ROLE OF UBIQUITINATED HuR IN mRNA 3' PROCESSING DURING DNA DAMAGE RESPONSE

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During DNA damage response (DDR), control of mRNA stability is essential for regulation of gene expression and DNA repair. HuR is an RNA binding protein that plays important roles in regulating the stability of mRNA targets involved in DDR. HuR can be ubiquitinated resulting in its release from the target mRNAs. Our aim is to identify the E3 Ub ligase involved in HuR ubiquitination and elucidate how ubiquitination of HuR plays a role regulating the stability of one of its targets, the p53 transcript.

Our results indicate that the E3 Ub ligase BRCA1/BARD1 can modify HuR using in vitro ubiquitination reactions. siRNA-mediated knockdown of BRCA1/BARD1 decreased HuR ubiquitination in HCT116 cells. Previous studies indicate that both the mRNA processing factor CstF-50 and the escort factor p97 play a role in BRCA1/BARD1 substrates ubiquitination. Our co-immunoprecipitation assays showed that p97, CstF-50, HuR, and BRCA1/BARD1 can form (a) complex(es) in HCT116 cells. Both GST-CstF-50 and His-p97 inhibited in vitro HuR ubiquitination by BRCA1/BARD1. Interestingly, HuR ubiquitination decreased binding of HuR to p53 mRNA, allowing the binding of mRNA destabilizing factors, such as PARN deadenylase and Argonaute, to p53 transcript.

Based on these results, we propose a model where under non-stress conditions BRCA1/BARD1 ubiquitinates HuR, inducing HuR release and PARN/Ago2 binding to target mRNAs and resulting in destabilization of mRNAs involved in DDR. After UV treatment, HuR ubiquitination by BRCA1/BARD1 is inhibited by CstF-50/p97, resulting in HuR binding to target mRNAs and the stabilization of mRNAs involved in DDR.
FINDING NOVEL THERAPEUTICS FOR RETINAL DEGENERATION: TEMPORAL, GENETIC, AND TRANSCRIPTOME ANALYSIS OF RD1 AND RD16 MOUSE RETINA

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Retinal degeneration leads to progressive photoreceptor cell death, and it is one of the most common human inherited eye disorders causing blindness and affecting 1 in 3,000 people in all ethnic groups. Millions in North America live with varying degrees of irreversible vision loss because they have been burdened with an untreatable degenerative eye disorder that affects the retina. Though it is has a growing disease burden, there is still vast genetic and therapeutic knowledge to be learned related to the onset of degeneration. Through gene expression profiling experiments and microarray transcriptome analysis using retina tissue from mice, we aim to find novel potential genetic causes for human retinal degeneration disorders such as Diabetic Retinopathy and Leber Congenital Amaurosis. Experimentally, rodent models exhibiting retinal degeneration, rd1 and rd16, were used for greater investigation and analysis of the functional and molecular changes that occur and persist in retinal degeneration. To further understand the pathogenesis and genetic background of retinal degeneration, mutant mouse lines (rd1 and rd16) were compared with a wild type mouse control model, and gene expression levels were analyzed at specific time points. By using computational biology, genetic variances and similarities between both the mutant and wild type mice were analyzed through GOrilla, a tool used to visualize gene ontology and enrichment. The GOrilla tool has provided further insight into understanding the fundamental biology between the differentially expressed genes in our mutant and wild type mouse models. By analyzing the biological connections between these genes, network and pathway analysis has identified a potential cell signaling pathways, which leads to retinal degeneration in our rd1 and rd16 mouse models. From these current insights, we are looking into finding molecular targets in order to establish novel drug discoveries associated with pathway inhibition, thus, blocking the onset of retinal degeneration. Cumulatively, this will improve treatments for retinal degeneration and advance the field of clinical ophthalmology.
PREVALENCE OF INTIMATE PARTNER VIOLENCE IN SAFETY NET CLINICS.

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Intro: Intimate Partner Violence (IPV), a complex public health issue, can be prevented with improved screening, identification, and referral to community resources that provide counseling and safety plans for victims. Studies show that minorities and uninsured populations similar to this study’s patient population served by the University of Florida’s (UF) safety net clinics benefit from improved IPV prevention. The UF safety net clinics’ current IPV intervention program includes IPV screening using three unique questions asked during intake and referrals to community resources. Patients who screen positive for IPV receive follow-up questioning, counseling, and legal representation by certified legal interns from the UF College of Law’s Source Program.

Methods: Medical charts of all patients aged 18 years and older seen between December 2012 and December 2013 were reviewed to determine the frequency of positive screens at each clinic. Patients screen positive and show suspicion of possible IPV if they answered yes to any of the three screening questions. The IPV prevalence of each mobile clinic site provided recommendations on the improvement and reallocation of onsite resources to benefit patients. Univariate analyses assessed the frequency of covariates and IPV.

Results: A total of 215 (19.5%) patients screened positive among the total sample size of 1100 patients. One clinic site (38%, n=215) received the highest prevalence of positive screening. Women were 64% (n = 215) more likely than men to screen positive for IPV.

Conclusion: The findings suggest that there should be on-site resources allocated to specific clinics. Further implications need to explore the characteristics of the patients screening positive for IPV and the number of patients being referred to the IPV resources.
THE EFFECTS OF SOCIAL ISOLATION DURING PUBERTY ON APICAL DENDRITIC BRANCHING AND SPINE DENSITY OF THE HIPPOCAMPAL CA1 OF PYRAMIDAL NEURONS

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Adolescence is a stage of development that is monumental in the development of the brain. Stress during the onset of puberty has been shown to alter the behavioral, physical, and biochemical processes of the brain because of the introduction of gonadal hormones. Previous studies have shown that stress during critical periods of development is linked to many pathological disorders, such as schizophrenia, depression and anxiety-like behaviors. The effects of stress could be gender specific. However, females have been insufficiently studied in animal models. Social Isolation is a stressor that has been shown to affect individual behaviors. Previous studies also indicate that there may be a critical period for the effects of social isolation before and during puberty. The hippocampus is a component in the limbic system that plays a role in spatial learning, memory, anxiety and the regulation of stress. Interestingly, previous studies indicate the differential response of hippocampal subregions to stress. For example, ventral region of the hippocampus is more susceptible than the dorsal region to changes in response to stress hormones. The goal of this study was to understand if social isolation alone during puberty in females could cause changes in the dendritic remodeling of the pyramidal neurons in the CA1 of ventral hippocampus. Sixteen Sprague-Dawley female rats were assigned to 2 experimental groups (socially isolated and paired housed) from P36 to P44, where animals were euthanized. We traced and measured the dendritic arborization of the pyramidal neurons by Sholl analysis of the CA1 region of the dorsal and ventral hippocampus. Our preliminary data indicated that in the ventral hippocampus, which preferentially regulates anxiety, social isolation evoked an increase in dendritic branching in the CA1 pyramidal neurons. On the other hand, in the dorsal hippocampus, which preferentially mediates spatial learning and memory, cells of animals under social isolation had fewer dendritic branches in stratum radiatum than in paired controls. Taken these results together, our data indicate that social isolation of adolescent females elicits pathway-specific changes in the hippocampus that may cause an increase in anxiety and a reduction in spatial memory performance. We also looked at the spine density.
EFFECTS OF GONADAL HORMONES ON RECOGNITION MEMORY AND ITS NEURAL CORRELATES IN THE HIPPOCAMPUS IN CASTRATED MALES.

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Previous studies have shown that chronic E & T enhance memory in orchidectomized rats. However, the effects of these gonadal hormones have not been explored acutely. Our goal is to understand how gonadal hormones affect learning and memory. Both chronic and acute estradiol treatment to ovariectomized female rats enhances memory. We therefore hypothesize that acute treatments with estradiol or testosterone will enhance memory in male rats.

This current project investigates the effects of acute estrogen and testosterone on recognition memory by using object recognition and object placement tests in castrated male rats two hours after hormone treatments with the same dose of hormones as in females. The estradiol treated groups spent more time exploring the new object or the object in the new location whereas the oil treated controls spent the same amount of time exploring the new object/location and the old. This pattern shows that estradiol enhances memory. Treatment with testosterone also enhanced object placement. This preliminary result suggests that acute gonadal hormones can improve spatial recognition memory in castrated male rats. Whether these acute hormone treatments increase dendritic spine density in the prefrontal cortex and hippocampus, two areas that regulate memory, is currently under investigation. Dendrites. Both E& T-treated rats showed significantly higher dendritic spine density in hippocampal CA1 neurons than controls. This is consistent with the results b/c CA1 is involved in spatial memory.

These current findings have implications in treating neurodegenerative diseases and aging that affect memory. In the future we would like to explore whether estrogen receptors and their downstream signaling molecules (ex: Raf-1 proto-oncogene) are altered to enhance in memory and learning.
STUDY OF PREVALENCE OF NEPHROPATHY AND ITS RISK FACTORS IN TYPE 2 DIABETES PATIENTS OF MORE THAN 40YRS AGE WITH INSULIN RESISTANCE IN ANANTAPUR, SOUTH INDIA

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1) Background and Aims: Nepropathy is not only related to glycaemic control and diabetes duration, but also to blood pressure and B.M.I.

Diabetes has become the most common single cause of end-stage renal disease (ESRD) . this is due to the facts that 1) diabetes, particularly type 2, is increasing in prevalence; 2) diabetes patients now live longer; and 3) patients with diabetic ESRD are now being accepted for treatment in ESRD programs where formerly they had been excluded.

