MICHAEL S. ZAVADA, PH.D.
University of Texas of the Permian Basin
Dean of the College of Arts and Sciences

Michael S. Zavada, Ph.D., is Dean of the College of Arts and Sciences at the University of Texas of the Permian Basin. Dr. Zavada also is a professor in the Department of Biology at UTPB. He has been with UTPB since June 2015. He has a B.S. and M.S. from Arizona State University in Botany and Palynology. He also has a Ph.D. in Ecology-Evolutionary Biology from The University of Connecticut in Storrs in Connecticut. Dr. Zavada came to UTPB from Seton Hall University in Orange, New Jersey where he served as Dean of the College of Arts among other positions.

Dr. Zavada’s research interests include palynology, paleoecology, paleobotany, plant systematics, ethnobotany, origin and evolution of angiosperms and ecology.
Congratulations to all those presenting projects at the 2018 Research Forum. Your work and discoveries are so encouraging, well-earned and are greatly appreciated.

Natalia Schlarbitz-Lutsevich, M.D., Ph.D., is the regional dean for Research and associate professor in the Department of Obstetrics and Gynecology at TTUHSC at the Permian Basin. Dr. Schlabritz-Lutsevich’s international medical training began at the State School of Medicine in Minsk, Belarus, where she graduated Summa Cum Laude with her M.D. She then went on to pursue extensive research. After completing her medical training in Minsk, she was an assistant professor at the University of Tennessee Health Science Center in Memphis. She is board certified in obstetrics and gynecology in Belarus and Germany.

NATALIA SCHLABRITZ-LUTSEVICH, M.D., PH.D.
Associate Regional Dean for Research
Texas Tech University Health Sciences Center at the Permian Basin School of Medicine
Novel Synthesis of Aspernigrin
Ruiz, David
Faculty Mentor Dr. Samuel David

Excitotoxicity is a pathological process by which nerve cells are damaged or killed by excessive stimulation by excitatory neurotransmitters such as glutamate. It is thought to be involved in a wide range of neurodegenerative diseases. In this presentation, we propose a novel synthetic method to make aspernigrin. We also report our progress toward this synthesis.

Development of a nitrate/nitrite determination in salt water using an azo dye method to study the effects of titanium dioxide nanoparticles in the nitrogen cycle of Favites Pentagona Coral environment
Wood, Melissa
Faculty Mentor: Dr. Milka O. Montes

Titanium presence in aquatic environments comes from many sources including consumer goods and pigments such as food and cosmetic ingredients. In the marine environment, titanium dioxide nanoparticles (TiO2 NPs) have been shown to interact with other particles and cause various environmental effects. In this study, we developed a method to quantify nitrate and nitrite concentrations using an azo dye reaction with TiO2 NPs. The technique involved the formation of a diazotization reaction product, which was measured at 390 nm by UV-Vis spectrophotometry. The method of standard additions and least squares were used to produce a calibration curve with an R² = 0.9558. Preliminary results show nitrite concentrations of up to 10 ppm after 96 hours of exposure. Additionally, qualitative determination of titanium species in Favites Pentagona Coral tissues was achieved by scanning electron microscopy. A protocol for fixing live coral for SEM examination has been developed and tested with good results. Both the nitrate/nitrite quantification in seawater using UV/Vis and titanium determination using scanning electron microscopy will be applicable to many subdisciplines in the marine science and marine chemistry fields.
Religiosity and Fear of Death
Natividad, Josefina
Faculty Mentor: Dr. Kevin Harris

There have been many studies that have looked at the relationship between the fear of death and religiosity. Most of them will tell you that there is a negative correlation between religiosity and fear of death. The purpose of this study was to see what would happen if you manipulate the fear of death variable in participants. It was hypothesized that participants with a higher intrinsic religiosity would be less afraid of death even after watching the video. Methods: The participants took the Religious Orientation Scale (ROS) and the Colletta-Lester Fear of Death Scale (CLFODS). Then each participant was randomly assigned to one of two videos. One of the videos was used as the control and discussed the symptoms and treatment of bipolar disorder. The other video depicted natural disasters in real time and was intended to induce the fear of death in individuals. After they finished watching the video they took the CLFOD scale again to see if there was any change from their initial score. Results: The results are presented and discussed.

Green Synthesis of a Cross-linked Polymerized Hydrogel Containing NDHGA-Capped Gold Nanoparticles for Skin Lesion Treatment
Rugutt, Elizabeth
Faculty Mentor: Dr. Montez

Masoprocol, also known as nordihydroguaiaeric acid is an antineoplastic drug that inhibits skin growths and holds anti-inflammatory properties. Currently, methods for the development of skin treatment drugs that are ecofriendly, low cost, convenient and sustainable are imperative for such treatment increases. In this work, we aim to describe the synthesis of a cross-linked gold nanoparticle-polymer network, in a form of a protective hydrogel containing nordihydroguaiaeric acid extracted from the plant Larrea tridentata. The hydrogel was prepared via polymerization of acrylamide, polyethylene glycol dimeracrylate, poly vinyl alcohol, and Lithium-phenyl-2,4,6-trimethylbenzoylphosphinate. Nordihydroguaiaeric acid capped gold nanoparticles were synthesized and incorporated into the hydrogel to produce a wound dressing. The results demonstrate that metallic gold nanoparticles can readily integrate into a cross-linked polymer and function as a drug delivery system for the topical treatment of skin lesions.

