (31%). Mean months since transplant was 136.4Â±31.2, creatinine 2.02Â±0.26 mg/dl. 70% had completed high school, 40% had income <$20K/yr. Patients who lived further from grocery stores had lower intake of phosphorus (r=-0.57 p=.021) protein (r=-0.57 p=.021) and sodium (r=0.-0.57, p=0.21) and less fast food intake (r=-0.592, p=0.016) but higher % carbs (r=0.56, p=0.025). There was no relationship between distance and total caloric intake, use of SNAP or BMI. Pts who lived farther were more likely to have others prepare meals for them (r=0.501, p<0.05). Pts who reported food cost influenced food choice ate more prepared foods (r=0.68, p=0.004) and less Vit D (r=10.56, p=0.023) and reported more stress (r=0.75, p=0.001).

Conclusion: In our population, 1. KTRs living farther from the grocery store were more likely to have someone else prepare meals for them, had lower sodium, protein & phosphorous consumption but higher % carbs and ate less fast food. 2. Pts who reported food cost influenced food choices were more stressed, ate less Vitamin D and ate more prepared or frozen foods. 3. Food security is important in achieving adequate nutritional status in KTRs and approaches to improve access to affordable healthy food should be investigated.

A52: Shifra Mincer   Advisor(s): Mariana Markell

Dietary Comparison of Long-term Stable Inner-City Kidney Transplant Recipients and People Attending the General Medical Clinic

Objective: In a previous study we noted that stable, long-term kidney transplant recipients (KTRs) in our inner-City clinic had low intake of phosphorous, protein and calories, but it was unclear whether this reflected dietary habits of the local population or was related to habits acquired during CKD and dialysis, as many patients reported difficulty in "unlearning" the dialysis diet.

Methods: Patients were randomly chosen at the Transplant Clinic and a general medical clinic in the same area. They were interviewed by face-to-face technique. A previous study revealed equivalence between 3 day diet history and 24 hour recall so Macronutrient intake was measured by the latter technique and analyzed using USDA Supertracker.

Results: There were 16 pts in the transplant group and 23 in the general medicine (GMED) group. Mean time since transplant was 11.4±0.11 yrs. The groups differed for age (50.5±0.3 yrs vs 65.4±2.3, p<0.05), but not for gender, marital status, insurance type (90% of pts were Medicaid primary) or BMI (28.5±1.5 vs 29.9±.1). All pts were Afro- American or Caribbean descent. All KTRs and 83% of the GENMED had a history of hypertension. Only 31% of GENMED and 50% of KTRs pts ate <2gm sodium. Lab values revealed no difference in Hgb, albumin, potassium, sodium or magnesium. Creat was higher in the KTR group (2.02±0.3 vs 1.25±0.08, p<0.05). KTRs ate fewer calories (1376.3±116.4 vs 2165.9±252.0, p<0.05), less potassium (1837.3±211.7 vs 3153.9±463.9, p<0.05), sodium (2256.1±337.8 vs 3432.6±463.4, p<0.05), phosphorous (920.1±17.8 vs 1432.8±169.7, p<0.05), and carbohydrates (161.8±13.8 vs 257.5±26.5, p<0.05), but not calcium, protein (gms) or fat (gms).

Conclusions: In our population, 1. KTRs ate significantly fewer calories although BMI was similar to GMED, suggesting that they require fewer calories to maintain their weight. 2. Protein and fat intake was similar, with the difference accounted for by lower carbohydrate intake. 3. KTRs ate less sodium.

A53: Sneha Galiveeti   Advisor(s): Lisel Hope

Thyroid Cancer Guidelines Applied In An Urban Thyroid Clinic

The impact of the 2015 American Thyroid Association (ATA) guidelines on thyroid cancer management was evaluated in an urban, minority thyroid clinic as a quality improvement project. Minorities have an increased annual rates of thyroid cancer in contrast to whites whose rates decreased after 2009 (Endo Soc abstract: SH04-6) and have with more advanced disease and higher mortality. Our aim was to optimize care practices and resource utilization. The majority of the 92 cases of diagnosed thyroid cancer were women(88%) and African American(86%). The median (SD) duration of disease was 10.6 (7) years, range 1-31 years. Their initial risk stratification showed that 48% were low risk, 27% were intermediate and 15% high risk and 10% were not known. 28% were NIFTP(Non invasive follicular thyroid neoplasm with papillary-like nuclear features). The most recent clinic visit 2 years after the ATA guidelines were published were used for dynamic risk stratification. Overall, dynamic risk stratification analysis showed that 56% had an excellent response, 27% indeterminate, 6% had biochemically incomplete and 11% had structurally incomplete response. Over half the patients were at TSH goals as determined by application of the guidelines or the clinician. Resource utilization was assessed by the number of annual clinic visits each year since 2014. The number of visits per year was 3.25 (1.66) in 2014 and was significantly lower in 2017 at 2.53 (1.31), p=0.003 on the paired t-test. In summary, in our minority, urban clinic, overall 56% had an excellent response on dynamic risk stratification which is associated with favorable outcomes. TSH levels were not uniformly at goal, the cause of which is unclear and may have resulted in the need for additional clinic visits. There was a reduction in resource utilization in terms of number of clinic visits per year. This project has yielded actionable results and the possibility of improving health care disparities among minorities.

B1: Jessica Magarinos   Advisor(s): Robert DiRaimo

Medical Student Knowledge and Awareness of Vascular Surgery: A Survey Study

Introduction: Vascular surgery and several other surgical specialties have implemented integrated residency programs to fill specialist shortfalls with quality applicants. These integrated residency programs are highly competitive and often require substantial specialty-specific research experience for serious consideration. An online survey was used to better define whether medical students obtain an adequate knowledge of vascular surgery early enough in their education to thoughtfully consider the specialty as a career and to eventually accrue the research and experience crucial for a successful application to an integrated residency program.

Methods: Second and third year students (MS2s and MS3s) at a single medical school were asked in an online questionnaire to evaluate the degree of familiarity with vascular surgery and general surgery procedures. A total of 210 students responded (99 MS2s, 110 MS3s). A scale was used to assess knowledge of procedures performed and comfort with explaining various surgical procedures.

Results: MS3's felt more confident explaining the purpose of procedures than MS2's (p value= 0.04). However, both MS2s and MS3s were overall less confident about explaining vascular procedures compared to general surgery. 61% of respondents had no exposure to surgery prior to starting medical school, and 74% had no additional surgery experience aside from the mandated surgical clerkship. A majority of the students reported a lack of appropriate mentorship.

Conclusion: These findings suggest that most medical students have an inadequate exposure to vascular surgery that may impact career choices and limit competitiveness for the expanding number of integrated residency programs. Medical schools may consider working closely with vascular surgery departments to devise a curriculum that both exposes students to the specialty early after matriculation and then also provides expanded opportunities for clinical experience and research for those interested.

C1: Kellie Christenson   Advisor(s): Geetha Chari,Alexandra Reznikov, Radha Giridharan, Mohammad El Shorafa, and Bronislava Banar

Two faces of anti-NMDA receptor antibody encephalitis in toddlers

Objective: : A case series exploring two very different presentations of N-methyl-D-aspartate (NMDA) receptor encephalitis in two year-old boys.

Background: Pediatric patients comprise 37 - 40% of NMDA receptor encephalitis cases. The disease entity in toddlers is exceedingly rare, however, and often diagnosed retrospectively as part of a comprehensive encephalitis work-up.

Method: The first patient is a 34-month-old boy presenting for EEG monitoring after sudden onset of mutism and aggression following two brief generalized tonic-clonic seizures. His presentation is contrasted with that of a 25 month-old boy presenting with recurrent focal seizure clusters with return to baseline mental status in between episodes.

Results: A 34 month-old boy presented with acute onset of generalized seizures, mutism, anorexia, and aggressive behavior. Physical exam was significant for orobuccal dyskinesia, poor eye contact, and emotional lability with aggression. EEG showed prominent diffuse slowing with delta brush. This is contrasted with a 25 month-old boy presenting with difficult to control brief focal seizures, often clustering, but with return to normal functional status in between episodes. Physical exam was non-focal. Both children were positive for anti-NMDA receptor antibodies in CSF and serum. The 34 month-old patent responded well to a 3-day course of IV Methylprednisolone followed by one 2 gram/kg dose of IVIG with resolution of his aggression and anorexia, as well as gradual improvement in his verbal capabilities. Seizures resolved in the 25 month-old patient with a titrated dose of oxcarbazepine without recurrence.

Conclusion: NMDA receptor encephalitis is uncommon in toddler age children, and with such a diverse array of associated symptoms, diagnosis can be difficult. This case series explores two very different clinical presentations of NMDA receptor encephalitis in toddlers to highlight variations in symptomology associated with such a critical diagnosis.

C2: Stanley Lee   Advisor(s): Emily Concepcion

Improving Anticipatory Guidance and Preventing SIDS in an Ambulatory Setting

Sleep-related infant deaths, including sudden infant death syndrome (SIDS) remain one of the leading causes of death in newborns. In 1992, the American Academy of Pediatrics (AAP) issued a "Back To Sleep" campaign as evidenced by findings that the supine sleeping position correlates to decreased incidence of SIDS. The AAP has since added further guidelines in 2016 to further reduce its incidence. We designed a questionnaire to survey the sleeping habits of the newborns seen at the Pediatric Resident Continuity Clinic at Kings County Hospital Center (KCHC) and the University Hospital of Brooklyn (UHB). We aim to identify the aspects of the AAP Safe Sleep Guidelines that have decreased adherence and improve anticipatory guidance in those aspects. Sixty-three parents with children between 4 days to 6 months of age were asked to fill out a questionnaire; 7 surveys were invalid. In adherence to the AAP Safe Sleep Guidelines, majority of the children were placed in the supine position (80.4%). Almost all babies slept on an AAP-approved sleep surface such as the crib, bassinet or playpen (96.4%) and slept in their parents' room (98.0%). However, there remains a significant percentage of parents that have extraneous items on the baby's sleep surface (41.1%), such as a blanket (n=17) and a pillow (n=6). A significant percentage of parents placed the baby to sleep at least once on a non-approved sleeping position (55.4%) or surface (33.9%). The results of this questionnaire will help improve the quality of anticipatory guidance given by the residents to their patients regarding safe sleep practices. By emphasizing anticipatory guidance pertaining to the aspects of the AAP Safe Sleep Guidelines that have a lower adherence within our community, we can aim to increase compliance to these guidelines and further lower the incidence of SIDS in our population.