2) Problem statement

If the damage due to diabetic nephropathy continues, kidneys could fail. People with kidney failure need either dialysis or a kidney transplant.

3) Hypothesis statement

Proteinuria, nearly a universal finding in progressive kidney disease, has been the subject of frequent recent analyses in the renal literature. Proteinuria is a hallmark of diabetic nephropathy

4) Material & method

500 type2 diabetic patients with insulin resistance from the O.P. of our Diabetes center, Sainagar, Anantapur, India are taken up for the study from jan 2013 to jan 2014. But 25 patients with major cardiovascular disease, amputation were excluded ( M/F:265/210, mean age : 41+or- 12 yrs, duration of diabetes 19+or-11 yrs, HbA1c 7.8+or-1.1%). Nepropathy was examined by urine protein, renal functions- serum urea, and creatinine levels, neuropathy by electromyography, blood pressure was taken 5 min. rest and a mean of 4 measurements was used. B.M.I and HbA1c are measured to all patients.

5) Results: Nepropathy was present in 51%, Hypertension (>130/80 mm Hg.) in 41%, neuropathy in 41%. nepropathy is more prevalent in over weight subjects than in normal weight (62% Vs 45% P < 0.0001). Patients with nepropathy were older (46+- 11 vs 36+-11 yrs p<0.0001), had longer diabetes
duration (25+-10 vs 13+-9 yrs p<0.0001), a higher HbA1c (8.0+-1.0 vs 7.7+-1.2% p=0.004) and a higher B.M.I (26.0+-4.2 vs 24.8+-4.4 p=0.005) than those with out nephropathy. Logistic regression analysis showed that diabetes duration (p<0.0001), blood pressure (p=0.013), HbA1c (p=0.019) were independent risk factors for nephropathy.

6)Conclusion: Nephropathy is present in 51% of type 2 diabetic patients and is more prevalent in patients who has hypertension (>130/80 mm Hg), longer diabetes duration (24+-5 years), higher HbA1c (8.0+-1.0%) and higher B.M.I (>25).
DEVELOPMENT OF A CIRCADIAN REPORTER SYSTEM

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Circadian rhythm, which is regulated by the suprachiasmatic nucleus in the brain, is the internal clock that affects many biological processes. Critical to normal metabolism, disruption of the circadian cycle is thought to impact diverse pathogenic conditions, including tumorigenesis. The core circadian gene, mPER2, is expressed within individual SCN neurons and modulates circadian oscillations. In this study, a transfected reporter is developed by using a mPER2 plasmid containing promoter downstream green fluorescent protein to monitor rhythms in HEK 293 cells. We plan to further examine whether disruptions of circadian rhythm occur in breast cancer cells.
HIPPOCAMPAL DENTATE GYRUS ANESTHETIC-INDUCED APOPTOSIS IN MICE DOES NOT EFFECT CONTEXT PRE-EXPOSURE FACILITATION EFFECT

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Anesthesia is used to facilitate surgical and radiological procedures in millions of children every year, but has repeatedly been shown to cause extensive apoptotic cell death in developing and more recently mature animals. Despite overwhelming histological evidence that exposure to anesthesia can cause neuronal cell death, the clinical consequences of this phenomenon remain unknown. Previous studies have shown anesthetic exposure in postnatal day (PND) 21 mice caused extensive hippocampal dentate gyrus apoptosis. We used a hippocampal learning paradigm that isolates the hippocampus-dependent aspect of the fear conditioning task from context-shock association. Context Pre-exposure Facilitation Effect (CPFE) guarantees a focus on the hippocampus and is not confounded by the possibility of other neural systems maintaining behavior. Despite immunohistochemical staining evidence that showed significant neuronal cell damage, no significant CPFE behavior changes were detected. These results suggest 3 distinct possibilities: 1) That anesthesia-induced apoptosis at the observed level in the dentate gyrus does not cause a clinically significant learning deficit in rodents. 2) The clinical consequences of this neuronal destruction occur outside of our testing window or 3) CPFE is not sensitive enough to detect the clinical consequences of the anesthesia damage observed. Translating the combined results of different rodent testing paradigms and CPFE in particular, any clinical deficit or behavior change that may be caused in our pediatric population may likely be small and need a very specific and sensitive testing battery to detect.
CEREBRAL VASCULATURE AND COGNITIVE IMPAIRMENT IN ACUTE TRYPANOSOMA CRUZI INFECTION

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The brain is one of the most protected organs in the body, with a tightly regulated blood-brain barrier (BBB) system. Certain organisms, however, including Trypanosoma cruzi (T. cruzi), are able breach this selectively permeable unit especially in children and immunocompromised individuals. Damage to the cerebral vasculature is an important feature tied to neurological impairments in Chagas disease (CD). The vasoactive peptide, endothelin-1 (ET-1), has been shown to mediate BBB permeability, inflammation, and vascular tone, thus may be important in the pathogenesis of T. cruzi. ET-1 reduces the expression of angiopoietin-1 (Ang-1), a growth factor that promotes endothelial quiescence and expression of tight junction proteins responsible for maintaining BBB integrity. We postulate that ET-1 contributes to the pathogenesis of neuro-CD by disrupting BBB integrity and potentiating endothelial activation and inflammation. In this study, C57BL/6 mice were infected with trypomastigotes of the Tulahuen strain of T. cruzi to induce experimental CD. Cognitive function, degree of illness, and levels of inflammatory mediators were assessed in the brains of T. cruzi infected mice and controls. Acute CD caused an increase in parasitemia, which correlated with the level of illness as determined by a decrease in rapid murine coma and behavior scale (RMCBS); however, infection had no adverse effects on body weight or temperature. Object recognition and placement tests revealed significant impairments in the visual and spatial memory of infected mice. These cognitive deficits were associated with elevated levels of pro-inflammatory cytokine IL-1β and cell adhesion molecules, E-selectin, VCAM-1, and ICAM-1. Ang-1 has been shown to suppress these molecules on endothelial cells, whereas Ang-2 promotes their expression. qRT-PCR performed on whole brain homogenates revealed elevated levels of ET-1 in the brains of T. cruzi infected mice correlated with decreased Ang-1, resulting in an increased ratio of Ang-2 to Ang-1. An imbalance in the angiopoietin system illustrates endothelial dysfunction and cerebral vasculature disruption, which may contribute to the neurological impairments and activated endothelium observed in experimental CD. Further examination of the mechanistic basis of these observations, including the roles of endothelin and angiopoietin are warranted and should provide insight into adjunctive therapy to prevent neurological complications associated with neuro-CD.
AUDITORY NERVE IN ELECTROCOCHLEOGRAPHY

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Background: Meniere’s disease (MD) is a clinical diagnosis based on symptoms of tinnitus, vertigo, hearing loss, and fullness in the ears that affects many Americans. Its pathological correlate is endolymphatic hydrops (ELH), an excess of endolymph in the cochlea that distends the basilar membrane (BM) downward. Electrocochleography (ECochG), which measures electrical activity of the cochlea in response to sound, has been researched as a diagnostic tool for ELH. The clinical tools researched include the “SP/AP” ratio in response to click stimuli, and the SP evoked by a 1 kHz tone burst. However, their clinical effectiveness is controversial and further study is necessary. The source of the SP is thought to be hair cells, and its increase with ELH is due to a change in the operating point to a more asymmetric position. Recently, our lab showed that only the SP to clicks is purely a hair cell potential, while the SP to tones has both hair cell and neural components, denoted SP-hair cell (SPhc) and SP-neural (SPn).

Objective: Past studies on SP changes due to operating point, as in ELH, have used bias tones. These studies have not considered the role of neural responses. The purpose of this study was to perform bias tone experiments using the neurotoxin kainic acid (KA) to remove the SPn, and characterize its effect on the SP waveform. We hypothesized that only the SPhc would be a reliable reflection of the operating point.

Methods: In Mongolian gerbils, ECochG was performed at the round window before and after KA which removed the SPn. Presenting a low frequency bias tone stimulus onto the tympanic membrane, which distended the basilar membrane (BM) upwards and downwards, simulated ELH. Responses were recorded to tones and clicks of different frequency, intensity, and position along the bias waveform. Pre- and post-KA recordings were used to isolate hair cell and auditory nerve contributions.

Results: Responses differed pre- and post-KA to the 80 Hz bias tone indicating neural contribution. When tones are added to the bias, the KA had an effect. During the tones, the SPn decreases at each transition of the BM, but the response increases over time, suggesting a release from adaptation.

Conclusions: Kainic acid use shows that the SPn and SPhc both contribute to results using bias tones and the SPhc is a reliable reflection of the operating point. Better understanding of the sources of ECochG can help to interpret clinical tests for ELH associated with MD.
DETERMINING THE ROLE OF G-PROTEIN SIGNALING IN DROSOPHILA MIDGUT PERISTALSIS.

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Little is known about the mechanisms controlling digestive motility, the failure of which underlies a variety of conditions such as irritable bowel syndrome, chronic intestinal pseudo-obstruction and gastroparesis. D. Melanogaster is an excellent model for study due to its short generational time and elegant genetics. Based on previously published data, enteroendocrine cells play a role in intestinal peristalsis in Drosophila. Neuropeptides secreted by enteroendocrine cells may act via associated G-protein coupled receptors (GPCRs) to influence intestinal muscle movement. Given the significant homology between GPCRs in Drosophila and humans, identification of the role of these receptors in flies may lead to an increased understanding of human mechanisms. This could open the door to the eventual development of drugs targeting GPCR mechanisms in digestive disease.