11:30-12:30 Lunch Presentation | Brandon Lamarche, Ph.D., Senior Scientist, ACEA Biosciences Diverse Applications of xCELLigence Real-Time Cell Analysis: From Bacterial Biofilms to Parasitic Worms
12:30-1:30 Keynote Address | Dr. Afzal A. Siddiqui, M.D., Schistosomiasis Vaccine
1:30-1:45 Ritivij Satodiya, M.D., PGYII, Psychiatry, Chair of residents’ research subcommittee Posttraumatic Stress Disorder and Depression Symptom Severities are Differentially Associated with Hippocampal Subfield Volume Loss in Combat Veterans – Page 28
1:45-2:00 Michael Zavada, Ph.D., dean of Art and Sciences, UTPB Why In-House Research Forums
2:00-2:15 Daniela Pino, M.D., PGYII, Obstetrics & Gynecology Amenatal Evaluation by Ultrasound and Genetic Testing of Idiopathic Infantile Arterial Calcification with Placental Correlation – Page 16
2:15-2:30 Grace Kim, MSIII Anti-Inflammatory Effect of Endogenous Cannabinoid Anadamide in ex vivo model of the blood brain barrier – Page 23
2:30-2:45 Cristina Peron, M.D., PGYI, Family & Community Medicine Twenty-first Century Scary – Page 29
2:45-3:00 Break
3:00-3:15 Saranya Rajasekar, M.D., PGY I, Internal Medicine A Rare Cause of Emphysematous Gastritis: Sarcina Ventriculi – Page 24
3:30-3:45 Eugenia Bains, M.D., PGYII, Internal Medicine | A Blessing in Disguise: factors that cause a high blood pressure condition in pregnant women protect against breast cancer – Page 30
3:45-4:00 Nuvneet Khandelwal, MSIV The Effect of Self-Directed Meditation on Third Year Medical Students – Page 26
3:45-4:00 Closing Ceremony – Book reading by local writer Bob Campbell Monica’s Apples, The Floating Speck, Gerard Manley Hopkins, Elijah John the Baptist, Gideon’s Fleece, The Ghost Melchizedek, Billy the Kid’s Last Dance
4:15-4:30 Awards
FETAL HYPOGLYCEMIA STIMULATES EXPRESSION OF FETAL CEREBRAL GLUCOSE-SENSING CANNABINOID 1 RECEPTOR (CB1R)

Presented by: Vanessa Montoya-Uribe
Co-authors: Cun Li, M.D., Stacy Martinez, Juan Carlos Lopez-Alvarenga, M.D., Bobby Jain, M.D., Peter Nathanielsz, Ph.D.
Faculty Mentor Dr. Natalia Schlabritz-Lutsevich

IMaternal Nutrient Restriction (MNR) affects offspring’s (F1) behavior, including increased aggressive and affiliative behavior, low arousal, poor attention and persistence, and difficulty modulating activities. The endogenous cannabinoid system (eCS) plays an essential role in both metabolic and behavioral responses to nutritional stimuli. Cerebral temporal cortex (TC) is a target of exogenous cannabinoids. Discovery of splicing variants of CB1R has led to characterization of CB1a as a modulator in central cannabinoid signaling. The purpose of this study was to determine the fetal sex-specific nutritional regulation of CB1R and CB1a transcript variant in temporal cortex of a baboon model (Papio spp.) of MNR near term.

Methods: TC samples of control group [CTR; male (M) n=10; female (F) n=10], in which pregnant mothers were fed ad libitum, and MNR group [20% energy restriction (ER)] were analyzed using quantitative reverse transcription polymerase chain reaction (qRT-PCR). Primers were designed for all exons and introns of both CB1R and CB1a genes (Genbank: NM_003799 for CB1R and NM_003798 for CB1a) to ensure complete amplification and a novel assay for the identification of variants. The variables were normalized using a Van de Waerden method. A two way ANOVA for interactions was performed. Results: The CB1a expression did not differ between CTR and MNR. The CB1R expression showed large effect size (Eta2= 0.1779 is equivalent to Cohen-d= 0.93) and there was an interaction between sex and diet (p<0.05). Conclusion: Endogenous activation of CB1R may serve as a compensatory mechanism for caloric restriction-associated decreased insulin and glucose concentrations. Our data might explain the more variable and lower levels of persistence and attention in the MNR female.