C3: Lesje Atkinson   Advisor(s): Paul Harris

HPV Vaccination Rates at Downstate Pediatrics

Despite the availability of an approved HPV vaccine introduced more than ten years ago, vaccination rates remain low in many parts of the country with a national average vaccination rate of 60%. HPV 16 and 18 are responsible for 70% or worldwide cervical cancers, with an additional 20% caused by HPV 31, 33, 42, 52, and 58. These serotypes are all targeted by the 9-valent vaccine, which can be given starting at 9 years of age and is recommended between ages 11 and 12. Misconceptions about the HPV vaccine are prevalent, and lack of education regarding the benefits of the vaccine is a common reason for parent refusal. This study attempted to quantify rates of HPV vaccination at Downstate and elucidate reasons for vaccine refusal among parents. Data for this study was collected through chart review of all patients ages 9 and above who came to general pediatrics clinic from August 1 to 31 2018. Qualitative data was obtained through individual patient interviews in this same time frame. Overall, the HPV vaccination rate of children above age 11 at Downstate Pediatrics was 83%, with 74% of females and 93% of males vaccinated. The only age group in which more girls were vaccinated than boys was between the ages of 9 and 11. This perhaps provides evidence that parents are more open to vaccinating their daughters at a younger age. Deferrals and misunderstanding about the utility of the vaccine and side effects of vaccine were the most common reasons we found for vaccine refusal.The HPV vaccination rate of 83% found at Downstate Pediatrics compares to a national HPV vaccination rate of 60% and a rate of 70% in NY state, indicating good overall adherence to national standards, but with room for vaccination rate improvement especially among females.
Authors: Lesje Atkinson and Emily Carbaugh

C4: Rachel Sheskier and Paul Mandaro   Advisor(s): Paul Harris

CPR at Downstate: Attitudes Among Providers at Downstate Pediatric Clinics

An estimated 16,000 children die each year of unexpected Pediatric out-of-hospital cardiac arrest (OCHA), with the overall population based incidence of non-traumatic pediatric OHCA being 8/100,000 person years. A disproportionate number of pediatric OHCAs occur in minority populations, with black children accounting for approximately 51.6% and hispanic children 26.6% of all cases. Black children have also been shown to have twice the risk of OHCA, possibly due to increased incidence of SIDS in this population. Despite the high percentage of OHCAs occurring in minority children, CPR by a bystander is more likely to be performed on white children than on black or hispanic children. As bystander CPR is associated with increased survival to discharge and favorable neurological outcomes, minority children are further placed at a disadvantage. The Downstate pediatric population is at a disproportionate risk for OHCA due to racial and socioeconomic factors. Determining the attitude and practices of Downstate pediatric providers (DPPs) in the pediatric clinics towards CPR is necessary to introduce BLS/CPR to this vulnerable population. It was found that DPPs rarely discuss CPR with new parents, except for rare mentions of discussions with parents of patients discharged from the NICU, reflecting a lack of communication regarding CPR. Despite the low number of DPPs addressing CPR within their patient population, the overwhelming majority of providers interviewed believe CPR is an important topic and should be a skill for all parents and children of varying ages. While providers had no consistent recommendations for parent CPR training, they expressed a strong interest in intervention following interview. Suggestions for intervention were made and an information sheet was developed to provide available BLS/CPR training options to members of the local community.

C5: Vivek Shukla   Advisor(s): Sukhvinder Ranu

Novel Association of Antenatal Corticosteroid and Neonatal Indomethacin Therapy with Spontaneous Intestinal Perforation and Necrotizing Enterocolitis in Extremely Low Birth Weight Neonates

Background: Administration of Indomethacin and steroids in extremely low birth weight neonates (ELBW, birth weight < 1000 gm) has been shown to increase the risk of spontaneous intestinal perforation (SIP) and necrotizing enterocolitis (NEC). Objective: To assess association between maternal antenatal corticosteroids (ANS) treatment followed by Indomethacin treatment in ELBW neonates and SIP/ NEC by case-control study design.
Methods: The study was conducted at neonatal intensive care unit at Kings County Hospital, Brooklyn, New York. All ELBW neonates born between 1/1/2009 - 06/31/2016 who received Indomethacin for patent ductus arteriosus treatment were identified and antenatal, perinatal and neonatal variables were collected from EMR. Data was analyzed using SPSS. Relevant variables were expressed as means and standard deviations, means and interquartile ranges (IQR) and percentages. Categorical data was analyzed by Chi-square test or Fisher exact test as applicable. Continuous data was analyzed by t-test or Mann-Whitney U test as applicable.
Results: Total of 133 ELBW neonates were studied. N=11(8.2%) participants had SIP and 35(26.3%) had NEC. There was significantly higher mortality in the participants who had NEC or SIP (cases) (43.7% vs 4.8 %, P-value<0.001). C-section delivery was also significantly higher in cases who had NEC or SIP (76.0% vs. 44.8%, P=0.001). The neonates who developed NEC or SIP received antenatal steroids closer to delivery vs. controls (6(1-49) vs. 26(6-106) hours, P=0.003). The infants with NEC/SIP received Indomethacin sooner after ANS as compared to controls (37(14-110) vs. 85(44-173) hours, P=0.0003). Neonatal steroid therapy (P-value <0.001) and number of blood transfusions (P=0.01) were also significantly associated with NEC/ SIP.
Conclusion: Short interval between antenatal steroid therapy and neonatal indomethacin therapy was found to be associated with an increased risk of SIP and NEC in the current study.

C6: Jenny Paredes   Advisor(s): Laura Martello-Rooney

Immune Checkpoints and Inflammation in Colon Tumors from African Americans

Colorectal cancer (CRC) is the third most common cancer among African Americans (AA) and when compared to Caucasian Americans (CA), they present more advanced CRC disease and lower survival rates. Recent findings suggest that this may be related to the differential expression in genes linked to inflammation and immune response. Therefore, we aimed to investigate if tumors from AA colon cancer patients diverge in their immunologic profile from CA and if these differences play a role in the health disparities observed between these populations. Methods: Using DESeq2 we evaluated the differential gene expression pattern by whole transcriptome sequencing (Illumina) of 20 CRC tissues (and 20 matching adjacent non-tumor tissue) from AA and CA individuals and validated significantly expressed genes by qPCR. We also examined by ELISA the secretion of cytokines associated with T cell activation (Th1/Th2/Th17) in plasma from these AA CRC patients and analyzed the microsatellite (MSI) status and MMR mutations in colon tumors from AA at Downstate. Results: The genomic data revealed that AA and CA tumors had a significant difference of expression in 221 genes associated with immune-oncology pathways, with 20 genes exclusively expressed in AA including IL17A, CD80 and FOXP3. The cytokine concentrations in plasma of these AA patients revealed a differential expression between early stages (I, II) and late stage (III) with a significant reduction of cytokines' secretion in the late stage group. Lastly, we demonstrated that up to 19% of our AA colon cancer patients have MSI and/or MMR mutations who could potentially benefit from immunothearapy. Conclusions: Our results suggest that the immune profiles of the tumors from AA patients differ from CA. The lower expression of immune-related genes in AA when compared to CA suggest an impairment of the immunological defense mechanism in this population that may contribute to the cancer health disparities among CRC patients.

C7: Maria Munoz-Sagastibelza   Advisor(s): Laura Martello-Rooney

Drug-loaded microparticles as a treatment approach for pancreatic cancer

Pancreatic cancer is the fourth leading cause of cancer death in the United States with only 7% of diagnosed patients surviving 5 years. Most pancreatic cancer patients are not surgical candidates due to advanced stage at diagnosis. Current systemic chemotherapies have not been very effective at decreasing tumor burden. Drug-loaded microparticles (MPs) are a promising tool for localized drug delivery within the tumor due to their biocompatibility and extended drug release. We investigated whether gemcitabine-loaded microparticles (GMP), paclitaxel-loaded microparticles (PMP) or sequential treatment of both, in comparison with blank MPs, systemic treatments and no treatment controls, are able to promote cancer cell killing and modulate drug resistance in vitro and in vivo. We were able to complete the MPs studies with two human pancreatic cancer cell lines, PANC-1 and MIAPaCa-2. In both cases, we tested the effect of the treatments on two resistance markers for gemcitabine, ribonucleotide reductase catalytic subunit M1 and cytidine deaminase, as well as the promotion of cell death measuring cleaved caspase-3 (CC3). When treated with GMP alone, both markers went up suggesting an increase in resistance against gemcitabine. Interestingly, the sequential treatment showed an increase in CC3 and a significant decrease in the expression of resistance markers. Subsequently, we tested the in vivo efficacy of MPs by direct injection into subcutaneous MIAPaCa-2 tumors in nude mice. Following four weeks of treatment, the tumors were excised, biopsied for protein analysis and frozen in OCT to detect apoptosis. Currently, we are analyzing the potential increase of reactive oxygen species in the MPs groups. In conclusion, we observed a decrease in cell viability and drug resistance proteins in vitro using the MPs in two high grade pancreatic cancer cell lines. The described drug delivery method has the potential to be an efficient treatment modality against pancreatic cancer.

C8: Kristen Lu   Advisor(s): Christopher Hellen and Tatyana Pestova

Novel Mechanisms of Initiation on Nedicistrovirus-like IRESs

Many viral mRNAs utilize internal ribosome entry sites (IRESs) to initiate translation in a 5' end-independent manner. The most streamlined mechanism is used by the ~200 nt-long intergenic region (IGR) in dicistrovirus genomes, e.g., Cricket Paralysis virus (CrPV). The IGR's triple pseudoknot (PK) structure binds ribosomes directly and mediates factor-independent initiation at a non-AUG codon by mimicking an authentic tRNA-mRNA interaction. PKI binds in the 40S ribosomal subunit's A site and must be "pseudotranslocated" to the adjacent P site by elongation factor (eEF) 2 for eEF1A/aminoacyl-tRNA (aa-tRNA) to bind and start translation.

Advances in metagenomics have revealed novel dicistroviruses such as Nedicistrovirus (NedV) and Antarctic picorna-like virus 1 (APLV1). Their IGRs have CrPV-like structures but are ~40 nt shorter and lack motifs critical for canonical IGR IRES function. In vitro reconstitution showed that both novel IGRs mediate factor-independent formation of elongation-competent 80S ribosomes on a non-AUG codon, GCU. The NedV IGR promoted translation in rabbit reticulocyte lysate at high [Mg2+] after preincubation with ribosomal subunits.

These IGRs differ from CrPV-like IRESs in key mechanistic respects: they bind 80S ribosomes (but not 40S subunits) and place the initiating GCU codon in the A site such that eEF2 is not needed for subsequent binding of A-site ligands (e.g., eEF1A-GTP/aa-tRNA, the bacterial toxin RelE, or, if the GCU codon is appropriately mutated, termination factors eRF1/3).

We generated structural models using bioinformatics approaches and tested them by mutagenesis to destabilize and then restore base-pairing by second-site mutations coupled with ribosome binding assays of IRES function. Our data show that NedV-like IRESs bypass the eEF2-mediated "pseudotranslocation" step and thus initiate translation by a mechanism even simpler than that used by CrPV-like IRESs and thereby constitute a novel IRES subclass.

C9: Stacey Subbie-Saenz de Viteri   Advisor(s): Jacquelyn Meyers and Bernice Porjesz

PTSD and comorbid AUD: Neurocognitive influences in adolescent and young adult offspring from families enriched with Alcohol Use Disorders

Trauma exposure can have many consequences, including subsequent posttraumatic stress disorder (PTSD) or related disorders, such as alcohol use disorder (AUD). It is hypothesized that shared risk factors for these disorders exist, such as family history of AUD (FH-AUD) and neurocognitive factors. Few studies have examined the influence of FH-AUD together with trauma exposure on risk for PTSD and comorbid AUD incorporating neurocognitive factors, and no study to our knowledge has examined this using prospective assessments throughout adolescence/young adulthood. Using data from the Collaborative Study on the Genetics of Alcoholism (COGA) prospective study, we investigated whether trauma-exposed adolescents/young adults who report a FH-AUD have increased risk for comorbid PTSD/AUD or display neurocognitive deficits, than those without a FH-AUD. COGA's prospective study is comprised of offspring from AUD high-risk and comparison families who were aged 12-22 at enrollment and were interviewed every 2 years since 2004 (N=3812). Traumatic exposures were collected using the Semi-Structured Assessment for the Genetics of Alcoholism, which assesses 20 potentially traumatic events. We investigated interaction effects of FH-AUD and trauma exposure (assaultive, non-assaultive, and sexual assaultive) on DSM-IV PTSD/AUD, as well as on two aspects of behavioral task performance (Tower of London test (TOLT) and Go/NoGo (GNG)), after controlling for race, sex, age, and socioeconomic factors. Significant interaction effects were observed among sexual assaultive trauma and FH-AUD such that having both a sexual assaultive trauma and FH-AUD increased risk for comorbid PTSD/AUD ($\hat{I}^2$=0.133, p<0.001). In addition, preliminary data suggest differences in TOLT and GNG task performance as a function of trauma. Understanding the influence of FH-AUD on the risk for PTSD/AUD could inform early intervention and treatment strategies aimed at reducing the severity and endurance of both disorders.