In this experiment, the technique of RNA interference (RNAi) was used to block the expression of G-protein subunits in intestinal muscle of Drosophila using the Mef2 muscle-specific driver. Fly stocks carrying Mef2 and a temperature-sensitive gal80 repressor (gal80ts) were crossed to stocks carrying RNAi against specific genes for the common G-protein subunits α, β and γ. Wild-type yellow-white flies and flies carrying Mef2 alone were used as controls.

Digestion time and midgut contractility were compared across these mutant lines and against control groups using stool assays and observational dissections. Stool assays were performed using dyed food to measure time between ingestion and defecation. Flies with RNAi were compared to wild-type and Mef2 strains. Preliminary results are inconclusive, as RNAi flies had rapid intestinal transit, but there were not significant differences from the control group. Possible confounders may include influences by temperature, a weak RNAi construct or an insufficiently robust driver. Alternative protocols are being explored to overcome these barriers.
PHARMACOLOGICAL PROPERTIES OF MEDICINAL PLANTS IN THE DOMINICAN REPUBLIC

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In developing areas, most ailments are treated with medicinal plants. However, the healing properties of these plants have not been tested and likewise, the negative side effects of these medicinal plants remain untested. Thus, this research involves analyzing the pharmacological properties of five Dominican medicinal plants from the cities of Punta Cana and Higuey in the Dominican Republic. The five plants were chosen because they had reputed antihypertensive properties; however, antihypertensive properties were not tested because of a lack of time and available animal models at the research site. Nevertheless, other properties from these plants were assessed including anticancerous properties, antimicrobial properties, allelopathic properties, and antitumor properties. Preliminary results showed that all five plants possessed some potential medicinal properties. Future work should include repeating these pharmacological studies and carrying out similar studies in animal models.
THE ROLE OF LYSOSMAL DYSFUNCTION IN ATHEROSCLEROTIC MACROPHAGES

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Autophagy and its canonical role of recycling and degrading intracellular material has been shown to be a critical mediator of atherosclerosis. The cellular processes leading to a deficiency in autophagy in plaque development are currently unknown. Previous evidence suggests the lysosome as the causative agent in cell dysfunction after lipid assault. The role the autophagy-lysosomal pathway plays in macrophages, particularly foam cell macrophages, remains a mystery. The macrophage’s phagocytic capability is responsible for removing lipid from the vessel wall and its dysfunction is culpable in lipid accumulation as plaques develop. Our work shows that the lysosome is crucial to the macrophage in maintaining lipid flux in cells in vitro and in vivo. Specifically, LysoTracker Red intensity, measured by flow cytometry, gradually decreases as elicited peritoneal macrophages are loaded with atherogenic lipid (cholesterol crystal or oxidized LDL vs. acetylated LDL). Microscopy showing engorged lysosomes confirms an induced lysosome dysfunction as macrophages fail to process lipid adequately. Similar to the findings in lysosomal storage disorders, the activity of lysozymes alpha- and beta-glucosidase, beta-hexosaminidase, and beta-glucoronidase are increased in these macrophages. FACS analysis of aortic plaque macrophages (CD45+/CD64+) ex vivo from apoE-/- mice also show a decrease in LysoTracker intensity as compared to wild type littermates and resident macrophages from nonatherosclerotic tissues. The same cohort of lysosomal enzymes show a robust increase in activity in the apoE-/- aorta as compared to wild type. This data suggests that modulation of lysosome activity could be an attractive therapeutic aim. Induction of a lysosomal biogenesis program via overexpression of the transcription factor EB is accomplished via transgenic and lentiviral methods. Quantitative PCR and protein shows increased expression of downstream lysosomal markers. Macrophages with increased TFEB expression secrete less IL-1 beta and exhibit an increase in efflux of triturated cholesterol. These data show 1) that lysosomes are greatly impaired in atherosclerosis and 2) the inflammatory phenotype owing to their dysfunction can be decreased by a novel lysosomal biogenesis program.
PROJECT PARENTHOOD: EFFICACY OF EVIDENCE-BASED PARENTING AND SAFER SEX EDUCATION PROGRAM IN AN AT-RISK ADOLESCENT POPULATION

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Background: The CDC monitors 6 categories of “priority health-risk behaviors among youth and young adults” through the YRBSS, one of which is “sexual behaviors that contribute to unintended pregnancy and STDs, including HIV infection” (1). In a study conducted by the CDC regarding pregnancy and childbirth among adolescent females, the authors stated, “pregnancy and childbirth among females aged <20 years have been the subject of long-standing concern among the public, the public health community, and policy makers” (2). Further, Martinez et al. found that those between the ages of 15 and 24 represent about 25% of the “sexually experienced population” and they “acquire nearly one-half of all new STDs” (3). Objective: Project Parenthood was developed to support the growth of adolescent parenting education and to provide a resource for adolescent safer sex education and unplanned/repeat pregnancy prevention. Through evidence-based practices, the program promotes confidence in parenting abilities and fosters positive parent-parent and parent-child relationships in order to help young parents break the cycle of abuse and grow into psychologically healthy adults. Methods: Through the use of pre- and post-surveys, 3 variables were measured; knowledge, perspective, and skill, and survey questions were categorized as measuring 1 of the 3 variables. Survey data was aggregated to create a pre- and post-composite score for each variable. The % of questions that resulted in an increase, decrease, or no change in the average response was calculated for each variable. A paired t-test analysis was run to evaluate whether or not there was a significant change in pre- and post-survey composite scores for each variable. Results: 45 adolescents between the ages of 14 and 22 participated in at least 1 workshop within two 12-week cycles of workshops. Within question categories, 65% of questions resulted in an increase in knowledge, 50% resulted in a change from a faulty to an appropriate perspective, and 62% resulted in an increase in skill. The change in mean pre- and post-survey composite scores was positive for two of the three outcomes (knowledge: +1.82, p<0.01; perspective: 0.00, p=1.00; skills: +0.46, p=0.26). Conclusion: Project Parenthood improved participants’ knowledge and skill, but failed to improve faulty perspectives. A recommendation from these data is to focus on developing new and expanding existing parenting and safer sex education programs for adolescents.
SICKLE CELL DISEASE IN FLORIDA: GEOGRAPHIC DISPARITIES IN ACCESS TO CARE

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Background: Sickle Cell Disease (SCD) is most prevalent in people of African, Mediterranean, Middle Eastern, and Indian decent. The number of individuals diagnosed with SCD in Florida is unknown. Population estimates using contemporary birth cohort and disease prevalence data are needed to identify the prevalence of SCD in Florida. Without prevalence estimates, anticipation of health care service needs is difficult.

Methods: Univariate analysis was used to determine the distribution of SCD in Florida stratified by genotype, gender, race, and county. Kaplan-Meier survival curves were used to construct SCD life tables, which were compared to 2007 National Health Statistics life tables for the healthy Black and White population. Florida Newborn Screening data from 2009 was used to analyze health care access barriers.

Results: An estimated 8,374 to 14,236 African Americans (AA) are living with SCD in Florida. The 2009 AA incidence of SCD was 415 per 100,000 AA live births. From 2002 to 2009, 39% of SCD cases in Florida resided in large fringe metro counties; had abnormal hemoglobin for Sickle Cell (58%); were Black (82%), and Female (52%). Marked disparities in the number of SCD referral centers in comparison to SCD birth hospitals were detected. The number and distribution of SCD referral centers mediated major access to care barriers.

Conclusion: Florida counties with high prevalence of SCD (Palm Beach, Polk, and Leon) should address the lack of specialty healthcare services. Policies need to be implemented to help decrease healthcare cost and increase healthcare quality in high priority areas.
STUDENTS TEACHING ABOUT REAL SUBJECTS (STARS) PROGRAM

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Across the United States, rates of sexually transmitted diseases and pregnancy are high among adolescents, particularly those that belong to ethnic minority groups. In New York City, these disparities in sexually transmitted diseases as well as teen pregnancy are apparent. The CDC has reported interventions for at-risk adolescents that address aspects of the social and cultural conditions that affect sexual risk-taking behaviors are imperative. The Students Teaching About Real Subjects (STARS) Program was a pilot program in partnership between NYU School of Medicine and Bellevue Hospital’s School Based Clinic at Norman Thomas High School in New York City. The program is designed to educate female students about sexual health through participation in interactive workshops with a goal of preparing these students to serve as peer educators and ultimately lead to reductions in risk-taking behaviors.

Students attending Norman Thomas High School were actively recruited to participate in the STARS program. Since this health education program is compatible with aspects of the school’s physical education curriculum, students were able to attend the STARS program in lieu of gym class. Prior to the program, students completed a needs assessment to identify topics of interest to inform creation of the curriculum. Pre and post-tests measured knowledge acquired and collected qualitative observations and evaluations of each session.

The curriculum was completed and included 8 topics regarding sexual health and other topics requested by students. A total of 32 students were successfully recruited to join the STARS program. There was adequate retention of the students that were recruited into the program with 19 students attending 4 or more sessions. The average satisfaction with the STARS sessions was 4.5 out of 5, indicating high satisfaction with the program. Knowledge scores increased by 5% as measured by pre and post-test results. Lastly, 9 students indicated interest in educating peers about the information they obtained during the program.