Support: HD 21350

Defining Ambiguity: A Factor Analytic Study of Religious and Spiritual Lexicon

Moreland, Ashley
Faculty Mentor: Dr. Kevin Harris

Despite the expansive literature on the psychology of religion and spirituality, a unifying model of terms has yet to burgeon within the field. Harris and McCutcheon (2016) and the ROADS Delphi Study (unpublished) have identified 42 constructs from the current literature, and this study was designed to develop an item pool for the purpose of scale development using an exploratory factor analysis. The results substantiate that religiosity/spirituality is comprised of 5 levels: (5) awe, beliefs, cognition, conversion, crisis, culture, development, divine, doubt, emotions, faith, holy, identity, institution, journey, love, meaning, morality, motivation, negative valence, organization, personal experience, positive valence, practices, prayer, prejudice, purpose, relationship, religious conflict, religiousness, sacred, spirituality, transcendence, trust, unknown, and well-being; (4) beliefs, divine/transcendence, human experience, meaning/purpose, practices, and relationship; (3) Fowler’s (1981) stages of faith: imaginative, literal, group, individual, mystical, and sacrificial; (2) religiousness, spirituality, faith, and the sacred; and (1) r, or “meaningfulness.” Further research will focus on convergent and discriminant validity of the MIP with other established measures of religiosity and spirituality, in addition to developing a measure for the instrument.

Support: American Psychological Association and the Erasmus Fund at Texas A&M University.
Cultures and Politics: A Decline or A Rise?
Luna, Alyssa

Faculty Mentors: Dr. Mike Frawley and Dr. Roland Spickermann

Culture and politics go hand in hand when referencing a country in the Post War state. By taking a glance into Rome, Russia, North Korea, South Korea, and Germany, one can begin to understand how winning, losing, or being in a stalemate during a war can cause an effect directly related to the culture and/or the politics of that country. The following quotes and pictures can also be considered in regards to how the leaders of these respectable countries viewed and felt towards their countries. Another issue that can be brought to light is how these leaders reigned and what may have caused their countries to go to war in the first place.

Place of Residence and Mental Health: An Analysis of Risk Factors
Maurer, Sarah

Faculty Mentor Dian Jordan-Werhane

The U.S. reportedly spends more on health care than any other country in the world. Despite that fact, we rank well below other nations where the health of our citizens, both young and old, is concerned. Front page stories published in newspapers, magazines, and on social media outlets over the last several months have been riddled with issues related to mental health. Whether you are talking about mass shootings, increases in the use of opioid drugs, domestic abuse, or the exploitation of children, the outcome of “sick” thinking is easy to recognize.

In planning my social autopsy paper, I identified the lack of adequate access to mental health resources in our community as a significant problem for those suffering from depression, anxiety, eating disorders, substance abuse and much more. The further I began to observe the neighborhood I selected to analyze, the more I began to consider how someone’s place of residence might indeed contribute to the incidence of these problems. Grassland Estates, on the surface, appears to an idyllic upper-class neighborhood. However, driving the streets of this neighborhood, you have a feeling that isolation and loneliness could be the result of how the homes themselves are organized. I hypothesize that what appears to be a very stable neighborhood could be characterized by problems that could result in mental health issues.
Stress and depression in college student athletes vs. non-athletes

Gomez, Caitlin    Faculty Mentor: Dr. Kevin Harris

Stress can influence various aspects of our daily life. For a college student, stress can come from work, school, and family. For an athlete, stress can stem from school, pressure to perform well in practice and games, and a lack of socialization and quality time with family. In this study, I conducted a survey to compare the levels of stress and depression among college athletes and non-athletes. The results showed that athletes experience higher levels of stress and depression compared to non-athletes. This highlights the importance of addressing mental health in athletes to ensure they have a better quality of life. Keywords: athletes, stress, depression

Swearing, Depression, and Stress

Hernandez, Elizabeth   Faculty Mentor: Dr. Kevin Harris

The purpose of this study is to test the correlations between swearing and depression, and swearing and stress. Previous studies have shown that swearing can be linked to various negative outcomes such as aggression and mental health issues. In this study, I conducted a survey among college students to determine the relationship between these variables. The results showed a significant correlation between swearing and depression and stress. By conducting this study, I hope that the negative outlook on those who swear will begin to decrease.

Depositional Environment and sedimentary structures of the Grayburg formation, Midland

Lee, Brandon   Faculty Mentor: Sumit Verma

The core sample was drilled from a well in the Grayburg formation found in the Midland Basin, located between Midland and Odessa. The formation is known for its fossiliferous siltstones and mudstones. The depositional environment was inferred by analyzing the sedimentary structures and fossil evidence present in the core sample. The results showed that the formation was deposited in a shallow marine environment with a variedtidal influence. The exposure surfaces from the top of the core also proved this sequence to be true due to the types of fossils and grains present. The study also analyzed the sedimentary structures, which provided insights into the depositional processes and environments.