C10: Julie Parato   Advisor(s): Sheryl Smith

Targeting of α4βδ GABA-A receptors to select spine types: Importance for pruning and optimal learning flexibility

During puberty, a period of synaptic pruning of occurs in the hippocampus. This process is thought to be necessary for normal brain function. Excitatory synapses of hippocampal pyramidal cells are localized to dendritic spines where they underlie learning and memory formation. We have previously shown that α4βδ GABA-A receptors are necessary for pubertal pruning and that mushroom and stubby spines are particularly targeted for removal.

α4βδ GABA-A receptors are pubertally expressed on dendritic spines of CA1 hippocampal cells of female mice. We have begun preliminary experiments using a novel Golgi-immunohistochemistry (IHC) technique to see if these receptors are shuttled to specific spine types. In pubertal CA1 hippocampus, α4 expression is increased on mushroom spines by 100% (p<.05), while in CA3 hippocampus there was a trend for increased expression of α4 on both mushroom and stubby spines, by 150% (p<.06) and 100% (p<.07), respectively.

In order to assess the role of the various spine types in learning processes, we analyzed Golgi-stained neurons from separate groups of mice before and after multiple trials of object relocation in the hippocampal-dependent multiple placement object recognition task (MPORT). Mushroom and stubby spine-types were significantly increased by 150% and 200% (p<0.05) after a single object relocation ("learning") compared to naïve mice, while a 50% increase (p<0.05) in mushroom spines was observed after the second object relocation ("re-learning") when thin spine density also decreased. Under conditions where synaptic pruning was prevented by picrotoxin treatment (3mg/kg) and mushroom spines were already plentiful, mushroom spines still increased after learning, which was normal, but not after relearning, which was impaired in these animals. Thus, α4 localization to the mushroom spines at puberty may explain how these receptors trigger pruning of this spine type which is essential for normal learning flexibility in adulthood.

C11: John Hessburg   Advisor(s): Joseph Francis

Reward and Aversion Representation in the Primary Somatosensory, Primary Motor, and Dorsal Premotor Cortices of Non-Human Primates Completing a Motor Task

Signals of reward and aversion have been recorded in a number of areas in the brain, from the midbrain to the cortex. This work explores how these variables are represented in the hand and arm regions of the primary motor cortex (M1), primary somatosensory cortex (S1), and dorsal premotor cortex (PMd). Two non-human primates (NHPs) were trained to complete a gripping task on a virtual robotic arm, where the animal manually gripped and held a given level of force for a specified period of time. Prior to each trial, visual cues were displayed to inform the NHP if the trial would result in a juice reward if completed successfully, a punishment consisting of a five-second timeout if completed unsuccessfully, or no reward or punishment, where the task would move immediately to the next trial. Subsets of trials with no cues and with catch trials, where a cue was presented but no reward or punishment delivered, were included to investigate reward and punishment prediction and error. Multiple levels of reward and punishment were incorporated to investigate how reward and punishment magnitude were represented in these regions, and how the interplay between the two was represented as motivation and/or value. Investigating the intricacies of these signals in M1, S1, and PMd will allow future brain-machine interfaces (BMI) to capture the breadth of these signals in a limited number of cortical regions that also contain sensorimotor information, rather than requiring multiple implants in multiple regions. Taking full advantage of the range of information in these regions will be useful in creating algorithms for more robust, nuanced, and naturalistic BMI control.

C12: Veronica Sebastian   Advisor(s): Todd Sacktor and Panayiotis Tsokas

Hippocampal PKMzeta expression in mouse models of Alzheimer's disease

Alzheimer's Disease (AD) is a neurodegenerative disorder, which results in severe cognitive and behavioral deficits characterized by progressive memory loss. Over 5 million Americans currently suffer from AD, with an estimated 13.8 million cases projected by 2050. One possible mechanism that could explain the memory deficits seen in AD is disruption of PKMzeta expression. PKMzeta is a nervous system-specific, persistently active PKC isoform that is necessary for maintaining long-term memory. Work in our lab has shown a decrease in PKMzeta expression in the dendrites of CA1 neurons in three separate transgenic mouse models of AD (Tg-SwDI, J20 and APP/PS1), compared to age-matched controls. We also see abnormal increased PKMzeta expression in non-neuronal cells, which strongly co-localizes with the astrocytic marker, glial fibrillary acidic protein (GFAP). These results suggest that PKMzeta may play a dual role in AD, involving both loss-of-function in neurons and excessive signaling in astrocytes, which may be related to astrogliosis and glial activity affecting neuronal function.

C13: Timothy Morello   Advisor(s): Mark Stewart and Helen Durkin

T memory cells for human ragweed specific IgE responses express receptors for complement. A role for complement in memory IgE responses?

Rationale: CD4+IL-4+ T cells are required for human and murine IgE responses. We reported that CD4+ T cells and CD8+CD60+ T cells and six cytokines (IL-2,4,6,10,12,IFN α ,IFN γ) are required for induction of ragweed specific memory IgE responses. Antigen cleaves complement and human CD4+ T cells express receptors for CSP. Receptors for CSP C3a and C5a on CD8+CD60+ T cells have not been reported.

Methods: CD4+CD3+ and CD8+CD60+CD45RO $\pm$ CD45RA $\pm$ IL-4 $\pm$ IFN γ $\pm$ T cells in blood of serum IgE+ (fluoroimmunoassay) ragweed sensitized (RS) and IgE- nonallergic humans expressing receptors for CSP C3a and C5a (CD88) (n=2-3/group) were determined by flow cytometry. Data expressed as mean % total lymphocytes and % subset.

Results: Blood of IgE+ RS humans contained increased numbers of CD4+ and CD8+CD60+ T cells expressing receptors for C3a (36, 85%, respectively), compared with IgE- nonallergic humans (16, 36%, respectively). Further, in IgE+, but not IgE- humans, both T cell subsets expressed greatly increased C3a receptors/cell (MESF). In IgE+ humans, virtually all CD8+CD60+ T cells were CD45RO+CD45RA- and IL- 4+IFN γ -; in IgE- humans they were virtually all IL-4-, with CD45RA+ cells predominating. Neither CD4+ nor CD8+CD60 $\pm$ T cells of either IgE+ or IgE- humans expressed receptors for CSP C5a (CD88) (<1%).

Conclusions: The presence of receptors for C3a on CD4+ and CD8+CD60+CD45RO+ IL-4+ T cells required for induction of ragweed specific memory IgE responses suggests that C3a may play an important role in induction of these responses.

C14: Elena Nikulina   Advisor(s): Peter Bergold

Minocycline plus N-Acetylcysteine prevents neuronal loss and repairs dendrites after experimental traumatic brain injury with a clinically useful time window

Traumatic brain injury (TBI) is an acute, heterogeneous injury that produces long term cognitive and behavioral impairments. There are presently no treatments for TBI. Clinical trials to treat TBI may have failed since most drugs rapidly lose efficacy with increasing time to treatment. Drugs that treat brain injury either prevent damage or induce repair. TBI can be induced by a blunt impact, a penetrating object, or by a blast wave. We use a closed head injury (CHI) model that mimics blunt head trauma. Following CHI, brain damage begins rapidly at the impact site and spreads to distal brain regions over time. Brain damage decreased when the drugs minocycline plus N-acetylcysteine were first dosed 72 hours (MN72) after CHI. To determine if MN72 worked by preventing injury or inducing repair, we examined the time course of injury progression proximal and distal to the impact site in saline and MN72-treated mice.

Neuronal loss was seen 3 days post-CHI in the hippocampus ipsilateral, but not contralateral to the impact site. MN72 was neuroprotective since the drugs prevented this loss at 14 days post-CHI. The expression of dendritic protein MAP2 was reduced in both hippocampi at both 3 and 14 days post-CHI. At 14 days post-CHI, MN72 increased MAP2 expression in the contralateral hippocampus suggesting repair of dendrites distal to the impact site. Our results suggest that CHI caused loss of hippocampal neurons and dendritic proteins that was seen as early as 3 days and continued at 14 days post-injury. MN72 prevented neuronal loss and repaired dendrites in regions distal to the impact site. These data suggest that MN72 works by both preventing injury and inducing repair with a clinically useful time window.

C15: Kristen Whitney   Advisor(s): Peter Bergold

Minocycline plus N-acteylcysteine limits injury and restores synaptic plasticity distal to the impact site in experimental traumatic brain injury

Traumatic brain injury (TBI) is a world-wide health problem and a major cause of death and disability. To be clinically useful, drugs to treat TBI must retain potency when first dosed hours to days after injury. This long window is necessary due to lack of access to immediate medical care or delays in seeking treatment. Brain injury develops over time following TBI; the risk of long-term neurobehavioral changes increases as damage spreads to brain regions distal to the initial impact site. We are developing therapeutic interventions that repair damaged tissue at the impact site, and protect more distal regions. With this goal, we examined the efficacy of MINO plus NAC when first dosed 72 hours after injury (MN72) to improve morphological and behavioral outcomes after experimental TBI using a clinically relevant closed head injury (CHI) model. Similar to TBI, the CHI model produces a heterogeneous injury to gray and white matter that leads to cognitive and behavioral deficits. The efficacy of MN72 was examined at brain regions both proximal and distal to the impact site. CHI damaged both the ipsilateral and contralateral hippocampus. CHI also impaired acquisition of Barnes maze, a long term potentiation (LTP)-dependent spatial memory task that requires one functioning hippocampus. MN72 treatment improved Barnes maze performance and maintained neuronal structure and synaptic density in the contralateral hippocampus. The atypical protein kinase C, PKMζ, is essential for synaptic plasticity. CHI decreased PKMζ expression and impaired LTP in both hippocampi. MN72 treatment restored PKMζ expression and LTP in the contralateral hippocampus. These data show that MN72 restores PKMζ expression, synaptic plasticity, and spatial memory performance. PKMζ activity mediates these outcomes, suggesting that PKMζ is a potential key target of MN72. These data also show that MN72 limits brain injury distal to the impact within a clinically useful time window.

C16: Michael Tekin   Advisor(s): Sheryl Smith

Role of α4βδ GABAA receptors in adolescent synaptic pruning of primary motor cortex of the female mouse

Pubertal synaptic pruning is thought to play an important role in refining memories. Proper neurodevelopment in M1 is essential for motor learning and coordination. Synaptic plasticity in layer 5 (L5) of the primary motor cortex (M1) decreases after puberty. Previous research has shown that α4βδ GABAA receptors regulate pubertal synaptic pruning in the prefrontal cortex and hippocampus but has not been studied in M1. Autism Spectrum Disorder has been linked to abnormalities in the α4 GABAA receptor subunit, motor deficits and difficulty with motor learning. Thus, the following experiments were used to test the hypothesis that adolescent selective synaptic pruning in L5 pyramidal cells of M1 is regulated by α4βδ GABAA receptors. Golgi staining was used to assess spine density and spine types in each group from z-stack projection (0.3 μm) photomicrographs taken with a Nikon DS-U3 camera mounted on a Nikon Eclipse Ci-L microscope using a 100xoil objective. Spine density of the basilar dendrites of pubertal vs. post-pubertal mice were compared using either wild-type (P35WT vs. P56WT) or α4 knockout mice (P35α4KO vs. P56α4KO). We found no significant difference in total spine density between P35WT and P56WT. However in the proximal region of the dendrite there was a significant decrease in mushroom spines ($p < 0.05$), and increase in thin ($p < 0.05$) and long thin spines ($p < 0.05$) in L5. These changes were not observed in L5 when comparing P35α4KO and P56α4KO. Moreover, immunohistochemistry was performed to detect α4 expression using confocal microscopy (alpha 4 antibody, Santa Cruz) on tissue collected from pre-pubertal wild-type (P28WT) mice and P35WT. Preliminary data suggest a 24% increase of α4 subunit expression at the onset of puberty ($p < 0.05$). These results indicate that selective pruning of mushroom spines in the proximal region of M1 L5 pyramidal cells occurs during puberty and the emergence of α4 is responsible for this selective pruning.