The pilot of the STARS program was successfully created and implemented at a NYC public high school in partnership with a school-based health center. Future directions for the program include continuing the program, expanding the program to include more information, and fostering a well-developed peer mentor component. By request, a pilot of parallel boys group with a modified curriculum will also be created and implemented.
PATIENT EDUCATION ON HPV VACCINATION AMONG HEALTHCARE WORKERS IN NIGERIA

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BACKGROUND: Cervical cancer is the second most common type of cancer in women worldwide with over 500,000 new cases and 230,000 deaths per year. These deaths are largely preventable with a vaccine against the Human Papillomavirus (HPV), the causative agent of cervical cancer. Despite the availability of a vaccine, populations living in low to middle income countries often have limited access to and knowledge about HPV vaccination. Limited or inaccurate knowledge about cervical cancer and the HPV vaccine has also been documented among healthcare workers. Levels of awareness across different healthcare workers have not been previously investigated.

OBJECTIVE: To determine awareness of the HPV vaccination among healthcare workers. To assess the extent to which HPV vaccination is discussed with patients and barriers to discussion.

HYPOTHESIS: Physicians will be more likely to discuss HPV vaccination with patients than clinical nurses and community healthcare workers, but less likely than public health nurses.

METHODS: We conducted a prospective, observational study at an academic medical center, primary healthcare centers, and private hospitals in Ibadan, Nigeria. Subjects included physicians, clinical nurses, public health nurses, and community healthcare workers. Data were collected between May and June of 2014. Subjects were provided a self-administered questionnaire with questions related to HPV vaccination and cervical cancer.

RESULTS: Subjects were predominantly women (72.6%) of the Christian faith (88.4%) and completed university degrees (82.6%) with the mean age group 26-35 (42.3%). Of those surveyed, public health nurses were more aware of the vaccine’s availability and access (95.5%) while clinical nurses were the least likely (76.4%). Public health nurses were also the most likely to routinely discuss HPV vaccination with patients (81%) while physicians were the least likely (42%). Subjects cited lack of awareness of vaccine availability (25.0%), unfamiliarity with the vaccine (14.3%), and lack of time (11.9%) as barriers to discussion.

CONCLUSIONS: We found that public health nurses were most likely group to routinely discuss HPV vaccination while physicians were the least likely. Discussion of HPV vaccination with patients is limited by vaccine availability, unfamiliarity with the vaccine, and limited time during patient encounters. Our data suggests the need for policies regarding preventative medicine education among healthcare workers.
Socio-Demographic Differences in Clinical-Pathological Diagnoses of Breast Cancer in Mauritian Women

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Health disparities in female breast cancer diagnoses across the African continent are understudied. Nevertheless, prior studies have reported that African women were more likely to be diagnosed at an earlier age, higher grade, and advanced stage of breast cancer when compared to both European and American women. However, categorizing “African women” as a homogenous group may disguise the powerful, yet complex relationship between social structure and health. To date, few studies have evaluated the role of socio-demographic factors in female breast cancer prognoses among African subpopulations despite Africa being the most ethnically diverse continent in the world. We hypothesized that there will be significant differences between socio-demographics and clinical-pathological diagnoses of breast cancer in the Republic of Mauritius. Demographic, clinical, and pathological data from female patients who presented with an initial primary breast cancer diagnosis between January 2006 and December 2012 were analyzed. Data was collected from the hospital registries and pathology laboratory archives of four Mauritian regional hospitals. Socio-demographic factors on clinical-pathological characteristics of breast cancer were assessed by univariate and multivariate analyses. Among 1,521 women with primary breast cancer diagnosis, who were included in this analysis, 47% (n=715) were Hindu-Mauritian, 30% (n=461) were Creole-Mauritian, 20% (n=308) were Muslim-Mauritian, and 3% (n=34) were Sino-Mauritian. The mean age was 54.82 (SD =13; range 19-93). Patients reported residence from 10 geographic regions in Mauritius. Early versus late stage breast cancer was 39% (n=580) and 32% (n=426), respectively. Estrogen receptor (ER) positive and negative tumors were 42% (n=632) and 26% (n=394). Progesterone receptor (PR) positive and negative tumors were 41% (n=617) and 26% (n=402). There was a significant difference between ethnicity and geographic region (p=.001). A significant difference was found between geographic region and ER receptor status (p=.005), PR receptor status (p=.019), and receptor subtypes (p=.047). Our data suggest differences between socio-demographics and clinicopathological diagnoses of breast cancer among Mauritian women. Mauritian tumor characteristics of breast cancer may differ from breast cancer profiles in other African nations. The future of breast cancer research should consider the cultural, regional, and healthcare differences within the African continent.
THE DIVERSE SURGEONS' INITIATIVE: LONGITUDINAL ASSESSMENT OF A SUCCESSFUL NATIONAL PROGRAM.

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Background

The Diverse Surgeons Initiative (DSI) is a program that was created to provide underrepresented minority (URM) surgical residents with the clinical knowledge and minimally invasive surgical (MIS) skills necessary to excel in surgical residency and successfully transition into surgical practice. The early success of the graduates of the program was published, however a more longitudinal assessment of the program was suggested and warranted. This study provides a five year follow-up of the 76 physicians that participated in the DSI from 2002-2009 to determine if the trend towards fellowship placement and academic appointments persisted. Additionally, this extended evaluation yields an opportunity to further assess these young surgeons' professional progress and contributions to the field.

Study Design

The most current professional development and employment information was obtained for the 76 physicians that completed the DSI from 2002-2009. The percentage of DSI graduates completing surgical residency, obtaining subspecialty fellowships, attaining board certification, receiving fellowship in the American College of Surgeons, contributing to the peer-reviewed literature, acquiring academic faculty positions, and ascending to professional leadership roles were calculated and compared to the original assessment.

Results

Of the 76 DSI graduates 99% completed general surgery residency. Of those eligible, 87% completed subspecialty fellowships, 87% were board certified, 50% received fellowship in the American College of Surgeons, 76% had contributed to the peer-reviewed literature, 41% had obtained faculty positions, and 18% held local, regional, or national professional leadership positions.

Conclusions

This longitudinal analysis has revealed sustained success of the DSI in preparing URM residents to excel in their training and transition into practice, obtain postsurgical fellowships, acquire faculty appointments, and contribute to the advancement of the field of surgery.
OBSTETRIC, GYNECOLOGIC, AND MEDICAL NEEDS OF SURVIVORS OF SEX TRAFFICKING, SEXUAL VIOLENCE AND FEMALE GENITAL CUTTING

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Background: Annually, 800,000 women and girls globally are trafficked, with 14,500-17,500 of those victims transported into the United States. About 46% of the females trafficked worldwide are done so for the purpose of prostitution. The EMPOWER clinic for Survivors of Sex Trafficking and Sexual Violence at Gouverneur Health provides integrated psychiatric and gynecologic care to survivors of sex trafficking and sexual violence. This cohort provides a novel opportunity to investigate the gynecologic needs of women who have experienced sexual trauma, which is lacking in the current literature.

Objective: To describe the reproductive health needs of women enrolled in EMPOWER.

Methods: This is a retrospective cohort with chart review of electronic medical records from Gouverneur Health. Data was collected in a REDCap database and analyzed using Stata v13.

Results: Data was collected for a total of 51 female patients followed in the EMPOWER clinic. Demographically, 68.6% of the women are Spanish-speaking and 47.1% are from Mexico. The prevalence of prior physical, sexual or emotional abuse was 38.8%, 32.7%, and 26.5%, respectively. Prior psychiatric diagnoses were reported in 53.1% of patients. Of the women presenting to EMPOWER, 82.3% desired a routine exam, 7.8% were seeking family planning, 74.5% presented with specific symptoms and 9.8% with unplanned pregnancy. While 19.6 reported currently using an effective method of contraception, 31.7% with an unmet need for contraception accepted effective contraception at intake. Of the total cohort, 76.0% had a history of trafficking history with 91.9% of those trafficked for the purpose of sex work and 8.1% for labor.

Conclusions/Discussion: Most of the women presenting to EMPOWER are survivors of sex trafficking from Mexico or other Latin American countries, but there is a wide geographical range represented. Prior history of physical, sexual, or emotional abuse is common. There appears to be a high rate of unplanned pregnancy, as well as a high prevalence of past pregnancy complications and psychiatric diagnoses. While most requested a routine exam, the vast majority also had a specific symptom requiring evaluation. There is a high unmet need for contraception among this population, and although all undergo contraceptive counseling, uptake of effective contraception is still inadequate.

QUALITATIVE ANALYSIS OF THE EFFECTIVE TRANSFORMATION INTO HIGH-PERFORMING PATIENT- AND FAMILY-CENTERED MEDICAL HOMES

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Objective: To depict the experiences of practicing primary care providers who transformed their respective practices into high Medical Home Index (MHI) scoring PFCMH’s. The drivers, sustainers, and hindrances of transformation are explored through the reflections of 12 pediatric practices.

Methods: MHI scores of pre- and post-evaluations, conducted surrounding a two-year long PFCMH learning collaborative that focused on children with special health care needs, were used to select the 12 top performers out of 45 total medical home practices. Semi-structured interviews of various providers and staff took place at these 12 practices, which received between 2,000 and 7,000 visits per year. All interviews were recorded, transcribed, and entered into NVivo Software 9.0 before they were coded and kappa statistics were determined for emerging and predetermined themes.

Results: Practices that are privately owned, part of larger health care systems, and community health centers are represented while diverse geographic regions are considered. Kappa scores ranged from 0.81 to 0.94 for the medical home champion and from 0.81 to 0.95 for the care coordinator. Coding densities revealed three arching themes to arise as important to transformation: leadership, buy-in, and resources. The motivation for transformation into PFCMH’s incorporated medical home team ingenuity, funding to expand care coordinator positions, organizational changes, time allocation, and the adoption of electronic health records.