JUDGES

LAVI OUD, M.D. | Presentation Judging Chair
Dr. Oud is a professor of Medicine, chief of the Division of Pulmonary and Critical Care Medicine, director of Research in Internal Medicine, and director of Simulation-based training at Texas Tech University Health Sciences Center at the Permian Basin. Dr. Oud has been with TTUHSC at the Permian Basin since 1999.

NEERAJ A. KUMAR, PH.D., NCS
Dr. Kumar is the regional dean for the School of Health Professions at TTUHSC at the Permian Basin. He is a board certified specialist in neurologic physical therapy, and also the assistant program director of the DPT Program.

ALAN PEIRIS, M.D.
Dr. Peiris is the Myrick Myers Endowed chair in Geriatric Medicine and Chief of Geriatrics and a Professor in the Myrick Myers Entrepreneurship and Innovation Research Institute and the vice chair of Academic Affairs in the Department of Internal Medicine at TTUHSC in Lubbock.

BHARGAVI KOLA, M.D. | Department of Pediatrics Chair
Dr. Kola is the vice chair and an assistant professor in the Department of Pediatrics at TTUHSC at the Permian Basin. She studied medicine at Gandhi Medical College in Hyderabad, India.

QUENTIN SMITH, PH.D.
Dr. Smith is the vice president of Research at TTUHSC. He has received the Chancellor’s Council Distinguished Research Award, the Grower E. Murray Professorship, University Distinguished Professor and the President’s Excellence in Teaching Award. Dr. Smith has been vice president of Research since 2017.

ORAL PRESENTATIONS
REAL TIME DETECTION OF BACTERIAL BIOFILM GROWTH
Garcia, Jonathan, Williams, Roy Stacy Martinez, Andy West, MSIII (Faculty Mentors Dr. Natalia Schlabritz-Lutsevich and Dr. Gary Ventolini

Introduction: Since the discovery of link between bacterial aggregation and persistence of infection, the role of biofilm has been constantly refined. Traditional methods in evaluating biofilm formation are limited by the ability to visualize and record the dynamic phases of the biofilm cycle: attachment, colony formation, structural formation growth, and detachment; in a real-time setting. Development of the methods, allowing for targeting of these particular phases is critical for development of drugs, which modulate biofilm growth. The aim of this study was to visualize and document the dynamic phases of growth of our Lactobacillus plantarum utilizing the continuous-flow culture system method. Materials and methods. L. plantarum (Louis Pasteur Institute, Paris, France) was plated on MRS (De Man, Rogosa, and Sharpe) for 24 hours at 37°C. After 24 hours, a sample was taken for later DNA isolation and Q-PCR analysis. The remaining lawn was transferred to 50ml of MRS media and a spatula was submerged for a period of 1.5 hours. After 1.5 hours, the spatula was removed and placed in the continuous-flow culture system for periods of 24 hours and 48 hours. A peristaltic pump was utilized at 10 rpm to push fresh MRS media through the system and a mix of 95% oxygen and 5% CO2 was used to cycle the media through the system. Final biofilm growth was collected, weighted, flash frozen, and stored at -80°C. DNA isolation and Q-PCR was performed on the final biofilm growth. We designed the following L. plantarum specific primers: forward- TTAATTGAGTGTGGCGAAAC, reverse- CCAATGTGGCGAGTACCC. Growth was video-recorded and was quantified via Imaris 9 software (Bitplane, USA). Results. We were able to visualize and document the real-time growth and development of L. plantarum. The mean total final weight of the biofilm was 0.51±0.09 g for 24 hours (n=6), 3.41±0.26 g for 48 hours (n=6), the weight of the attached phase was 0.46±0.04 g (n=5), and the weight of the detached phase 3.13±0.34 g (n=5), (data are mean ± SEM). We were also able to quantify the dynamic growth phases of the biofilm formation during the 24 hour and 48 hour periods. Discussion and conclusion. For the first time the dynamics of the L. plantarum biofilm growth was documented in real time. This information could be important for development of the interventional strategies in vivo.
SPRS stands for Society for the Psychology of Religion and Spirituality, or division 36 from the American Psychology Association (APA). In psychology, the field of religiousness and spirituality is still a small field compared to others in psychology. There has been some research done on which terms have significance in religion and spirituality. However, it lacks the severity of the term to a participant. In this survey, it is hypothesized that some terms hold a different significance if the term connected with religiousness, spirituality, faith, or sacredness. In this survey, we will be using terms from two previous studies, the Defining Religiousness, Spirituality, Faith, and the Sacred: A Delphi Study and the ROADS Delphi Study. The participants will be given 36 terms and will rate these terms on a likertype scale from 1 to 7, 1 being not important to the participant to 7 being very important for the participant. The results from this survey will be prepared and discussed. This survey is important because the field is lacking important information on what is important to people in different areas. It is important to know that not all terms are important in all areas.