C17: Adam Newton   Advisor(s): William Lytton

Expanding NEURON extracellular reaction-diffusion support: simulation of ischemic stroke

The NEURON simulation platform, featured in over 1900 publications, traditionally focused on models of neurons and networks of neurons. NEURON's reaction-diffusion module (rxd) expanded support for 1D and 3D intracellular reaction-diffusion models. These have been used to probe intracellular calcium dynamics in dystonia, impedance mismatch and persistent neuronal activity via HCN channels.

Originally rxd provided only limited extracellular support with isolated compartments around each segment. Recently rxd has been extended to include coarse-grained macroscopic models of the extracellular space. NEURON thus allows detailed cell models to be embedded in a 3D macroscopic model of tissue. Extracellular diffusion is implemented using the Douglas-Gunn alternating direction implicit method, an efficient scheme which supports parallelization. Reactions are now implemented using Just-In-Time compilation, allowing numerical integration to use faster compiled code rather than slower interpreted code.

Ischemic stroke modeling requires multiscale coupling of electrophysiology with complex intracellular molecular alterations, and consideration of network properties in the context of bulk tissue alterations mediated by extracellular diffusion. Occlusion of a blood vessel in the brain triggers a cascade of changes, including: 1. synaptic glutamate release, related to excitotoxicity; 2. elevated extracellular potassium, leading to spreading depression; 3. cell swelling, reducing the extracellular volume and increasing the tortuosity; 4. production of reactive oxygen species, which give rise to inflammation. These cascades occur over multiple time-scales, with the initial rapid changes in cell metabolism and ionic concentrations triggering several damaging agents that may ultimately lead to cell death.

C18: Roza George　　　　　　　　　　　　　　　　　　　　Advisor(s): Jeremy Coplan

The Kynurenine Pathway in Early Life Stress; Relationship to Affective Disorders and Resilience

Affective disorders encompass prevalent and common mental health issues which affect approximately 20.9 million American adults, which is approximately 9.5% of the population annually (Kessler et al., 2005). It is estimated that >30% of depressed patients suffer from treatment resistant depression (Sourey et al. 2006) which puts these individuals at a higher risk of suicide (Gilbert, 2013). Early life stress (ELS), has been shown to be a risk factor in the development of TRD (Kaplan et al., 2000). Furthermore, evidence of TRD being more than just a simple neurochemical deficit has been found. The dysregulation of the kynurenic pathway has been found in TRD and suicidality (Serafini et al. 2017). To better understand the effect that ELS has on the kynurenic pathway bonnet macaques (Macaca radiata), which had both long and short alleles for the serotonin transporter gene, were exposed to a separation stress paradigm (Perara et al., 2011) and CSF was collected. Using LC-MS/MS 100ul of the CSF was analyzed for tryptophan and kynurenic pathway metabolites. Telomere length was also analyzed as a measure of resilience. It was found that the ELS has profound changes on the kynurenic pathway which are linked to 5HIAA, serotonin transporter genes, and telomere length.

C19: Navneet Singh　　　　　　　　　Advisor(s): Vanthanh Ly, Hector Ojeda-Martinez, and Mohammad Al Ajam

Tissue Doppler Imaging on transthoracic ECHO to assess prevalence of HIV-associated Pulmonary Hypertension

Introduction: Pulmonary Artery Hypertension (PAH) in patients with human immunodeficiency virus (HIV) has mortality that is higher than the general population. Despite this poor prognosis, no evidence exists to support routine screening for HIV-associated PAH.
Transthoracic echocardiography (ECHO) is an accepted noninvasive screening tool to assess for possible PAH, though its limitations are well understood. Studies using ECHO in symptomatic patients have shown a prevalence of PAH between 0.5-2% in the HIV-positive population. By using advanced echocardiographic techniques like tissue doppler imaging (TDI), the accuracy of ECHO as a screening tool may improve.
This study was designed to understand the clinical utility of screening asymptomatic HIV-positive patients for PAH, allowing for earlier surveillance and intervention.
Methods: A retrospective review was performed on all HIV-positive patients that were seen in the HIV clinic between January 2015 to September 2016 at the Brooklyn VA. Patients with pulmonary arterial systolic pressure (PASP) > 35mmHg as assessed by ECHO were suggestive of PAH; these patients were then reassessed using Tissue Doppler Imaging (TDI) to estimate the pulmonary capillary wedge pressure (PCWP). Other variables were also collected.
Results: Of 96 HIV-positive patients who received an ECHO from January 2015 to September 2016, 15 had a PASP > 35mmHg with a PCWP <15mmHg. This suggests a prevalence of PAH of 15.6% (95% CI 9%-24%) in this population. Out of these patients, only 13.3% were noted to have uncontrolled viral load.
Conclusion: A higher prevalence of PAH was found in the HIV-positive population at our institution. Given the mortality of this disease, all HIV-positive patients should be screened with ECHO for elevated PASP with TDI estimations of PCWP to improve the sensitivity of this screening test. This should be used to pursue guideline-directed diagnostic workup at the time of screening.

C20: Veena Dronamraju   Advisor(s): Joseph Gorga and Hector Ojeda-Martinez

HIV and Bronchiectasis, a case series

Background: Bronchiectasis is a permanent distortion of airways characterized clinically by cough productive of sputum and diagnosed with the presence of bronchial wall thickening and luminal dilatation on computed tomographic (CT) scan of the chest. The relationship between HIV and bronchiectasis is not completely understood, however, preliminary analyses suggest that bronchiectasis may be more prevalent in the HIV-positive population than previously thought. We describe here, several cases of bronchiectasis in HIV-positive patients seen at our institution.

Subjects and Methods: 14 patients were identified with bronchiectasis and HIV infection seen at Kings County Hospital Center or SUNY Downstate Medical Center from 1999 to present. Details of their care over time was collected and compiled.

Discussion: With the advent of newer anti-retroviral therapy, there has been a decline in pulmonary infections that were typically thought to be the inciting factor for bronchiectasis in HIV patients. Thus, it is not clear if HIV-positive patients develop bronchiectasis as result of an opportunistic infectious insult or if an independent inflammatory insult from the HIV infection itself is to blame.

In our small sample, we noted that patients are routinely connected to the pulmonary service somewhat late in the course of their disease and sometimes are inappropriately treated for alternate and seemingly incorrect diagnoses. Importantly, patients were uniformly not offered bronchodilator therapy after diagnosis. We identified many reasons for this, but ultimately this was often due to the patients' primary providers not being fully aware of the diagnosis.

Given the under recognition of bronchiectasis in our 14 patients we posit that the prevalence of bronchiectasis in HIV patients may be grossly underestimated. Improving recognition and management of bronchiectasis in our population could help diminish rehospitalization rates.

C21: Andrew Lee   Advisor(s): Mohammad Al Ajam

Clinical utility of electromagnetic navigation bronchoscopy in the diagnosis of lung cancer

Introduction: Lung cancer remains the leading cause of mortality from malignancy in the United States despite significant advances. With the recent validation of low dose helix computed tomography (LD-CT) as a screening modality, there have been an increased number of diagnosed peripheral lung nodules that require evaluation. Electromagnetic navigation bronchoscopy (ENB) has emerged as a novel diagnostic modality that is purported to be equivalent to CT transthoracic needle aspiration (CT-TTNA) in diagnostic yield with a superior safety profile. We set out to evaluate the diagnostic yield and the number of adverse events of ENBs performed at the Brooklyn Veterans Affairs Hospital.

Methods: A retrospective chart review was done of all ENB cases performed from 2012 until present. 45 completed cases were identified and chart review was done to identify nodule size and location, distance to the pleura, PET-CT standardized uptake value (SUV), pathological yield, and clinical course following procedure. Two cases were excluded due to patients having been diagnosed with malignancy prior to ENB, thus 43 cases were included for final analysis.

Results: 12 patients were identified with false negative biopsies (negative biopsy from ENB with subsequent positive pathologic diagnosis from either repeat ENB surgical biopsy). Given that 14 patients were found with disease, sensitivity of this test was calculated at 53.9%. 19 patients were found to have positive initial biopsies, thus negative predictive value (NPV) was calculated at 61.3%. There was an incidence of 0.04% of pneumothoraces in our patient population.

Discussion: We demonstrated that ENB in our institution is not as sensitive a modality in ruling out malignancy as previously thought. While this raises the question of the clinical utility of ENB as a diagnostic tool, it still remains significantly safer than CT-TTNA in the evaluation of peripheral lung nodules.

C22: Elizabeth Garay   Advisor(s): David Schreiber

Patterns of Care and Outcomes in Patients with Squamous Cell Carcinoma of the Buccal Mucosa

Purpose/Objective(s): Primary buccal mucosa squamous cell carcinoma represents 2% of all oral cavity cancer cases in the United States annually. The purpose of this study was to examine patterns of care and outcomes for squamous cell carcinoma of the buccal mucosa.

Materials/Methods: Using the National Cancer Data Base (NCDB) we identified 5,786 patients with buccal mucosa squamous cell carcinoma diagnosed between 2004-2014. Patients who lived less than 3 months from diagnosis or who had stage 0 or IVC disease were excluded. Patient and treatment factors were compared between patients who received surgery alone (S), postoperative radiation therapy (S+RT), postoperative chemoradiation (S+CRT) or definitive chemoradiation (CRT) using the Chi-square test. Univariate and multivariate Cox proportional hazards regression models were used for covariate survival analysis.

Results: The final cohort analysis included 2,570 patients. Median age and median follow-up were 69 years and 44 months, respectively. 1068 patients had stage I/II disease and 936 stage III-IVB. 1,468 (57.1%) patients received surgery alone, 605 (23.5%) received S+RT, 300 (11.7%) S+CRT, and 197 (7.7%) definitive CRT. Median radiation dose was 64 Gy for those that received RT. The 3-year overall survival was 71.8%, 58.4%, 52.6%, and 35.8% for the S, S+RT, S+CRT, and CRT arms, respectively. The 3-year survival by stage was 71.3% (I-II), 54.5% (III) and 38.7% (IVA-IVB). Charlson/Deyo score of 2, overall stage III-IVB disease, and presence of ECE were associated with worse survival on MVA. Higher number of neck nodes removed was associated with improved survival.

Conclusion: Nearly 60% of buccal mucosal cancers present with stage III-IVB disease. Consistent with national guidelines, more than 90% of patients were treated with surgery with or without adjuvant therapy rather than definitive chemoradiation. Patients with stage IVA-IVB disease have a very poor prognosis, with a 3 year overall survival of 38%.

C23: Ami Kavi   Advisor(s): David Schreiber

Patterns of Care and Comparison of Outcomes Between Primary Anal Squamous Cell Carcinoma and Anal Adenocarcinoma

Purpose/Objective(s): To compare and analyze the patterns of care and survival outcomes of patients with anal squamous cell carcinoma (SCC) and anal adenocarcinoma (AC).