Final Recommendations: High-performing (according to MHI scores) PFCMH’s achieved and sustained their transformation through the implementation of specific care coordination concepts. These practices sought internal and external leadership support, built internal support from each represented role, promoted an open collaborative and innovative staff environment, and creatively utilized resources for supporting activities.
EXAMINATION OF BREAST CANCER RISK CALCULATOR

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In 2013, over 2 million women in the U.S had been diagnosed with breast cancer. Breast cancer, the result of abnormal growth of breast cells is a major public health concern. There are many factors associated with increased risk of breast cancer. However the mechanisms by which they act are complex. There have been many tools developed with the intent of predicting breast cancer. Personalized medicine, a new ideal in healthcare, includes a focus on understanding and incorporating risk to improve the healthcare of individuals. Risk factors for breast cancer include mutations in the BRCA1 or BRCA2 genes, and the amplification of a human epidermal growth factor receptor, HER2. Some of the other risk factors include age, race, breast density, age at menarche, and family history of breast cancer.

The goal of this project was to assess the accuracy of a publically available breast cancer risk calculator, which has never been validated. The breast cancer risk calculator is a tool on the National Cancer Institute website that considers only five variables (age, race, family history of breast cancer in a first degree relative, history of breast biopsies, and breast density) to predict breast cancer. An additional goal was to further assess the risk calculator on specific simulated US sub-populations. To do this, we first created a simulated population created from a publicly available dataset. Upon validation, we tested the accuracy of the calculator using R software. These results will provide evidence regarding the efficacy of a widely available tool in breast cancer prediction.
INTER-RATER RELIABILITY OF DISASTER TRIAGE METHODS IN THE PEDIATRIC POPULATION

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Background: In the event of a mass disaster, five algorithms with differing variables for victim categorization are available for pediatric triage. Subjective variables such as “minor injuries only” and “likely to survive” are used in the Sort, Assess, Life saving intervention, Treat and transport (SALT) triage algorithm. The remaining four algorithms: Simple Triage and Rapid Treatment (JumpSTART/START), CareFlight (CF), Sacco Triage Score (STM) and the Pediatric Triage Tape (PTT), use objective variables such as ability to ambulate, pulse, breathing, and mental status. No studies have compared the inter-rater agreement of these five algorithms in retrospective pediatric cases.

Objective: To compare inter-rater reliability of the five disaster triage algorithms when applied to retrospective pediatric trauma cases.

Methods: A retrospective chart review of 25 ED patients, less than 14 years of age, with varying severity of trauma, was collected from a single level one trauma center. Prehospital data was gathered for the use of triage, including: vital signs, palpable radial pulse, capillary refill, ambulation status, Glasgow Coma Scale, whether airway interventions were required, and all paramedic comments. A pediatric emergency medicine fellow (reviewer 1) and a first year medical student (reviewer 2) independently triaged all 25 patients in each algorithm. Inter-rater reliability was defined as percent agreement in triage level designation.

Results: Three of the five algorithms (CF, STM, and PTT) each had 100% agreement (25/25) in triage level designation. START had 96% agreement (24/25) and SALT had 80% agreement (20/25). Using the senior reviewer as gold standard, the disagreements consisted of 1 undertriage in START, 4 undertriages with SALT, and 1 overtriage with SALT.

Conclusion: Overall, inter-rater agreement was high, especially in CF, STM, PTT, and START. Algorithms with objective guidelines had the highest percent agreement of triage designation, irrespective of differences in medical knowledge between reviewers. Subjective criteria in triage design leads to increased variability in inter-rater reliability, as seen with SALT in our pilot study. Further studies with larger numbers of victims and scenarios are needed.
MACROPHAGE INDUCTION BY HIV

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The innate immune system is the first line of defense against viral infections in the human body. Cells of the innate & adaptive immune systems such as macrophages & CD4+ Tcells work to rid the body of viral infections. Importantly, the innate & adaptive immune systems can produce interferons to help control and rid the body of a viral infection. HIV has evolved to circumvent interferon interference from the innate & adaptive immune systems. Important to the macrophages & CD4+ Tcells are Toll like receptors (TLRs) and RIG-I like receptors (RLRs). Toll like receptors are found on the surface of macrophages & Tcells. RIG-I like receptors is found in the cytoplasm of macrophages and Tcells. This project will test to see what mechanisms that HIV use to bypass the affects of macrophages. The project will test specifically, which signaling pathway TLRs or RLRs are used.

Methods- Cell Culturing: THP1 human monocyte cell line was exposed to HIV lysates, which are lysed virions of HIV that have all the components of HIV but do not replicate. THP1 cells were grown in RPMI+10%FBS+1% Pen/Strep.

Stimulation: THP1 cells were exposed to HIV lysates either with lipofectamine or without. While the HIV lysate alone stays extracellular, Lipofectamine allows entry of the lysate into the cytoplasm. Samples were incubated for 24 hours before analysis.

Luciferase: A firefly luciferase reporter controlled by the HIV LTR was used. A Renilla luciferase reporter controlled by the SV40 promoter was used as a transfection efficiency reporter. Lucterase was read using a Promega Dual Luciferase Assay Kit by a Flo-Max Jr luminometer.

Results summary:

Three western blots where done:
1) First western blot -Phosphorylated IRF3 (contained six lanes)
   Lane 1- cells only (no lipofectamine or HIV lysate) showed no band
   Lane 2 – lipofectamine & cells (no HIV lysate) showed heavy band
   Lane 3 – HIV lysate & cells (no lipofectamine), showed light band
   Lane 4 – HIV Lysate, Lipofectamine & cells , showed no band
   Lane 5 – Poly IC with lipofectamine – showed lite band
   Lane 6 – Poly IC without lipofectamine – showed lite band

Conclusion: Macrophages May Use Only TLRs to Induce Interferons When Sensing HIV & Latent HIV in Macrophages Can be Induced by TLR Stimulation in Macrophages
EARLY DETECTION OF INTRAOPERATIVE STROKE IN PATIENTS UNDERGOING SURGERY FOR SYMPTOMATIC CAROTID STENOSIS.

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Background: Stroke is the leading cause of disability in the United States, resulting in more than 36 billion dollars each year in health care cost. Significant stenosis of the carotid arteries is a major risk factor for stroke. Carotid endarterectomy (CEA) is the gold-standard treatment, for patients with symptomatic carotid stenosis, to reduce the risk of cerebrovascular accident. However, studies have shown 2-3% of CEA cases result in ischemic insult. Intraoperative neurophysiological monitoring, with somatosensory evoked potential (SSEP), has been shown to be a valuable technique for determining the need for intraoperative shunting and allows for adequate assessment of perioperative ischemia. Our primary aim was to evaluate, via meta-analysis, whether changes in SSEPs during CEA are diagnostic for perioperative strokes.

Significance: Underrepresented minorities are more impacted by stroke than the major Caucasian population. Furthermore, African-Americans are twice as likely to die from stroke and their rate of first strokes is almost double that of Caucasians. SSEP can offer an avenue for prevention of intraoperative stroke.

Hypothesis: We hypothesize that intraoperative SSEP has diagnostic value for post-operative neurological outcome following carotid endarterectomy with significant sensitivity and specificity in comparison to the more commonly used electroencephalography (EEG).

Methods: Authors searched Pubmed/MEDLINE and World science database for reference lists of retrieved reports and/or experiments from January 1950 through January 2013 for studies on SSEP use for post-operative outcome after CEA for symptomatic carotid stenosis.

Results: SSEP change exhibited strong pooled average specificity 91% [86%, 94%] but a weaker pooled average sensitivity of 58% [49%, 68%]. A pooled diagnostic odds ratio for individual studies of patients with neurological deficit with changes in SSEPs was 14.39 [8.34-24.82], indicating that the odds of observing an SSEP change among those with neurologic deficit are 14 times higher than those without neurologic deficit.

Conclusion: Intraoperative SSEP is a highly specific test in predicting neurological outcome following carotid endarterectomy. Patients with perioperative neurological deficits are 14 times more likely to
have had changes in SSEPs during the procedure. The utilization of SSEPs to design prevention strategies can prove valuable in reducing perioperative cerebral infarctions during CEA.
STROKE IN THE YOUNG: PRELIMINARY RESULTS FOR TEMPORAL TRENDS IN STROKE INCIDENCE IN A LARGE BI-RACIAL POPULATION

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Background/Purpose: Stroke is a leading cause of death and long-term disability in industrialized countries. An estimated $36.5 billion is spent each year in the US on health care services, treatment, and lost wages from missed work due to stroke. If stroke in the young is on the rise, those costs may exorbitantly exceed what was previously predicted. The purpose of this study was to gain insight on trends of stroke in the young by race and explore correlates and causes that contribute to this phenomenon. Our hypothesis is stroke in the young has significantly increased over the last 20 years and is correlated with smoking and increased incidence of hypertension, diabetes, and hyperlipidemia simultaneously on the rise in the US.

Methods: All potential cases were retrospective and abstracted from electronic medical records. Cases with prospective symptom-based screening of admission logs and ICD-9 discharge diagnosis codes 430-436 were screened for selection. Trends in incidence rates were calculated for younger patients (ages 20-54) and older patients (ages ≥ 55). All cases came from a 5-county region of Greater Cincinnati, a bi-racial population of 1.3 million people. It is representative of the U.S. for age, percent of African American, median income and educational level. Study periods ranged from 1993-1994, 1999, 2005, and 2010.