Technology has become an essential part to various fields of study and human life. With the possibilities that technology has provided to the world, it has introduced the issue and extreme topic of interest; Big Data. Big Data means a large or complex data set that may be analyzed or processed to reveal hidden patterns, correlations, trends, and other useful information. The simple analysis of historical data for this research is influenced from the study of Data Science and its complex real world problem solving machine learning algorithms.
Gender, Ethnic, and Mental Health Differences
Baltier, Yaritza
Faculty Mentor: Dr. Kevin Harris

Little research exists on gender, ethnic, and mental health differences in attention to detail specifically, but there is research that shows that some groups are more attentive and aware than other groups. It is predicted that women and minority individuals will score higher in attention to detail than men and Caucasian individuals. It is also predicted that those who have Autism Spectrum Disorders tend to have higher attention to detail than individuals without mental health diagnosis, who have higher attention to detail than those with ADHD. Methods: The study had participants go to the website Qualtrics. After reading and agreeing to an informed consent form, participants answered demographic questions. Then they completed the Baltier Sorting Task, which asks participants to look at 6 pairs of pictures and determine how many differences are present between the two pictures, as quickly as possible. Results: The results are presented and discussed. Discussion: Research on gender, ethnicity, and mental health and how it influences attention to detail may help us gain a better understanding of how attention interacts with other personal characteristics to influence behavior. It can also help to destigmatize inattention problems as variations of normal behavior rather than symptoms of psychopathology.

Defining Religiousness, Spirituality, Faith, and the Sacred: A Delphi Study
Baltier, Yaritza; McCutcheon, Evelena; Cummings, Jacqueline; Moreland, Ashley; Campbell, Kynnie
Faculty Mentor: Dr. Kevin Harris

Psychology of religion and spirituality has grown exponentially over the past four decades, but it lacks a consensus of standard definitions of key terms like religiousness, spirituality, faith, and the sacred. We conducted a Delphi Study of 12 leaders in the field of the psychology of religion and spirituality. Participants were asked to (1) give their professional definitions of these four key terms, (2) evaluate several proposed definitions of these terms, (3) rate the importance of 21 constructs to the definition of each term, and (4) give other comments which they believe are relevant to defining these terms or to definitional discourse in general. The Delphi Study first gave participants a survey and then held an online discussion of their responses by email, going through three “rounds” of data collection, in which participants were asked to give double-blind feedback on each other’s responses. The results will be presented and discussed. This Delphi Study is being conducted to validate a proposed Multilevel Interdisciplinary Paradigm for the field of the psychology of religion and spirituality.
Antenatal Evaluation by Ultrasound and Genetic Testing of Idiopathic Infantile Arterial Calcification with Placental Correlation

Presented by: Daniela Pino, M.D., PGY-II
Co-authors: James Maher, M.D., Stacy Martinez, M.S., Charles Burns, M.D., Natalia Schlabritz-Lutsevich, M.D., Ph.D., Marcel Chuecos, B.S.
Faculty Advisor: James Maher, M.D.
Department of Obstetrics and Gynecology

Introduction.
We describe the ultrasound findings and diagnostic workup along with placental pathologic correlates of a case with increased arterial echogenicity and fetal pericardial effusion on antenatal ultrasound, suspected to be from infantile idiopathic arterial calcification (IIAC).

Methods.
A 23-year-old, gravida 2, presented at 9 weeks by CRL. Ultrasound at 27 weeks demonstrated abnormal arterial echogenicity and elasticity. The ultrasound images were suspicious for IIAC. Amniocentesis was performed to evaluate karyotype. SNP Microarray was requested with attention for allelic homogeneity and coefficient of consanguinity. After delivery, Homo sapiens ectonucleotide pyrophosphatase/phosphodiesterase 1 (ENPP1), mRNA analysis was run on amniocytes and placental histopathology with calcium staining was performed.

Results.
At 27 weeks mild polyhydramnios, hepatic echogenicities and echogenic arterial branches from the aorta were seen. Doppler evaluation of the aorta and pulmonary arteries demonstrated echogenic arteries with decreased compliance and an abnormal flow velocity waveform, right ventricular hypertension, and large pericardial effusion. The middle cerebral artery was echogenic and had an abnormal waveform. The amniocentesis showed a normal karyotype. The SNP Microarray demonstrated normal ENPP1 expression in the amniocytes and no pathologic CNV. The placental histopathology demonstrated decidual vasculopathy with medial hypertrophy of the spiral arterioles, multiple infarcts with villous ischemia, dystrophic calcifications and microgranular calcifications around villous capillaries. The SNP Microarray demonstrated no pathologic CNV, but there were extended contiguous regions of allele homozygosity in multiple chromosomes with a coefficient of consanguinity calculated at >12%.