Materials/Methods: The National Cancer Database was explored to identify patients diagnosed with primary stage II or III SCC or AC of the anus from 2004-2014. Patients were treated with surgery alone (S), neoadjuvant chemoradiation followed by surgery (CRT+S), surgery followed by adjuvant chemoradiation (S+CRT), or definitive chemoradiation (CRT). S was defined as abdominal perineal resection while CRT was defined as starting either modality within 14 days of each other. Median radiation dose was 5400cGy. Overall survival (OS) was obtained and treatment groups compared via the log-rank test after stratifying by histology. Univariate and multivariate Cox proportional hazards regression models were performed to assess the impact of covariates on survival.

Results: 19,539 patients were included, 18,346 (93.9%) with SCC and 1,193 (6.1%) with AC of the anus. Median follow-up was 47.6 months. Of the SCC group, 96.2% received CRT alone (p<0.001). The 5-year OS by treatment for SCC was 48.2% for S alone, 46.3% for CRT+S, 60.8% for S+CRT, and 67.8% for CRT alone (p<0.001). For the AC group, 38.8% received CRT alone, 44.5% received CRT+S, and 12.5% received S alone (p<0.001). The 5-year OS by treatment for AC was 57.6% for S alone, 64.6% for CRT+S, 51.7% for S+CRT, and 39.2% for CRT alone (p<0.001). The 5-year OS for stage II SCC was 69.2% and for AC was 54.2% (p<0.001). Five-year OS for stage III SCC was 55.2% and for AC was 32.9% (p<0.001).

Conclusion: Primary anal AC when compared to primary anal SCC had a lower 5-year OS stage for stage. Anal AC appears to be treated similarly to the rectal cancer paradigm, with frequent use of neoadjuvant chemoradiation followed by surgery. When definitive chemoradiation was used, outcomes were very poor, with a 5-year OS of 39%.

C24: Anna Lee   Advisor(s): David Schreiber

Patterns of Care of Adjuvant Radiation Therapy After Lumpectomy and Survival in T1N0M0 Estrogen Receptor Positive Breast Cancer

Background: Given the excellent outcomes in early stage breast cancer, there is an increased focus on de-escalation of treatment, particularly for estrogen receptor (ER) positive breast cancer who receive endocrine therapy. We sought to examine patterns of care of adjuvant radiation therapy (RT) after lumpectomy and outcomes in these most favorable breast cancer patients using the National Cancer Database.

Methods: Patients diagnosed with ER positive pathologic T1N0M0 breast cancer from 2010-2013 who received lumpectomy with negative margins followed by adjuvant RT and endocrine therapy were identified. Those with human epidermal growth factor receptor 2 positive status were excluded. Patient- and clinical-related factors were compared between those who received adjuvant RT versus those who did not. Logistic regression was performed to assess for predictors of RT use. The Kaplan-Meier method was used to assess overall survival (OS) and Cox regression to assess impact of covariables on OS.

Results: There were 21,312 (54.4%) patients who received adjuvant RT and 18,887 (45.6%) who did not. Median follow-up for living patients was 48.4 months (IQR 37-61). Five-year OS for those who did and did not receive RT was 96.3% and 92.9% (p<0.001). On multivariable survival analysis, older age (HR 1.96-4.85, p<0.001) and 10-20mm (T1c) tumor size (HR 1.55, 95% CI 1.20-2.00, p=0.001) were associated with worse survival. Treatment at an academic facility (HR 0.90, 95% CI 0.67-1.21, p<0.001) and receipt of postop RT (HR 0.66, 95% CI 0.55-0.79, p<0.001) were associated with improved survival. Race, grade and receipt of boost were not associated with any differences in survival. When stratifying by age group, there was still a survival benefit in all groups with postop RT, including among those over 70 years (log-rank p<0.001).

Conclusion: Nearly half of patients with T1N0M0 ER-positive breast cancer did not receive post-lumpectomy RT though it was associated with a survival benefit.

C25: Virginia Osborn   Advisor(s): David Schreiber

The Impact of Treatment Order in Trimodality Therapy for Malignant Pleural Mesothelioma

Purpose: To assess the impact of timing of chemotherapy in trimodality therapy for malignant pleural mesothelioma (MPM) using the National Cancer Database (NCDB)

Methods: The NCDB was queried to identify patients diagnosed with nonmetastatic MPM 2004-2014. Two cohorts receiving trimodality therapy were then selected for comparison: 1) patients receiving neoadjuvant chemotherapy (NAC) initiating chemotherapy >30 days prior to surgery with adjuvant radiation started within 12 weeks (84 days) of surgery, and 2) patients receiving only adjuvant therapy (ADJ), having had no therapy prior to surgery and then receiving both adjuvant chemotherapy and radiation (in any order). ADJ patients must also have begun their first adjuvant therapy within 84 days of surgery and their second adjuvant therapy within 180 days of surgery. Patients were stratified according to age, gender, race, Charlson-Deyo Comorbidity Index, cT stage, cN stage, clinical stage grouping, facility type, insurance status. Characteristics were compared between the groups using Chi-Squared and Fisher's Exact Tests. Kaplan-Meier and multivariable Cox regression analysis were performed to assess for factors affecting overall survival (OS) outcomes.

Results: 259 patients were identified, 119 (45.9%) ADJ, and 140 (54.1%) NAC. Median age was 63 and median follow up was 20.9 months. Patient characteristics were well balanced between the groups. Median and 2-year OS were 20.9 months and 40.6% for ADJ compared to 23.7 months and 47.6% for NAC, respectively (p=0.90). Multivariable Cox regression analysis also demonstrated no survival difference between the treatment groups HR 0.878 (p=0.414) for NAC compared with ADJ. Women had higher OS, HR 0.568 (p=0.002). cN3 and cNX patients had worse OS compared to cN0, HRs 8.728 (p=0.001) and 1.845 (p=0.040), respectively.

Conclusion: The delivery of neoadjuvant chemotherapy was not associated with any OS difference in patients receiving trimodality therapy for MPM.

C26: Niki Sheth   Advisor(s): David Schreiber and Peter Han

Hepatocellular Carcinoma: Patterns of Care and Outcomes for Patients receiving Stereotactic Radiotherapy

Purpose: This study aims to analyze the patterns of care, including fractionation and utilization, of hypofractionated stereotactic body radiotherapy (SBRT) in the treatment of hepatic cellular carcinoma

Methods: The NCDB was queried for patients diagnosed with hepatocellular carcinoma (HCC) in 2004-2014 and treated with radiotherapy in 3, 4, or 5 fractions in 15-20, 10-13, or 6-12Gy per fraction respectively. Patients with stage IV and Charlson-Deyo Comorbidity Index > 0 were excluded in order to avoid bias resulting from selection of poorer prognosis patients. The patients were then stratified based on several characteristics including Biologically Equivalent Doses (BEDs) of > 100 Gy and <100 Gy to determine whether there was an association with overall survival (OS) benefit and a multivariable analysis (MVA) was performed to assess for potential confounding factors.

Results: There were 462 patients identified in whom the most common SBRT fractionation regimen was 10Gy x 5 fractions (25.3%), followed by 8Gy x 5 (17.7%), and 15-16Gy x 3 (26.4%). 152 patients were treated to a BED < 100Gy which was associated with a median overall survival (OS) of 20.8 months (95% CI 14.551-27.109. 310 patients were treated to a BED > 100Gy which was associated with a median overall survival (OS) of 30.8 months (95% CI 5.251-32.083. On MVA, BED > 100Gy was not significant associated with improved OS (HR 0.852 CI 0.638-1.137, p=0.277). Factors that were associated with significantly worse survival were tumor size in the largest quartile (HR 2.197 CI 1.440-3.354, p<0.0001) and T3a disease (HR 2.474 CI 1.472-4.158, p=0.001 compared to T1).

Conclusion: The most common SBRT fractionation regimen was 10Gy x 5 fractions. BED dose â‰¥ 100Gy was not associated with a significant survival benefit. However, local control data are not available within the NCDB.

C27: Joseph Kim   Advisor(s): Chiaojung Jillian Tsai

Long Term Outcomes and Prognostic Factors of Head and Neck Soft Tissue Sarcoma (HNSTS) Treated with Definitive Therapy

Purpose: We reviewed long term outcomes of HNSTS patients treated at a tertiary cancer center with definitive intent.

Methods: The study included adult (>18 yo) patients with biopsy-proven HNSTS treated at our institution between 1990-2016. Local progression free survival (LPFS) and overall survival (OS) were evaluated with the Kaplan-Meier method. Chi-square and Cox proportional hazards were used to identify clinicopathologic predictors of survival and compare treatment groups.

Results: Our study had 127 patients with a median age of 53 years (19-86) and 58% male. 58 (46%) received radiation therapy (RT): 16 were treated definitively, 42 (33%) definitive surgery + RT, and 16 received concurrent chemoradiation (CRT). 91 patients received definitive surgery, of which 49 were surgery alone. 104 patients had sufficient data for outcome analysis: 2-year OS and LPFS were 76.9% and 63.0%, respectively. In multivariable analysis, non-white race (HR 3.51, 95%CI 1.47-8.35) and high grade (HR 3.20, 95%CI 1.04-9.83) were associated with worse LPFS. Compared to surgery only, definitive RT/CRT (HR 0.18, 95%CI 0.05-0.66) and definitive surgery + RT/CRT (HR 0.23, 95%CI 0.1-0.57) were associated with better LPFS. Age >60 and high grade were associated with worse OS. In the surgical subset, non-white race was associated with worse LPFS and surgery + RT/CRT was associated with increased LPFS compared to surgery alone. There was no difference in OS between treatment groups in both the entire cohort and the surgical subset.

Conclusions: In patients with HNSTS, surgery alone was associated with worse LPFS than RT/CRT alone and surgery with RT/CRT groups. Non-white race and high grade were also associated with decreased LPFS. Factors associated with worse OS included older age and high grade. In the surgical subgroup, non-white race and surgery alone were associated with worse LPFS. There was no difference in OS between treatment groups in the main cohort and the surgical subset.

C28: Tenya Steele   Advisor(s): Laura Geer

Using Technology to Communicate Prenatal Health Messages to Pregnant Women: A Mixed Methods analysis of Text4Baby in Urban Immigrant Pregnant Women

The Text4baby™ mobile health (mhealth) program has received national attention and is acclaimed to provide pregnant women with greater access to prenatal healthcare resources and information. However, without sufficient piloting, little is known whether urban and immigrant women are receptive to mobile health communication methods, or of the cultural and systematic barriers that inhibit their behavioral intent to use Text4baby. In our study, we aimed to understand the lived experiences of urban and immigrant pregnant women with accessing prenatal health care and information in Brooklyn New York, and to utilize behavioral and technology assimilation theoretical constructs to measure their knowledge, perceptions and behavioral intent towards the use of the Text4baby program.

This exploratory mixed methods study first used a phenomenological approach to explore and describe the lived experiences of pregnant women. Data from the qualitative arm led to the development of a survey instrument that was then used in a repeated measures pre-post test design to evaluate changes in participants' knowledge, attitudes, beliefs and perceptions of Text4baby after a minimum of four weeks exposure to the program's message.

Findings showed that inadequate patient provider engagement often left many participants with feelings of indifference regarding the prenatal care and information they received. In contrast, these women displayed strongly positive attitudes towards the use of technology for accessing prenatal health information, and many indicated heavy use of the internet and mobile apps for health information-seeking and increased support. Both qualitative and quantitative data indicated positive interest in the use of Tex4baby. Nearly 60% of survey respondents reported strong agreement in the compatibility of Text4baby as a mode of communication, while 63.3% reported strong agreement that Text4baby provided them extra support during their pregnancy.