Results: For all study periods, 7,760 stroke cases were discovered (56.5% women, 43.5% men, 19.22% black, 81.8% white). Incidence of stroke in the young (cases per at risk population) was 33 in 1994 and 63 in 2010, for both races (95% CI). Incidence in blacks ages 20-54 was 80 in 1994 and 123 in 2010 (54% increase, 95% CI), compared to 26 (1994) and 53 (2010) in whites (104% increase, 95% CI). High cholesterol presented in 9.6% of young stroke cases in 1994 and 28.1% in 2010 (p-value <0.0001). Self-reported young smokers at the time of the stroke accounted for 52.1% in 2010, up from 41.8% in 1994 (p-value 0.04). Incidence of hypertension increased by 10% and diabetes by 6% in young stroke cases for both races between 1994 and 2010.

Conclusion: Stroke in the young had more than a 50% increase in blacks and more than doubled in whites. The presence of comorbidities increased by 30% in the young of both races by 2010. The presence of hyperlipidemia nearly tripled and smoking increased by 10.3% by 2010, which may prove a stronger correlation than diabetes or hypertension. Further trend data will be studied to determine causality.
CHARACTERIZING CHICAGO AREA DIABETIC RETINOPATHY PATIENTS USING MULTI-CENTER ELECTRONIC MEDICAL RECORD DATA FROM UNDERSERVED AND ACADEMIC MEDICAL CENTER SETTINGS

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Background: Diabetes is the leading cause of blindness among United States (US) adults 40 years and older. Diabetes and diabetic complication rates have been shown to be higher in medically underserved populations. Gaining insight into diagnosis and ophthalmic care of minority, low-income, and uninsured patients will provide a further basis to effectively prevent, detect, and treat diabetic eye disease. We hypothesize that there will be variation in the frequency of diagnosis and treatment of diabetic retinopathy in patients based on their insurance status ("Medicaid/Financial Means Tested/Uninsured" vs "Medicare/Privately Insured").

Methods: The HealthLNK database was used to identify approximately 2 million unique patients who visited one of the participating institutions from 2006-2012. HealthLNK includes electronic medical record (EMR) data from 6 federally qualified health centers (FQHCs), and 6 hospitals, including 4 academic medical centers in the Chicago area. Diabetic patients were defined by having ICD-9 codes for diabetes (250.xx) and/or diabetic complications (357.2, 362.01-362.07, and 366.41). From this population, patients with diabetic retinopathy (362.0-362.10, 362.1, 362.10, 362.14, 362.16, 362.2, 364.42) were elucidated. Diabetic retinopathy patients with CPT codes related to diabetic retinopathy treatment (67015, 67025, 67028-67031, 67036, 67039-67043, 67105, 67108, 67113, 67210, 67227, 67228) were further categorized. Insurance status was also determined within each subgroup.

Results: Of the 1,933,082 patients in the HealthLNK database, 171,427 were identified as diabetics (representing a total prevalence of 8.9%). 12,014 patients had diabetic retinopathy (7.0% of diabetics). 2,143 patients had CPT codes related to diabetic retinopathy treatment (17.8% of all retinopaathy patients). There were differences in the prevalence of both diabetic retinopathy in diabetics (5.7% vs. 9.0%, p<0.01) and subsequent treatment (15.4% vs. 20.2%, p<0.01) when comparing "Medicaid/Financial Means Tested/Uninsured" vs. "Medicare/Privately Insured" patients.

Conclusions: The prevalence of diabetic retinopathy and procedures varied by insurance status, suggesting screening and treatment disparities may exist in this population. Future work will need to be done to elucidate the significance and reasons for these differences. This also work provides rationale for targeted screening and treatment strategies.
MFH AND HIGH-GRADE UNDIFFERENTIATED PLEOMORPHIC SARCOMA-WHAT’S IN A NAME?

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BACKGROUND AND OBJECTIVES:

In 2002, with the advent of better classification techniques, the World Health Organization declassified malignant fibrous histiocytoma (MFH) as a distinct histological entity in favor of the reclassified entity high-grade undifferentiated pleomorphic sarcoma (HGUPS). To date, no study has evaluated comparative outcomes between patients designated historically in the MFH group and those classified in the new HGUPS classification. Our goal was to determine the presence of clinical prognostic implications that have evolved with this new nomenclature.

METHODS:

Sixty-eight patients were retrospectively evaluated between January 1998 and December 2007. Forty-five patients diagnosed with MFH between 1998 and 2003 were compared to 23 patients in the HGUPS group, from 2004 to 2007. Primary prognostic outcomes assessed included overall survival, metastasis-free, and local recurrence-free survival.

RESULTS:

Five-year survivorship between MFH and HGUPS populations, using Kaplan-Meier or competing risk methods, did not show statistical difference for overall survival (60% vs. 74%, P = 0.36), 5-year metastasis-free survival (31% vs. 26%, P = 0.67), or local recurrence-free survival (13% vs. 16%, P = 0.62).

CONCLUSION:

Despite new classification nomenclature, there appears to be no identifiable prognostic implications for sarcomas that remain in the unclassifiable HGUPS group, as compared to the previously accepted MFH group.
Further education on risk factors for physical abuse in children is needed in the medical community

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Background: Any fracture present in a child that appears inconsistent with the story given in the history raises the index of suspicion for abuse, but there are particular types that are commonly associated with non-accidental injury. These fractures include “bucket-handle” of classic metaphyseal lesions (CML), rib fractures, and skull fractures.

Objective: To assess the knowledge of resident physicians on their ability to properly identify potential victims of physical abuse.

Design/Methods: Resident physicians currently training in the state of Michigan were surveyed with an electronic survey. Participants ranged in level of training from PGY1-PGY5 and are currently training in various fields of medicine. The electronic survey included questions relating to participant demographics, with additional questions identifying their knowledge on identifying victims of physical abuse. Specific focus was placed on infants less than one year of age that present with a fracture and what risk factors should lead physicians down a work-up for potential abuse.

Results: Preliminary results of our study show 25 survey responses including 17 males and 8 females from various residency programs including emergency medicine (11), radiology (8), pediatrics (3), orthopedic surgery (2), and medicine/pediatrics (1). Nine PGY-1s, eight PGY-2s, two PGY-3s, two PGY-4s, and four PGY-5s responded. Fifteen residents reported the largest predicting factor of child abuse as being of low socioeconomic status, and six residents reported it was related to parental drug use. Thirteen residents (52%) selected African-American as the ethnicity with the highest prevalence of child abuse. When asked to identify the top three fractures found in child abuse cases, residents selected: posterior rib fractures (20), skull fractures (13), CML (12), spiral (10), tibia/fibular fracture (7), anterior rib fracture (4), foot fracture (2), finger fracture (1).

Conclusions: Our data suggest that residents are misinformed of the ethnicity that has the highest prevalence of child abuse. Residents also are not certain of the three most common fractures of child abuse. While the vast majority of residents have treated patients of child abuse, they vary greatly in what they perceive their experience levels to be. This information will be useful in developing future curriculums in graduate medical education to improve teaching about the diagnosis and treatment of child abuse patients.
AN UNUSAL CASE OF MRSA PANNICULITIS IN A NEWBORN

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We present a case of a term 7 day old female with neonatal abstinence syndrome who presented with fever and lumbo-sacral erythema with methicillin-resistant staphylococcal aureus cellulitis and subsequent abscess development. Neonatal cellulitis commonly presents as facial, orbital, peri-orbital or retro-auricular cellulitis. These are usually a result of group B streptococcus (GBS) and group A streptococcal infection. Staphylococcal aureus has also been reported in cases of mammary cellulitis. Lumbo-sacral cellulitis related to MRSA is uncommon in this age group and may mimic subcutaneous fat necrosis. Appropriate work up and broad-spectrum antibiotic coverage should be introduced immediately in a febrile neonate with skin manifestations with index of suspicion for MRSA.
“TO FLIP OR NOT TO FLIP?” – THE EFFECT OF A “FLIPPED CLASSROOM” MODEL ON MEDICAL STUDENTS’ LEARNING OF CHILD DEVELOPMENT

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Research Mentor: Erica Shoemaker MD MPH, Keck School of Medicine, USC

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Introduction: Attendance at traditional lectures by pre-clinical medical students can be below 50%. This calls into question didactic lectures as a primary model of education for medical students and as a productive use of faculty time. The current generation of medical students is accustomed to learning from diverse sources – e.g. online text and videos. The flipped classroom model, whereby students self-teach information from paper or online materials, then engage in small-group activities that require them to apply their new knowledge, has been shown to be effective in undergraduate and graduate education; however, the effect of this teaching method in a medical setting is still sparse.

Objective: The aim of this study is to examine whether medical students learn and retain knowledge content better via a flipped classroom model.

Methods: This is a prospective crossover single-subject design study design. The content being examined is normal childhood development from infancy to adolescence. The entire span of child development was divided into two equal parts by content volume and difficulty. Module 1 (age 0-5) was delivered in a case-based format including a pre-session assignment of a 15-minute video on the fundamentals of child development. Module 2 (age 6-18) was delivered in a lecture format. A knowledge test was given to examine their content knowledge right before and right after the lesson. A 6-months follow-up test is scheduled to assess knowledge retention in April of 2015.

Results: 82 of the 189 students volunteered to participate. Paired-sample t-tests were conducted to examine differences in performance between the pretest and posttest on Module 1 and 2. Students scored significantly higher on Module 2 posttest (m=3.16, sd=.92) than pretest (m=1.80, sd=1.04) (t=9.575, df=81, p<.001). The difference achieved a large effect (d=1.39) as measured by Cohen’s d. Students also scored significantly higher on Module 1 posttest (m=2.87, sd=.91) than pretest (m=1.93, sd=.86) (t=7.209, df=81, p<.001). Although the difference has also achieved a large effect (d=1.06), it was slightly smaller than Module 2.