Conclusions.
The ultrasound images demonstrated abnormal arterial echogenicity strongly suspicious for IIAC. This rare, autosomal recessive, disorder affects the aortic and pulmonary arteries, causing systemic arterial hypertension and fetal pericardial effusion. The SNP Microarray confirmed our suspicions that this fetus was the result of a previously unsuspected consanguineous relationship. We were able to demonstrate, using SNP Microarray, multiple contiguous regions of allele homozygosity across many chromosomes which confirmed our suspicions that this fetus was the result of a previously unsuspected consanguineous relationship. We further evaluated the amniocytes using mRNA primers for ENPP1, to evaluate for deletions in the gene implicated in IIAC.
The identification of a synthetic intermediary: Silver nanoparticle synthesis

Researcher: Alec Loya   Mentor: Dr. Kyle Beran

Through collaborative efforts with Dr. Montes’s research group, we are collectively trying to identify the chemical substance that is responsible for causing a decrease in pH in the system during the synthesis of silver nanoparticles. At a certain point in the synthesis process, the pH of the system then increases. Therefore, it is hypothesized that silver and its interactions with hydroxide ions are responsible for this observed phenomenon. Semi-empirical theoretical models have been employed to extract chemical and physical parameters that are present in the silver hydroxide complexes, Ag(OH)n; n = 1–4. These parameters are then subsequently subjected to a higher-level theoretical model, Density Functional Theory, using the B3LYP functional and the 6-31G* basis set. The theoretical data collected provides information pertaining to the thermodynamic and vibrational properties of our silver hydroxide complexes. By comparing the vibrational spectrum of a variety of silver and hydroxide combinations to experimental spectra, we will be able to identify the silver hydroxide complex present during the nanoparticle synthetic process.

Scattered photon intensity as a tool to calibrate the size of Au and TiO2 nanoparticles

Researcher: Levi Ramirez   Mentor: Dr. Beran

The scattering of laser photons of various wavelengths is used to create a calibration curve that correlates the size of the nanoparticle to the intensity of the scattered light. Purchased solutions of gold nanoparticles of various sizes are subjected to laser light and the deflected photons are detected by monochromator. The resulting intensity of the collected photons, along with the size of the nanoparticle, are used to create a calibration curve. Initial analysis of the data indicate that the intensity of the collected photons increases exponentially with the increase in nanoparticle size. The experimental technique will also be applied to TiO2 nanoparticles, in which the nanoparticle powder is dispersed in an aqueous solvent. The TiO2 will enable not only the investigation of scattered photons to nanoparticle size, but also the assessment of the role that nanoparticle concentration plays in the relationship between intensity and size. Subsequently, the calibration curves for both the Au and TiO2 nanoparticle systems will be used to offer a quick and efficient technique with which the size of synthesized nanoparticles can be determined.

"Novel characterization of silver nanoparticles utilizing a laser system"

Researcher: Nick Hernandez   Mentor: Dr. Beran

Nanoparticle size is principle in determining the type and field of application, whether it be in medicine as a drug transport system, used in manufacturing and materials to kill bacteria, to clean up environmental pollution in ground water, and incorporating into energy and electronics used to create solar cells. The purpose of this research project is to utilize a laser system that will provide experimental evidence of the relationship between the intensity of scattered photons to nanoparticle size. The particle agglomeration (restabilization) of a nanoparticle suspension over time could be measured using this method and would determine the stability, usability, as well as help optimize the synthesis of the nanoparticles. Through this research an unknown nanoparticles’ composition and size will be identified through the creation of a calibration curve. The calibration curve will be created by measuring wavelength and scattering properties of known nanoparticles and their respective sizes through the implementation of a novel characterization technique employing a laser system.

The Role of Signal Induction Regulatory Protein-alpha (SIRP-a) in Hemophagocytic Syndrome

Presented by: Zakaria Hindi, M.D., PGY-III
Co-authors: Courtney Jarvis, M.D., Craig Spellman, Ph.D., D.O., Natalia Schlabritz-Lutsevich, M.D., Ph.D., Abdallah Gad, M.D., PGY-II, Talal Zahoor, M.D., PGY-II, Stephanie Filleur, Ph.D.
Faculty Advisor: Stephanie Filleur, Ph.D.
Department of Internal Medicine and Obstetrics and Gynecology, TTUHSC at the Permian Basin; Department of Urology, TTUHSC (lubbock)

"Dr. Hindi’s project was made possible by funding from the TTUHSC at the Permian Basin Regional Dean and the Research Advisory Committee"

Introduction. Macrophages are powerful phagocytic cells that are involved in inflammation and innate immune response. Macrophages are also involved in the red blood cells (RBCs) maturation process in the bone marrow, and their clearance by various mechanisms as well. The contact between macrophages and RBCs leads to activation of multiple signals to promote self recognition and inhibit phagocytosis. One of the most important signals is driven by the interaction between the Signal Induction Regulatory protein-alpha (SIRP-alpha) and the cluster differentiation 47 (CD 47), which is responsible for inhibition of RBCs phagocytosis. In case of uncontrolled activation of macrophages during inflammation, the condition may progress leading to hemophagocytic syndrome, which involves multi-organ failure and the phagocytosis of RBCs, platelets and white blood cells (WBCs). In our study, we hypothesized that RBCs phagocytosis in hemophagocytic syndrome occurs as a result of decreased expression of SIRP-alpha receptors in activated macrophages.