C29: Viola Browne   Advisor(s): Denise Bruno, LeConte Dill, Sarita Dhuper, and Aimee Afable

Qualitative study of barriers and facilitators for physical activity among teens with obesity in Central Brooklyn

Background: Childhood obesity is a serious public health problem in NYC. Central Brooklyn one of the poorest areas in NYC, where the majority are Black, experiences a disproportionate burden of obesity-related diseases. Obesity in children 5-14 years old in Central Brooklyn (23.1-26.5%) are among the highest in NYC. One in three adults are obese, exceeding the NYC average.

Objective: Qualitative study was used to explore the understanding of physical activity, perceptions of their ideal body type, and the facilitators and barriers for physical activity among adolescents with obesity.

Method: Twenty-two (22) adolescents with BMI >85th or > 95th percentile, 12-18 years of age, and 14 of their parents from Central Brooklyn were recruited at an obesity clinic and exercise sites from June to November 2017. Data was collected using focus groups and semi-structured in-depth interviews, followed by Interpretative Phenomenological Analysis (IPA) of the transcripts.

Results: The adolescents wanted to "lose some weight" but not to be "thin" or "look hungry." Most females desired a "slim-thick" figure, - which was "a flat stomach with big thighs, and curvy." Fun and support from parents and peers, facilitated their activity. Barriers included their low self-efficacy, inactive families, fear of neighborhood gangs and crime, and perceptions that the parks were small and overcrowded with limited physical activity options for adolescents.

Conclusion: These findings highlight the need to consider local norms concerning body image when designing obesity interventions. To seriously tackle childhood obesity in NYC, policy should center on the promotion of public safety, improvement of neighborhood parks, and increasing options for physical activity.

C30: Cemal Karakas   Advisor(s): Geetha Chari

Unsolved mystery: 11-year-old boy with idiopathic immune-mediated necrotizing myopathy

Immune-mediated necrotizing myopathy is a poorly known, relatively newly recognized disease, and has very rarely been reported in pediatric age group.

We present an 11-year-old boy who was brought in by his mother with 3-week history of progressive proximal symmetrical weakness in upper and lower limbs and neck flexion with no associated rash or previous illness. He had elevated CK of 13000.

An extensive investigation including blood work, MRI, and muscle biopsy lead to diagnosis of idiopathic immune mediated necrotizing myopathy. The patient initially had poor response to steroid treatment, however showed some improvement with subsequent IVIG treatment.

A high index of suspicion is necessary to diagnose immune mediated necrotizing myopathy as it is a very rare entity in children and earlier recognition can prevent rapid and severe progression.

C31: Helen Lyo   Advisor(s): Miguel Ramirez and Eduardo Fernandez-Hernandez

A Rare Case of Rapidly Progressive Stiff Leg Syndrome Refractory to Treatment

Introduction: Stiff person syndrome (SPS) is a rare neurological disorder that affects 1-2 people/million. It is characterized by progressive muscle stiffness of the trunk and extremities and elevated Anti-Glutamic Acid Decarboxylase (GAD) antibodies. Here, we report a rare variant of SPS: stiff limb syndrome (SLS).

Case Report: 70-year-old Haitian woman with HTN and T2DM presented with bilateral lower extremity pain for 5 days. The pain started in the lower back and progressed to lower extremities leading to sudden inability to ambulate. Physical exam showed bilateral lower extremity hyperreflexia and spastic paraparesis with peripheral edema worse on the left, rest of the physical exam was normal.

Initial vitals were T 99.5F, BP 164/95, HR 100, RR 20, O2 96% and remained stable over hospital course. Doppler studies and total spine MRI revealed no DVT or cord compression, respectively. CPK level was 325 and SPEP, B12, copper, zinc levels were normal. Anti-GAD antibodies were elevated, confirming the diagnosis of SPS.

Baclofen 20mg and Clonazepam 1mg was started, then a 5-day course of IVIG and Dantrolene 25mg, no clinical improvement was noticed with treatment.

Discussion: Classical SPS presents with truncal rigidity progressing to distal limbs, affecting balance and gait. Anti-GAD antibodies are elevated leading to decreased GABA in the CNS and sustained co-contraction of antagonist muscles. SPS is treated with benzodiazepines or baclofen (GABA agonists), IVIG is reserved for severe disease.

Stiff Leg Syndrome (SLS) is a rare form of SPS that spares the trunk and affects one or both legs. It has a worse prognosis and is more resistant to treatment than SPS. One study following 23 SLS patients found that half of them became wheelchair bound in 3.5 years. We report a case of SLS with an incredibly fast deterioration in ambulation, with only 5 days from walking without assistance to being wheel-chair bound. Progression of disease was also refractory to treatment.

C32: Olga Yeliosof   Advisor(s): Vivian Chin and Sumeet Arora

Kallmann Syndrome due to Novel KAL1 Gene Mutation

Background: Kallmann syndrome is a form of isolated hypogonadotropic hypogonadism (IHH) associated with anosmia/hyposmia. Sporadic cases are most frequent, but inherited mutations in genes affecting GnRH neuronal migration have been described. We discuss a 17-year-old male with Kallmann syndrome due to a novel mutation in KAL1 gene.
Case Presentation: A 17-year-old obese male was evaluated for delayed puberty, hyposmia and insignificant family history. He had adult type body odor and axillary hair at 13 years without facial hair or testicular enlargement. He tried Claritin and Flonase for allergic rhinitis without relief. He underwent adenoidectomy/tonsillectomy for OSA. Exam showed weight (96th%ile), height (12th%ile), BMI (>97th%ile), no dysmorphic features or midline defects, nasal turbinates swollen/red, alcohol pad smell detected, CN 2-12 intact, testicles prepubertal (3 ml), Tanner 4 pubic hair, and stretched penile length 6.5 cm (normal). Labs revealed LH <0.10 mIU/ml, FSH 0.37 mIU/ml, testosterone 2.5 Î·g/dl (prepubertal values) along with normal IGF1, IGFBP3, Prolactin, TSH and Free T4. Bone age was delayed. Differential diagnosis was between constitutional delay of growth and puberty (CDGP) vs IHH so he was given 6 monthly injections of testosterone enanthate to jump start puberty, but he failed to progress in puberty. Brain MRI showed normal pituitary gland but was unable to visualize olfactory bulbs. Mother later revealed that maternal uncle had same presentation. Genetic testing for Kallmann syndrome showed complete deletion of exon 3 on the KAL1 gene.
Conclusion: Kallmann syndrome is suspected in patients with hypogonadotropic hypogonadism, anosmia/hyposmia, and/or positive family history. MRI can show absent or normal olfactory bulbs (20%).Clinical suspicion is very important for early diagnosis and treatment. Although KAL1 mutation is well described in Kallmann syndrome, this particular deletion has never been previously reported in literature

C33: Vishali Ramsaroop   Advisor(s): Eduard Porosnicu

A Diagnosis of Neuromyelitis Optica Spectrum Disorder in a Patient with Systemic Lupus Erythematosus presenting with sudden Acute Transverse Myelitis

Acute transverse myelitis (TM) is a rare neuro-inflammatory spinal cord disorder that presents with the rapid onset of weakness, sensory alterations, and bowel and bladder dysfunction. The differential for TM can be broad including compressive and non-compressive spinal cord pathologies. In this case, we describe a 28 year old African American male with a known history of SLE who presented with a high grade fever and sudden onset bilateral lower extremity weakness, profound sensory deficits, and urinary and fecal incontinence. The leading differentials initially included Guillain Barre syndrome, CNS infectious processes, and Lupus Transverse Myelitis. A CT head was unrevealing for a causative pathology followed by a MRI of the Brain and total spine which showed extensive longitudinal T2- enhancing changes from C2-T4. Infectious work up including a lumbar puncture were negative for common and opportunistic infectious causes. The patient received high dose steroids and immunomodulation as initial treatment for Lupus transverse myelitis with poor clinical response as well as IVIG and plasmapheresis for possible Guillain-Barre Syndrome. Lab results later showed gross seropositivity with NMO-IgG antibodies consistent with Neuromyelitis Optica (Devic's disease). Ophthalmologic evaluation and imaging however did not reveal evidence of optic neuritis. This case illustrates a rare occurrence of SLE in conjunction with clinical, radiologic and serum antibody positivity consistent with Neuromyelitis Optica (NMO) in the absence of optic neuritis. Optic neuritis is currently believed to be a defining feature of this demyelinating disease. A recently modified spectrum of NMO like disorders, namely NMO spectrum disorders (NMOSD) is congruent with this patient's findings in the scarce setting of a previous SLE diagnosis.

C34: Carl Swanson   Advisor(s): Mohamed Nakeshbandi

Eyes on the Line: CLABSI evaluate at UHB

Central Line Associated Bloodstream Infection (CLABSI) is a growing concern among hospitalized patients due to high patient mortality, non-reimbursable hospital costs at ~$50,000 per case, and it's use as a Core Measure of hospital competency by Center of Medicare and Medicaid Services (CMS) and The Joint Commission. Rates of CLABSI have been monitored at University Hospital Brooklyn (UHB) and demonstrate wide ranges between 2015 to 2017. CLABSI rates have been shown to decrease with increasing awareness of central venous catheter (CVC) indication and maintenance.

This study aimed to evaluate CVC indication, duration and review prevention techniques in order to implement an interdisciplinary approach to reduce CVC placement and maintain increased line awareness, thus improving patient care and, in turn, a reduction in CLABSI, patient morbidity and mortality and hospital costs. This quality improvement project evaluated rates of CLABSI in hospitalized patients through chart review, documenting line indications, dates, line types and duration of hospitalization.

PICC's demonstrated highest CLABSI rate at 46%, with mediport lowest at 8%. Difficult access was commonest line indication at 30%, prolonged therapy at 25%, hemodialysis 24%, critical illness at 21%. Mean line duration was 44.7 days with median of 20 days. Mean line duration prior to CLABSI was 39 days. Average total days hospitalization for patients with CLABSI was 54.4 days, median 43.5 days.

Results indicate a high rate of CLABSI in PICC line with indication of difficult venous access. Through the implementation of an algorithmic approach to determine appropriate venous line access type and reduction of PICC placement, with consideration of midline catheter, initiation of a multidisciplinary team including nursing staff, residents and Infection Control staff for increased line awareness, monitoring and maintenance, CLABSI rates at UHB show potential for significantly decreased rates in the upcoming year.

C35: Sara Wertenteil   Advisor(s): Steven Levine

Bringing Recognition and Awareness to Inner-city Neighborhoods about Stroke (BRAINS)

Introduction: Children are exposed to individuals at risk for stroke and when properly educated may recognize stroke and call 911. We evaluated baseline stroke knowledge of an underserved, inner-city community to assess the need and optimize future educational interventions.

Objective: To assess beliefs and concepts of pre-teens (9-12 year olds), teens (13-18 year olds), and adults (19+) about stroke and determine variation in stroke knowledge with age.

Methods: In a cross-sectional study we recruited and surveyed participants in Central Brooklyn aged >9 years about stroke symptoms, prevention, risk factors, and urgent responses (5 multiple-choice and 5 fill-in questions). For multiple-choice responses, chi-square test was used for association between categorical variables and ANOVA compared mean number of correct answers between 3 age groups. Fill-in answers were categorized and described.