Discussion: It is not surprising that the lecture-based module achieved higher effect than the case-based module as the tests were given immediately after the lesson. We speculate that content learned in the case-based flipped classroom module will retain better than content learned in the lecture-based module when measured 6-months out.
POST-TRAUMATIC STRESS DISORDER AMONG ELDERLY MOTOR VEHICLE COLLISION VICTIMS RECEIVING CARE IN THE EMERGENCY DEPARTMENT: A PROSPECTIVE STUDY


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Introduction: Post-traumatic stress disorder (PTSD) is a common and preventable cause of disability and can occur following motor vehicle collision (MVC). MVC is the second most common mechanism of trauma among older adults, but little is known about PTSD after MVC in this population.

Objectives: We sought to characterize risk factors for and consequences of PTSD among older adults who received care and were discharged from an ED following MVC.

Methods: We conducted a prospective longitudinal study of adults aged 65 years or older who presented to one of eight US EDs following MVC and were discharged home. Participants were interviewed in the ED and then contacted by phone or mail 6 months following their ED visit. PTSD symptoms were assessed at 6 months using the Impact of Event Scale – Revised (IES-R); an IES-R score of 33 or more was used to identify participants with a high likelihood of having PTSD.

Results: Of the 136 participants who completed the 6-month interview, 40% (95% CI, 31%-47%) had an IES-R score of 33 or more. Individuals reporting moderate or severe vehicle damage, severe pain in the ED, and a perception that the MVC was life-threatening at the time of the ED evaluation were at increased risk for PTSD at 6 months. Participants with an IES-R score of 33 or more were at higher risk for functional decline and disability, persistent pain, and subsequent hospitalization related to the MVC (Nebolisa, Table).

Conclusion: In this sample of older adults discharged home following ED evaluation for MVC, PTSD symptoms at 6 months were common and associated with multiple important adverse health outcomes. Individuals at increased risk for PTSD could be identified using information available at the time of ED evaluation. Interventions to prevent PTSD in these patients may be of value.
THE QUANTITATIVE DEFINITION OF AIR TRAPPING DEPENDS ON THE QUALITY OF THE RESPIRATORY MANEUVER

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Background: The most important characteristics of intervention studies is the dependency of the response on the intervention (impulse). Cardiac stress studies are characterized as sufficient if a certain heart rate is reached. If not, a “normal” response has no diagnostic value. In the quantitative evaluation of air trapping with pulmonary volumetric CT, the distribution of lung densities in the inspiratory and expiratory segmented lungs are compared. In this study we present a solution for the effect of insufficient expiratory effort.

Data and analysis: The data is from 24 patients, who were studied 4 times over a period of 2 years. The goal was to obtain an inspiratory scan at near Vital Capacity (nVC) and expiratory scan at near Residual Volume (nRV) lung volumes respectively. However, there was variation in the respiratory effort. One of the measures of the respiratory effort is based on the upper 90th percentile density of the lungs in inspiration and expiration, and the difference (delta90 % density change in healthy lung average 51.5%±10.7 range 25%-68%). If one considers the measure of air trapping (A) as a function of delta90%, the linear regression is: A=58.9 - 0.92×Delta90%. A correction is then applied such that the corrected air trapping (Ac) is Ac = A – (58.9 – 0.92×Delta90%). The correction is considered valid if the variability for each patient for the four patient studies is decreased.

Results: The average variability of A of the 4 measurements was 7.099, but after the correction, the average variability of Ac was 2.83.

Discussion and conclusion: In this case the problem of impulse and response was complicated by the fact that a higher degree of air trapping would by necessity decrease the expiratory effort. But using the 90th percentile of the densities in inspiration and expiration restricts the measure to lung regions without air trapping. The correction works in as much as intra-patient variability is much reduced without affecting inter-patient variability.
RACIAL DISPARITY IN LOWER EXTREMITY REvascularization FOR CRITICAL LIMB ISCHEMIA

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Introduction: Prior reports have shown that African-Americans (AA) suffer worse outcomes after lower extremity revascularization when compared to Caucasians. The aim of this study is to investigate racial disparities in a contemporary cohort of patients who underwent open infrainguinal bypass surgery.

Methods: We conducted a retrospective cohort study of all patients who underwent open lower extremity revascularization surgeries performed for peripheral arterial disease using autogenous grafts between January 1st 2007 and July 31st 2014 at The Johns Hopkins Bayview Medical Center. We employed Kaplan-Meier and Cox regression analyses to evaluate graft failure. We defined outcomes as duration of primary patency, primary assisted patency, secondary patency, and resulting amputation using criteria of the Society for Vascular Surgery.

Results: There were 428 grafts placed in 368 patients in this cohort. Of these, 312 (73%) bypasses were placed in Caucasians, 100 (23%) in African-Americans (AA) or Black and 16 (4%) in persons who identified as other races. AA patients were younger (66 vs 68 years) and more likely to be female (AA: 65%; caucasian: 35%). AA patients were more likely to: be diabetic (74 vs 57%), hypertensive (96 vs 90%), to have renal disease (53% vs 34%) and be on dialysis (22 vs 10%). AA’s were also more likely to present with critical limb ischemia (84 vs 79%). There were 17(17%)amputations for failed bypasses in AAs and 32 (10%) in Caucasians. There is no significant difference in the patency comparing AA to Caucasians (table 1). The significant predictors of loss of patency were diabetes mellitus and hyperlipidemia (p<0.05).

Conclusion: Using our modern cohort of patients, we have shown no differences in outcomes between AA and Caucasians after open lower extremity revascularization. We believe that outcomes of racial minorities can be optimized and brought to par with their Caucasian counterparts with careful selection of conduits, comprehensive multidisciplinary surgical care, meticulous follow up and treatment of comorbidities.
<table>
<thead>
<tr>
<th>Outcome</th>
<th>Unadjusted</th>
<th>Adjusted HR</th>
<th>95% CI</th>
<th>P-value</th>
<th>HR</th>
<th>95% CI P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary patency</td>
<td>0.94</td>
<td>0.69-1.27</td>
<td>0.68</td>
<td>0.90</td>
<td>0.65-1.25</td>
<td>0.54</td>
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<tr>
<td>Primary assisted patency</td>
<td>1.17</td>
<td>0.83-1.63</td>
<td>0.37</td>
<td>1.12</td>
<td>0.79-1.59</td>
<td>0.53</td>
</tr>
<tr>
<td>Secondary patency</td>
<td>1.58</td>
<td>1.02-2.42</td>
<td>0.04</td>
<td>1.34</td>
<td>0.84-2.15</td>
<td>0.22</td>
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</table>
MOBILE PHONE AND INTERNET USE AMONG LOW INCOME AND HOMELESS POPULATIONS

Presenting Student: Jordan Rivera

Research Mentor: Jo Marie Reilly

Additional Coauthor: Paul Gregerson

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Background: The national focus on healthcare and technology has become the forefront of improved quality patient care since the implementation of the Affordable Care Act. Understanding patient access, attitudes, and socioeconomic barriers to information technologies (IT), can provide insight on developing strategies to engage populations on using patient portals. At the Center for Community Health (CCH), a clinic for indigent populations on Skid Row in downtown Los Angeles, little is known about the barriers impeding access to IT or use among socioeconomically disadvantaged individuals. We hypothesize that over 50% of the patients interviewed will have access to mobile phone technology, and of those, 50% or more will use their phones to access email. Moreover, less than 50% will have computer access, and of those 50% or more will know how to access the internet. Lastly, greater than 60% of the total patients will be interested in using a patient portal.

Objectives: To develop a validated questionnaire in multiple languages to fit the demographics of the target population and distribute to CCH patients.

Methodology: A qualitative study design with a 28-question survey was constructed in both English and Spanish and distributed over 5 weeks. Using a random number generator, choosing numbers corresponding to chairs in the waiting room between 1 and 25, data were collected and analyzed from one hundred patients.

Results: 77% of participants reported that if they had access to the internet and a patient portal, it would be utilized. 82% of participants reported having a cell phone with 61% knowing how to access the internet from their cell phones. 70% know how to access internet through a computer. 67% of patients reported having access to a computer, while 33% reported not having any access.