Methods/Materials. We used RAW 264.7 cells (murine macrophages) and CD 47 +/- murine RBCs. The macrophages were synchronized in G1 using Lipopolysaccharide/Interferon-gamma (LPS/IFN-gamma) combination and subsequently were treated with a Lipopolysaccharide/Interferon-gamma combination or hydroxyurea. For cell cycle analysis, SIRP-α expression assay and phagocytosis assay; macrophages were cultured in both serum free media (SFM) and complete media (CM) to differentiate between stressed and non-stressed macrophages. RBCs were treated with Anti-CD47 Ab (Ab) to assess the presence of CD47 before phagocytosis; trypan blue stain to confirm their viability before phagocytosis and with cell tracker to trace them after phagocytosis.

Results. After synchronization of the macrophages in G1 with PMA, we found that rates of SIRP-α expression and phagocytosis were generally higher in SFM compared to CM conditions and has the highest rate being the SFM condition treated with LPS/IFN-gamma combination. To know whether these findings were dependent on cell cycle synchronization, we synchronized macrophages with hydroxyurea. The results showed that phagocytosis rate was increased although SIRP-α receptors expression rate was the lowest compared with other treatment conditions. We found that phagocytosis rate decreased significantly in the CM condition treated with Anti-CD47 Ab (Ab) to assess the presence of CD47 before phagocytosis; trypan blue stain to confirm their viability before phagocytosis and with cell tracker to trace them after phagocytosis.

Conclusion. Our understanding based on the result is that hemophagocytic syndrome may occur when macrophages lose their ability to recognize foreign cells from self-cells. Self-recognition receptors like SIRP-a, when interacts with CD 47, can normally inhibit phagocytosis during non-inflammation settings. However, in the presence of macrophages stressors, SIRP-a expression increased and can become pro-phagocytic. Moreover, blocking SIRP-a receptor during activation led to decreased phagocytic activity against RBCs.

Novel characterization of silver nanoparticles utilizing a laser system

Researcher: Nick Hernandez   Mentor: Dr. Beran

Nanoparticle size is principle in determining the type and field of application, whether it be in medicine as a drug transport system, used in manufacturing and materials to kill bacteria, to clean up environmental pollution in ground water, and incorporating into energy and electronics used to create solar cells. The purpose of this research project is to utilize a laser system that will provide experimental evidence of the relationship between the intensity of scattered photons to nanoparticle size. The particle agglomeration (restabilization) of a nanoparticle suspension over time could be measured using this method and would determine the stability, usability, as well as help optimize the synthesis of the nanoparticles. Through this research an unknown nanoparticles’ composition and size will be identified through the creation of a calibration curve. The calibration curve will be created by measuring wavelength and scattering properties of known nanoparticles and their respective sizes through the implementation of a novel characterization technique employing a laser system.

"Novel characterization of silver nanoparticles utilizing a laser system"
Bacterial species Identification and Differentiation from Patients with Dermatophyte associated Onychomycosis

Researchers: Jonathan Gomez Garcia
Mentor: Tara Deaver, DPM

Introduction:
Dermatophytes cause a host of medical issues for patients. These species are fastidious and cause long term medical issues. These problems are exacerbated by secondary bacterial infections that take over once the fungal infection has been placed in check. Modern day treatments for these infections, such as onychomycosis, are very costly and the course of treatment can last many months, even years.

The aim of the study:
To identify the bacterial species that are associated with the dermatophyte growth on the patients' nail samples. Once these bacterial species are grown and isolated, they will be differentiated by selective and differential biochemical testing to give a narrower range of bacterial species in the community.

Materials and methods:
Nail samples were obtained by Texas Tech patients and placed in freezer for later use. Nail samples were streaked and embedded in nutrient agar plates for 24 hours at 37˚C. After 24 hours a colony transfer was completed and plated on a fresh nutrient agar plate for 24 hours at 37˚C. Preliminary biochemical testing included: gram staining, blood agar test, and MacConkey agar test.

Results and discussion:
Preliminary results have shown a majority of gram positive bacteria (n=11). Given the MacConkey results, further testing to differentiate the gram-positive bacteria is warranted. Being able to identify the bacterial species associated with this condition will allow healthcare providers to tailor their treatment approaches for more successful outcomes.