Results: Of 81 subjects completing surveys 82% were Black, Caribbean, or both, and 11% Hispanic. Freeform responses revealed misconceptions participants had about stroke causes, symptoms, and prevention strategies. Our analysis of multiple-choice responses revealed the mean numbers of correct answers were 2.0(0.9 SD), 2.8(1.2) and 3.8(1.3) for age groups of 9-12 (n=27), 13-18 (n=23) and >18 (n=31) years, respectively (p<0.001). Of these respective groups, 11%, 52%, and 87% (p<0.001) identified the brain as the site of stroke, and 11%, 26%, and 58% (p<0.001) correctly identified stroke symptoms. For response to stroke, 89%, 96%, and 100% (p=0.14) of each group chose "call 911€. Thirty (37%) reported having a close relative/family friend with a stroke, and it did not predict the number of correct answers (p=0.30) after controlling for age.

Conclusions: Stroke knowledge was lowest among children, yet still low among teens and adults in Central Brooklyn. Public health initiatives should focus on educating more children/teens about stroke symptoms to enhance stroke recognition.

C36: Peiqi Ou   Advisor(s): Chongmin Huan

Sphingomyelin synthase 2 protects against lupus pathogenesis via regulating the B cell tolerance

Systemic lupus erthymatosus is an autoimmune disease characterized by the presence of anti-double stranded DNA antibodies produced by self-reactive B cells. Lupus remains a clinical challenge due to lack of a treatment that specifically targets the pathogenic mechanism of the disease. Recent studies indicate that failed clearance of self-reactive B cells generated by somatic hypermutation in the germinal center is the primary source of autoreactivity in lupus. However, the protective mechanism of B cell tolerance that normally eliminates self-reactive B cells in the germinal center is unknown.

Sphingomyelin synthase 2 (SMS2) is a sphingolipid enzyme that catalyzes the synthesis of sphingomyelin and diacylglycerol on the plasma membrane. We found that SMS2 deficient mice have a lupus-like phenotype due to failure of the elimination of self-reactive B cells in the germinal center. SMS2 induces apoptosis in germinal center B cells via activation of PKC delta, a recognized mediator of B cell apoptosis that prevents the pathogenesis of lupus in both humans and mice. Activation of SMS2 was able to inhibit the production of anti-double stranded DNA antibodies in NZBWF1 mice, an established animal model of lupus. Thus, our findings provide significant insight into the mechanism of B cell tolerance that protects against the pathogenesis of lupus, and could lead to development of an effective therapeutic approach to target the pathogenic mechanism of lupus.

C37: Kevin Chua   Advisor(s): Andrew Winer

Comparison of Renal Cell Carcinoma Characteristics Among Distinct Populations of Black Patients

Introduction: Previous studies have shown differences in Renal Cell Carcinoma (RCC) subtypes, stage and comorbidities between non-African American (non-AA) and African American (AA) patients. This study aims to elucidate what type of relationships exist when these populations are compared to an underserved, primarily Afro-Caribbean population.

Methods: Clinical and pathologic data were collected retrospectively from 65 Afro-Caribbean patients with RCC who underwent a nephrectomy at Kings County Hospital Center (KCHC) (6/24/2003 - 12/29/2016). We performed a chi-squared analysis to compare our data with previously published data of AA and non-AA patients from Vanderbilt University Medical Center (VUMC) (Lipworth et. al. 2016), Kaiser Permanente Northern California (KPNC) health system (Mafolasire et.al. 2016) and Duke University Medical Center (DUMC) (Qi et. al. 2014).

Results: RCC subtype distribution (Clear cell vs Papillary vs Other) was different in the Afro-Caribbean population from KCHC when compared to non-AA populations (p<.001) with a higher percentage of Papillary and Other RCC (Table 1). KCHC subtype distribution was also different from the AA patients with a higher percentage of Other RCC in the KCHC patients (p=.004, 27.7% vs 12.8%). T stage was non-significantly earlier in KCHC patients compared to non-AA patients (p=.068, T1-T2 80% vs 69.5%) and AJCC stage was significantly earlier compared to KPNC non-AA patients (p=.031, stage I-II 75.4% vs 62.2%).

Conclusion: In this retrospective comparative analysis, our population was found to have a higher proportion of non-clear cell/non-papillary RCC when compared to AA patients from other studies. This may signify a difference of how RCC affects the Afro-Caribbean patients when compared to the general AA population. Furthermore, previous studies have shown that AA patients were diagnosed at an earlier stage than non-AA patients, which our data validates.

C38: Matthew Epstein   Advisor(s): Jeffrey Weiss

Relationship of nocturnal polyuria and combination anti-hypertensive drug therapy

Introduction and Objective: Nocturia due to nocturnal polyuria is a prevalent problem in middle-aged and elderly patients. Most patients find no improvement from current therapies. The mechanism of nocturnal polyuria is believed to be multifactorial, including a change in the circadian release of natriuretic peptides and anti-diuretic peptide, and possibly blunting of the normal nocturnal dip in blood pressure (which can drive pressure-natriuresis). This study attempts to identify an association between anti-hypertensive (AHT) drug therapy and nocturnal polyuria.

Methods: We performed a retrospective analysis of voiding diaries taken from male patients at a Veterans-Affairs based urology clinic. Inclusion criteria were patients with a baseline actual nocturnal voids (ANV) ≥ 1 and age ≥ 50. Patients were excluded who had a diagnosis of obstructive sleep apnea, diabetes insipidus, congestive heart failure, or chronic renal failure. Patients were split into 3 groups based on number of AHT's taken (0, 1, or 2 or more), which were limited to thiazide diuretics, calcium-channel blockers, and ACE-I's/ARB's. Patients were also broken down by age into 4 groups (50-59, 60-69, 70-79, and 80+). An ANOVA model was used to test for significance.

Results: Patients taking 0, 1, 2 or more AHT's had a nocturnal polyuria index (NPi) of 37% (n=93), 40% (n=58), and 49% (n=26) respectively. Along the same group breakdown, patients had an ANV of 2.7, 2.7, and 3.5 respectively. NPi was found to be significantly associated with AHT's (p=0.007) and age (p=0.002). ANV was also shown to be significantly associated with AHT's (p=0.04), but no relationship was found between ANV and age (p=0.42). There was no interaction found in the model between AHT's and age for NPi (p=0.48) or ANV (p=0.93).

Conclusion: Combination drug therapy for hypertension, as compared with untreated hypertension or monotherapy, was shown to be associated with much more nocturia and nocturnal polyuria. The steepest increase in these outcomes was seen between monotherapy and combination antihypertensive drug therapy. Patients requiring multiple blood pressure drugs are likely to have more severe and long-standing hypertension, with impairment of both nocturnal dipping of blood pressure and renal tubular sodium and water transport, resulting in greater nocturnal polyuria. Further research is warranted.

C39: Lucas Policastro   Advisor(s): Jeffrey Weiss

History of the "sontimeter" and its role in medical education

Students of medicine in English-speaking countries will encounter "sontimeter", a variant pronunciation of centimeter. This variant is notable in that it is heard exclusively in the medical field, resulting in confusion for the learner. This article describes the history of "sontimeter", explains its continued use, and enables educators to consider the implications of using the pronunciation. "Sontimeter" is a partially anglicized pronunciation coexisting with "centimeter" since at least the 1880s. The persistence of "sontimeter" demonstrates a sociological concept, the medical habitus—dispositions that facilitate membership in the medical culture. The issue of "sontimeter" reveals social forces at work within medical education and challenges medical teachers to consider their high degree of influence on students.

C40: Irini Youssef   Advisor(s): David Schreiber

Patterns of Care and outcomes for Early Stage Anal Squamous Cell Carcinoma

Purpose/Objective(s): Standard of care treatment for squamous cell carcinoma (SCC) of the anus is concurrent chemoradiation (CRT) however it is unclear whether CRT is necessary for very early stage, T1-2N0 anal cancer. We therefore sought to assess for predictors of use of CRT and its impact on overall survival (OS) in patients with early stage node negative SCC of the anus with favorable characteristics in a large hospital-based database.

Materials/Methods: The National Cancer Database (NCDB) was queried to identify patients who received CRT, or RT alone for cT1-2N0M0 Anal SCC. The cohort was limited to patients less than 70 years old with Charlson-Deyo Comorbidity Index of 0. Patients were stratified by age (<60, ≥60), gender, race, stage, facility type, and insurance status. Univariable and multivariable logistic regression were performed to assess for predictors of CRT usage. 5-year OS was analyzed using the Kaplan Meier method with the log rank test both for the full cohort and then on the subsets of T1 and T2 patients. Univariable and multivariable logistic regression were used to assess for covariables associated with survival differences.

Results: There were 8,914 patients included in the present study, of whom 8,223 patients received chemoradiation and 691 received radiation alone. Median follow up was 46.2 months overall. Multivariable logistic regression indicated that patients were more likely to receive chemoradiation if they were <60 years old, had better performance status, were of white race, or had T2 disease. 5-year OS was 80.1% for chemoradiation and 54.4% for radiation alone. There was also a significant association between survival and chemoradiation us (HR 0.431, $P<.0001$).

Conclusion: The vast majority of patients under age 70 without significant comorbidities are treated with chemoradiation over radiation alone for early stage squamous cell carcinoma of the anus, with better survival associated with chemoradiation.

C41: Nanda Lahiri-Mushtaq   Advisor(s): Christopher Roman

Regulation of CD4 T cells by MiT family of proteins

The MiT family of transcripton factors consists of four members: TFE3, TFEB, MiTF and TFEC. TFE3 and TFEB have been shown to be involved in the control of two genes which are critical for CD4 T cell function: CD40L and FoxP3. CD40L is necessary for protective antibody responses and cellular immunity because it activates B cells and macrophages, respectively, via the receptor for CD40L, CD40. FoxP3 is necessary for the generation of regulatory CD4 T cells (Tregs), which have an essential role in suppressing autoreactive and other undesirable immune reactions. My research will focus on establishing a clearer picture of the physiological importance and regulation of CD40L and FoxP3 by TFE3 and TFEB. To this end, I will be studying T cell function, such as in models for CD40L-dependent cellular immunity, in mice that are deficient in TFE3, TFEB or both. In addition, I will be using mouse models for spontaneous and induced mucosal inflammation to test the importance of TFE3-dependent FoxP3 expression, because Tregs are important for preventing this process. I will also compare the phenotype observed in WT mice and mice lacking either TFE3 or both TFEB and TFE3 in the induced colitis model. In complementary studies, I will be examining TFE3- and TFEB-dependent CD40L and FoxP3 expression in primary human and mouse naive CD4+ T cells to examine under what conditions TFE3 and TFEB are needed. Through my work I hope to provide greater insight in to the cause of autoreactive disorders.

C42: Olipriya Das   Advisor(s): Richard Kollmar

The Role of the C1q Domain of Otolin1 in Otolith Morphogenesis

Otolin1 is an extracellular matrix protein of otoliths ("ear stones" of fishes), and otoconia ("ear dust" of higher vertebrates). These acellular biominerals are essential for the sense of balance; dislodging results in the most common human balance disorder, benign paroxysmal positional vertigo. Otolin1 comprises of a collagen and a C1q domain, similar to atypical collagens VIII and X. We propose that Otolin1 forms a scaffold to which other otolith proteins, Ca2+ and CO2- ions bind during otolith morphogenesis, with C1q trimers as hubs and collagen triple- helices as spokes. To test this model, we investigated whether the Otolin1 C1q domain is necessary and sufficient to form trimers and higher complexes in vitro. The zebrafish Otolin1a C1q domain was expressed in bacteria either alone or fused to thioredoxin. Multimerization of affinity purified recombinant proteins was assessed by size-exclusion chromatography and gel electrophoresis. Under denaturing conditions, recombinant C1q proteins formed monomers and trimers, but not dimers or higher- order complexes. Under native conditions, they formed only higher-order complexes. In contrast, thioredoxin alone only appeared as a monomer. Our results are consistent with the proposed ability of the Otolin C1q domain to form trimers that, in turn, assemble into higher-order complexes. Experiments are underway to characterize the various complexes in more detail and to test whether the C1q domain is necessary to trimerize of full-length Otolin1a.