Conclusion: Despite the prevailing presumption that people experiencing homelessness lack methods of communication, this study indicates that mobile phone and internet technologies are available to homeless individuals. Only 13/100 patients had neither a cellphone nor access to a computer. Implementing the patient portal may stand to be a critical step for vulnerable populations given that there are patients with many high unmet needs and medical complexities. We recommend CCH collaborations with transitional housing programs on Skid Row, and offering hands-on technology lessons in the waiting room between patient appointments.
DISCLOSURE OF SEXUAL ORIENTATION/GENDER IDENTITY IN LGBTI PATIENTS

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Lesbian, gay, bisexual, transgender, intersex (LGBTI) individuals are at greater risk for worse health outcomes, but don’t always communicate their sexual orientation/gender identity with their doctor. We sought to determine what factors were associated with disclosure in this setting. METHODS: A prospective web-based survey was conducted to evaluate cancer-related issues in LGBTI populations. Analyses were performed using SPSS software v.22. RESULTS: Of the 542 LGBTI individuals in this survey, 72% disclosed their sexual orientation/gender identity to their doctor. Factors correlating with disclosure were older age (median 32 vs. 23, p<0.001), Caucasian race (75.3% vs. 57.0%, p<0.001), LG sexual orientation (75.3% vs. 51.3% for BTI, p<0.001), greater than high school education level (73.5% vs. 23.5%, p<0.001), and having a usual site of care (74.3% vs. 56.3%, p=0.003). Gender, ethnicity, income, insurance and region of residence were not correlated with disclosure. On multivariate analysis, increasing age (OR = 1.05, 95% CI: 1.03-1.07, p<0.001), LG sexual orientation (OR = 2.94, 95% CI: 1.72-5.02, p<0.001), greater than high school education (OR = 6.03, 95% CI: 1.78-20.41, p=0.004), and having a usual site of care (OR = 1.78, 95% CI: 1.02-3.10, p=0.043) remained significant factors associated with disclosure. Race, however, was no longer significant. DISCUSSION: Nearly three-quarters of patients disclose their sexual orientation/gender identity to their healthcare providers. However, younger patients who may be less well educated and who may not have a usual site of care, especially if bisexual or transgender, are less likely to share this information.
LIVES ARE AT STAKE: FINDING VULNERABLE PATIENTS LOST TO FOLLOW-UP

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BACKGROUND, PROBLEM, AND HYPOTHESIS

Losing patients to follow-up is a known challenge when studying long-term outcomes. Patient with greater health risks may be at higher risk for loss at follow-up, due to related factors: poverty, disability, employment, documentation, justice, and health status. By leaving these patients uncounted, researchers risk underestimating the prevalence of adverse outcomes, particularly in our most vulnerable populations. We addressed this challenge in a West Philadelphia emergency department population evaluated for acute coronary syndrome and monitored for long-term adverse cardiovascular outcomes. We hypothesized that lost-to-follow-up rate could be reduced by escalated outreach methods.

METHODS: Follow-up was conducted for a randomized controlled trial comparing coronary angiography to traditional care in emergency department patients with chest pain and monitoring one year outcomes for adverse cardiovascular events, including cardiac death or myocardial infarction. Patients not reached by phone within first month of one year follow-up period were designated for escalated outreach methods, including medical record search at local hospitals, public record search, daily phone calls, and unscheduled home visits. Primary outcome of this analysis was contact with patient, proxy, or records which confirmed incidence or absence of adverse cardiovascular events.

RESULTS: After one-year follow-up began, 187 patients were unreachable in the first month and designated for escalated outreach. For 59 patients (32%), follow-up was successfully obtained via unscheduled home visits. Twenty-five patients (13%) returned to enrollment institution. Twelve patients (6%) were located at other institutions. One patient (<1%) was determined deceased via Social Security Death Index. Seventy four patients (40%) were reached by phone between 14 months and two years post-enrollment. Escalated methods resulted in a 91% reduction of lost-to-follow-up rate from 187/982 (19% of total enrolled in trial) to 16/982 (1.6%).

CONCLUSION: Escalated efforts to reach lost-to-follow-up patients through novel measures are effective and can substantially improve follow-up rates. Home visits, despite occurring without advance notice to patient, had a high success rate (32%) in patients previously unreachable by phone. Given the importance of ascertaining outcomes in these vulnerable populations, home visits may be a crucial way of reaching lost patients.
**FILLING, AFFORDABLE AND NUTRITIOUS (FAN): AN INDIVIDUALIZED PROGRAM TO ASSIST POORER FAMILIES IN OBTAINING SUFFICIENT AND NUTRITIOUS FOOD AT A REASONABLE COST.**

*Donald Okoye, Robert J. Karp, Isabelle Bollendorf, Christian Ngo, Nessy Dahan, Rayana Johnson, Shikha Sheth, and Spiros Mancoridis*

SUNY Downstate Medical School, Brooklyn, New York

Background: It is difficult to construct filling, affordable and nutritious menu plans using the USDA-Low Cost Food Plan (LCFP) given the cost of nutrient dense fruits and vegetables; moreover, “food insecurity” (FI), a fear that desired food choices are not affordable, is common among the poor. A computer program, Filling, Affordable and Nutritious/Low-Cost Menu Selector (FAN/LCMS), creates a 7-day menu plan, with 3 meals and 2 snack per day, equating to 2,000 kcal, costing < $4.40, containing 400 μgm of folate and having 2 servings each of fruit, vegetable and dairy products.

Objectives Using the FAN/LCMS we sought to document 1) changes in food frequency selections of families enrolled in the intervention and 2) changes in prevalence of FI from baseline to follow-up.

Methods: A convenience sample of 90 families was enrolled in urban ambulatory care clinics. At baseline, food frequencies from NHANES for the 10 domains of the LCFP plus food choices likely to diminish the quality of the diet were provided by the adult giving the history. Menus were prepared from foods selected by the adult. Telephone follow-up was performed 5 to 7 weeks after baseline. We analyzed differences between food frequencies of baseline and follow-up using Wilcoxon Signed-Rank Test for Matched Pairs. Changes in FI were assessed with a two-tail Fisher's Exact Test for non-parametric data.

Results: Of the 90 baseline participants 42 (47%) responded to the follow-up interview. Food frequencies showed an increase in consumption of fresh vegetables (p<0.0001) and fruits (p=0.0006) and decrease for foods of low nutritional value (p=0.02), juice (p=0.02), bottled water (p<0.0001) and “fast food” (p=0.007). There were no significant changes for other food domains. At baseline 44% were FI and 56% were Food Secure (FS). At follow-up, 29% were FI and 71% were FS. (P = 0.0157)

Conclusion: This small study’s data show significant changes in food choices. However, a 53% of non-response rate after 5-7 weeks emphasizes the multiple obstacles to good nutrition among the poor in the United States. On a positive note, post-intervention families reported an increase in high nutrient content vegetable and fruit intake with decreases in food choices diminishing diet quality. Frequencies for staple foods were not reduced suggesting a sensitivity to food cost and value. This pilot study shows encouraging evidence of the benefit of the FAN/LCMS.
PERSONALITY TYPES AND LEARNING STYLES IN MEDICAL ADMISSIONS AND EDUCATION

METHODS FOR STUDY

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The American Academy of Family Physicians estimates that over 50,000 new Primary Care Physicians will be needed by 2025. It falls on Medical schools to supply these needs. Admissions policies must adapt to encourage the enrollment of more students likely to fill these rolls, and prepare a larger number of students for national board examinations. Personality types of medical professionals working in different specialties have been explored; however, the personality types of students admitted to and attending schools with different admissions policies has not. We plan on examining the effect of admissions process on personality trends in a class make up at Albany Medical College (AMC) as well as investigating other effects of personality and learning style on different aspects of performance and satisfaction in medical school.

In this study we will examine differences in personality type and learning style between students in consecutive classes that were subjected to different admissions processes. We will begin to study the interactions between effectiveness of and satisfaction with peer-based learning and personality types/learning styles. We will identify if personality type or learning styles correlates with performance on practical examinations.

We will use the Myers-Briggs Type Indicator (MBTI) and the Kolb’s Learning Style Inventory. In the group dynamics portion, we will assess group and pair satisfaction and functioning based on gross anatomy dissection groups. At AMC, six students are assigned per cadaver; two students are responsible for a dissection, and teaching that anatomy to the other students in the group. Our survey will be used to assess the satisfaction students have with their anatomy teams and their perceptions of their group functionality during peer-based learning sessions.

Using these tools we expect to be able to distinguish personality differences between the classes that may be due to the different admissions processes. These differences may reflect differences in the applicant pool for each year. We hope to shed light on how group interaction and teaching dynamics are affected by the personalities and learning styles of the individuals in each group, gathering data for possible future studies. Finally, we expect to get an idea if there is an advantage to performance on the practical exam associated with the different learning styles to better support and train the future doctors attending AMC, and other institutions.
DOES THE MEDICAL SCHOOL CURRICULUM PREPARE STUDENTS TO EFFECTIVELY COPE WITH THE CLINICAL YEARS OF MEDICAL SCHOOL?

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BACKGROUND: The long-term psychosocial well-being of a physician is important given their higher rates of mental illness, suicide, and chemical dependence [1]. Tools currently in place at David Geffen School of Medicine (DGSOM) to improve students’ preparedness for clinical years include problem based learning (PBL), which interweaves the application of knowledge and patient care [6], as well as, short transitional courses, designed to teach students how to work in multidisciplinary settings [10]. However, students still face similar difficulties to their counterparts, difficulty with adapting and utilizing clinical knowledge, insufficient time for studying and adjusting to the new cultural norms of third year rotations [6].

OBJECTIVE: To determine the most important system issues in the medical learning environment (MLE). To assess what medical schools can do to optimize the transition from pre-clinical to clinical years and determine issues associated with medical students’ well-being.

METHODS: A qualitative study based on grounded theory analysis with semi-structured in-depth individual interviews (n=12) with medical students that matriculate at UCLA DGSOM who have completed at least one clerkship rotation at an affiliated hospital.

RESULTS: Although there are numerous challenges medical students face during third year clerkships, our findings suggest a lack of clear expectations and clinical evaluation congruency. Additionally, although medical students perceive flaws within both the MLE and preparation for third year clerkships, there is an overall sense of complacency.

CONCLUSION: Recommendations that may improve the MLE: 1) fostering camaraderie within the medical class, 2) providing time for medical students to take care of personal/health matters during the weekday, 3) increasing upperclassmen involvement with clinical foundations and other third year preparation activities, 4) providing a clear understanding on the various teams and interdisciplinary roles within a hospital setting, 5) having clinical evaluations be reflective of student work 6) having clear expectations throughout clerkships.