C43: Scott Schoninger   Advisor(s): Stacy Blain

Nanoparticle-Mediated Delivery of Alt Brk Protein in Human Breast Cancer Cells and its Impact on Cell Cycle Arrest

Introduction: p27Kip1 regulates cyclinD-cdk4 activity, and has both oncogenic and tumor suppressor properties [1]. Breast tumor related kinase (Brk) has been shown to phosphorylate p27Kip1 at tyrosine 88 (Y88), which is associated with cellular proliferation [2]. An alternatively spliced but catalytically inactive form of Brk (Alt), is believed to compete for the binding site of Brk on p27Kip1, thereby inhibiting its activity. The Blain lab has focused on mechanisms to increase intracellular Alt, with the hypothesis that this will inhibit p27Kip1 Y88 phosphorylation and progression through the cell cycle. Prior work has shown that overexpression of Alt in a tetracycline-inducible MCF-7 breast cancer cell line inhibits cellular proliferation. In order to study the biological activity of Alt in different cell lines and evaluate its potential use as a pharmacologic agent, we packaged Alt into cationic liposomal nanoparticles (NP1-Alt). The primary aim of my project was to create doseresponse curves for three breast cancer cell linesusing NP1-Alt.
Materials & Methods: Nanoparticles were produced by combining Alt protein with empty liposomes via sonication. Day 0: 5.0 x 104 cells were plated for the MCF-7 and MB231 cell lines, and 7.5 x 104 cells for the HCC1954 cell line. Day 2: NP1-Alt or empty lipoparticles, in serum-free media, were applied to each well for 6 hrs. Day 4: The cells were counted using a hemocytometer, and assessed for viability with trypan blue.
Results/Conclusions: Liposomal nanoparticles are a viable strategy for delivering Alt into human breast cancer cell lines in vitro.MB231, MCF-7, and HCC1954 human breast cancer cell lines all exhibited a dose-dependent response to Alt treatment, with the MB231 cell line being the most responsive. MB231 responded similarly to both the 10: 1 & 20: 1 formulations, while MCF-7 responded better to 10: 1, and HCC1954 better to 20: 1. The 10: 1 formulation will be used in future experiments.

C44: Albert Palileo   Advisor(s): Laura Martello-Rooney

Treatment With Paclitaxel Causes Upregulation in Resistance Protein Beta III Microtubulin in a Beta III Microtubulin Negative Type 2 Endometrial Cancer Cell Line

Introduction: Type 2 uterine cancers are associated with chemoresistance and poor outcome. Poly(lactic-co-glycolic acid)-based (PLGA) microparticles (MPs) are a promising new tool for delivery of cytotoxic chemotherapies. These MPs have a benefit of eluting drugs over a period of days for sustained pharmacokinetic effect. The current study serves to test the hypothesis that paclitaxel encapsulated microparticles is a feasible cytotoxic treatment modality in an in vitro model of a Type 2 uterine carcinoma cell line. Part of this evaluation included evaluating the cell line for resistance to paclitaxel. Overexpression of beta 3 microtubulin (TUBB3) has been linked to paclitaxel resistance in many cancers including uterine carcinomas.
Materials and Methods: PLGA MPs were prepared using established laboratory procedure to encapsulate paclitaxel in DMSO (PMPs). Blank microparticles (BMPs) were created by repeating the process with DMSO only and were used as controls. Endometrial adenocarcinoma cells from type 2 cell line KLE were plated in 6 well plates at a density of $2x10^5$ cells and treated with BMPs and varying volumes of the 15mM PMPs (20, 40, and 60 uL). Cells incubated with BMPs and PMPs for 6 days then harvested and underwent western blot analysis.
Results: Cells treated with PMPs showed decrease in cell density with morphologic changes consistent with apoptosis. Western Blot analysis for cleaved-PARP, a byproduct of apoptosis, showed significant increase in cells treated with PMPs compared to the control group. WB analysis also revealed an absence of TUBB3 in the controls, indicating no baseline resistance to paclitaxel. After treatment with PMPs, there was a statistically significant increase in TUBB3 for 40 and 60uL.
Discussion: This endeavor represents the first demonstration biochemically of upregulation of a resistance marker for paclitaxel as a response to treatment in a cell that is negative for beta 3 microtubulin prior to treatment.

C45: Sungsoo Kim   Advisor(s): Sabina Hrabetova

Testing EAAT2 and glutamine synthetase as potential targets for epileptiform activity inhibition via ECS volume changes

Because numerous forms of epilepsy remain resistant to classical anticonvulsant drugs, hints toward new therapeutic approaches must be actively pursued. Such a lead was recently observed when introduction of gliotoxin DL-alpha-aminodipate (DL-AA) during an induced epileptiform activity in a mouse cortical brain slice led to inhibition of epileptiform activity and concurrent spikes of extracellular space (ECS) marker, tetramethylammonium ion (TMA+), suggesting a rhythmic water movement between the ECS and glial cells as a potential component in the generation of epileptic activity.
To further explore the observed phenomenon, this study tested 2 key targets of DL-AA, excitatory amino acid transporter 2 (EAAT2) and glutamate synthetase, with their respective antagonists, dihydrokainate (DHK) and methionine sulfoximine (MSO), to see which of these is responsible for the effects seen with DL-AA.
Epileptiform activity was induced using a potassium channel blocker 4-aminopyradine (4-AP). Its frequency and ECS shrinkage before, during, and after application of each drug from multiple experiments were measured using ion selective microelectrodes (ISMs) and application of the Nikolsky equation. These were then compared using one-way ANOVA, followed by a post-hoc Tukey HSD test when a statistically significant difference was detected.
As expected, results of the statistical analysis with DL-AA showed a statistically significant reduction in frequency of epileptiform activity and ECS shrinkage with the drug and a return once it was washed out [$F_{(2,3)} = 79.392$, $p = 0.003$ and $F_{(2,3)} = 21.589$, $p = 0.017$, respectively]. However, frequency and ECS shrinkage had no statistically significant change with either DHK [$F_{(2,6)} = 0.107$, $p = 0.900$ and [$F_{(2,6)} = 0.709$, $p = 0.529$, respectively] or MSO [$F_{(2,6)} = 0.043$, $p = 0.958$ and $F_{(2,3)} = 0.088$, $p = 0.918$, respectively]. Hence, neither EAAT2 nor glutamate synthetase, when targeted separately, seem to account for DL-AA's effects.

C46: Tehila Saadia   Advisor(s): Rauno Joks

Correlation of Exhaled Nitric Oxide Levels with Salivary Melatonin Levels in Adults With and Without Allergy/Asthma

Rationale: We have previously reported that longer duration of sleep is associated wtih lower AM FeNO levels. As melatonin, a photoneurohormone which regulates sleep-wake cycles, can have anti-inflammatory effects, we sought to determine whether salivary melatonin levels correlate with FeNO.

Methods: IgE+adults with allergy/asthma (n=10, IgE:554.7 IU/ml ±541.7) and IgE- nonallergic adults (n=10, IgE:48.8 IU/ml ±38.4) had FeNO levels measured and salivary samples obtained for melatonin levels (Niox Vero, Circassia; EIA, Salimetrics, State College, PA) at 9-10 AM (> 1hr post meal) and 6 hrs later. Saliva was collected by unstimulated passive drool technique and frozen at -20ºC until assay. Salivary melatonin levels (pg/ml) were determined with a competitive immunoassay using HRP and tetramethylbenzidine. Pearson correlation coefficients and T-test were used in analysis.

Results: There was no intraday variability in FeNO levels for either the IgE- (AM: 16.2 ppb ±7.5, PM: 15.8 ppb ±8.0) or IgE+ (AM: 40.7 ppb ±40.8, PM: 33.5 ppb ±27.3) group (p=ns). While there was no significant change in melatonin from AM to PM for the IgE+ group (AM: 6.8 pg/ml ±8.2, PM: 18.1 pg/ml ±34.2)(p=0.3), there was a significant increase in salivary melatonin for the IgE- group (AM: 6.5 pg/ml ±9.8, PM: 31.6 pg/ml ±26.52)(p=0.02). There was no correlation between FeNO and salivary melatonin level for either group, in either AM or PM (p=ns).

Discussions/Conclusions: Daytime FeNO levels in IgE+ and IgE- adults are independent of circadian effects on salivary melatonin levels. Sleep has been likened to a shifting balance between Th1 and Th2 cytokine activity toward Th1 dominance. This may suppress allergic inflammation and decrease FeNO levels. The data from this study does not associate this with salivary melatonin levels.

C47: Hui Jiang   Advisor(s): Xian-cheng Jiang

Prodomain of furin promotes phospholipid transfer protein proteasomal degradation in hepatocytes

Background—PLTP is one of the major modulators of lipoprotein metabolism and atherosclerosis development, however, very little is known about the regulation of PLTP. The effect of hepatic profurin expression on PLTP processing and function is investigated. Methods and Results—We utilized adenovirus expressing prodomain of furin (profurin) in mouse liver to evaluate PLTP activity, mass, and plasma lipid levels. We co-expressed PLTP and profurin in Huh7 cells and studied their interaction. We found profurin expression significantly reduced plasma lipids, plasma PLTP activity and mass in all tested mouse models, compared with controls. Moreover, the expression of profurin dramatically reduced liver PLTP activity and protein level. We further explore the mechanism using in vivo and ex vivo approaches. We found that profurin can interact with intracellular PLTP, and promote its ubiquitination and proteasomal degradation, resulting in less PLTP secretion from the hepatocytes. Furin does not cleave PLTP, instead it forms a complex with PLTP, likely through its prodomain. Conclusions—Our study reveals that hepatic PLTP protein is targeted for proteasomal degradation by profurin expression, which could be a novel post-translational mechanism underlying PLTP regulation. Keywords: PLTP, profurin, furin (PCSK3), hepatocytes, ubiquitination, proteasomal degradation.

C48: Adriana Nozima   Advisor(s): Stephen Macknic

An Objective Classifier of Expertise in United State Marine Corps Combat Aviators

We and others have previously shown that oculomotor dynamics serve as a valid biomarker for fatigue and high mental workload, and other brain states—measured in applied environments—and neural disease, such as parkinsonian diseases and Alzheimer's disease. Here we obtained eye movements from both instructor and trainee United States Marine Corps (USMC) combat aviators to determine the differences in dynamics as a function of expertise. The pilots flew different simulated mission types and we determined their ocular kinematics—as a function of mission type and cohort—across many dimensions. We observed that there are differences in specific eye movement signals between novice and expert helicopter pilots. From this data we created a classifier of expertise, which performed with an accuracy of 70.5%. We then studied whether novice pilots benefit more from viewing movies of experts performing emergency procedures or the same movies with the expert's eye position scanpaths overlaid. As an innovation, we did not measure the benefit to novices as a function of performance, but instead measured their oculomotor dynamics as a function of the expert scanpaths—assessed by our objective expertise discriminator. We tasked novice pilots with repeatedly resolving an Emergency Procedure (dual engine failure cascade), followed by watching a video with the expert eye position indicated, and the other half watched the video without the eye movements superimposed. Pilots who were given access to the expert's scanpaths significantly changed, in comparison to pilots who saw the same movies without scanpaths. These results suggest that physiological biomarkers—such as oculomotor dynamics—may provide a rich source of data—in short amounts of time—even within challenging operational environments, and that our oculomotor systems learn fast to use eye tracking information—even without being instructed to—very quickly.