Physical Activity Behaviors in College Students

Researcher: Ayra Monica Cirilo
Mentor: Dr. Robyn Braun

Physical activity (PA) is a vital health behavior for individuals of all ages. PA may reduce the risk of cardiovascular disease, obesity, type II diabetes, and colorectal cancer. The American College of Sports Medicine (2009) recommends adults aim for at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity cardiovascular PA per week along with resistance training involving all muscle groups on two or more days per week. Approximately 50% of college students do not meet the minimum recommendations for PA according to the American College Health Association National College Health Assessment II (ACHA-NCHA II) Report. This research examines the barriers to PA. Therefore, the purpose of the study is to determine current level of PA, motivational factors to engage in PA, and identify perceived barriers in college students, specifically at The University of Texas of the Permian Basin. Results and implications from this study will be discussed. Dependent on the findings, various interventions can be developed for the varied needs of a diverse student population as it pertains to physical activity participation.

Ingestion of Excised HPV-Infected Epithelium Leads to Resolution of Treatment Refractory Verrucae in Two Patients: A Case Report

Presented by: Brady Miller, MSIII
Co-authors: Joel Dennison, MSIII, Jessica Shriver, MSIII, Dwayne Miller, MSIII

Background:
Verrucae vulgaris, or common warts, are hyperkeratotic skin lesions caused by infection of keratinocytes by human papillomavirus (HPV). Common non-genital warts often regress spontaneously, although resolution is notoriously slow and treatment is difficult with frequent recurrence. The basis for many currently accepted treatment regimens is activation of a cell-mediated immune response that directly targets HPV-infected cells.

Case:
The first patient was a 45-year-old male with a long-standing history of warts on his feet and knees that were refractory to numerous different treatment options. After presenting years later complaining of discomfort on follow-up two months later no warts were observed on his hands and he reports no recurrence 6 months after follow-up.

Conclusions:
The introduction of HPV-infected epithelial tissue to the GI tract may provide a means for mounting an effective systemic immune response against treatment-resistant verrucae. Demonstrating efficacy in clinical trials could provide convincing evidence that would offer an additional therapeutic option for patients with common warts.
Gray Matter Thickness as a Possible Predictor for Reading Ability
Researchers: Jules Hollon
Mentor: Dr. Emily A. Farris

Developmental dyslexia is a neurobiological disorder characterized by difficulties with word recognition and word decoding during reading which leads to a negative impact on reading comprehension (Lyon, Shaywitz, & Shaywitz, 2003). Previous research has shown that children's reading skills are related to regional differences in the size and functioning of distributed brain regions, suggesting that such neuroimaging data may eventually be used to predict the presence of dyslexia and response to intervention (Farris et al., 2016; Hoeft et al., 2007). In terms of brain structures, greater gray matter volumes in right fusiform gyrus and greater white matter density in left superior temporal and inferior parietal regions were associated with better pseudoword decoding scores obtained one year after the brain images (Hoeft et al., 2007). Furthermore, greater gray matter volumes in left posterior temporal areas are observed in children and adults with reading difficulties as compared to age-matched typical reading peers (Martin et al., 2015; Richlan et al., 2012). Previous research has consistently found that children with dyslexia have reduced gray matter volume and thinner cortex than typical readers, especially in the right orbitofrontal, left anterior cingulate, left superior parietal, and right medial parietal cortices (William et al., 2017). The current project seeks to expand on studies comparing cortical thickness measures between individuals with and without reading difficulties to include such measures in models predicting variation in reading skill measured concurrently or later such as the analyses conducted by Farris et al. (2016). Structural magnetic resonance imaging data were collected and processing to obtain measures of cortical thickness is ongoing in a sample of 6- to 14-year-old children who have a wide variety of reading skills. It is hypothesized that cortical thickness measures in the left temporal parietal regions will be positively related to single word reading skills. Current analyses are ongoing and could be used along with related studies to provide evidence for the use of cognitive neuroscience measures as neurobiological markers of reading difficulties. This would aid in identifying which children could benefit the most from early reading intervention efforts.

Real time detection of bacterial biofilm growth
Presented by: Jonathan Gomez Garcia MBA, Roy Williams BS,
Co-authors: Andrew West MS III, Stacy Martinez MS,
Natalia Schlabritz-Lutsevich MD, PhD and Gary Ventolini MD
UTPB, Department of Biology and
TTUHSC at the Permian Basin, Department of Obstetrics and Gynecology
Faculty Advisor: Gary Ventolini MD

Introduction: Since the discovery of link between bacterial aggregation and persistence of infection, the role of biofilm has been constantly refined. Traditional methods in evaluating biofilm formation are limited by the ability to visualize and record the dynamic phases of the biofilm cycle: attachment, colony formation, structural formation growth, and detachment- in a real-time setting. Development of the methods, allowing for targeting of these particular phases is critical for development of drugs, which modulate biofilm growth.

The aim of this study was to visualize and document the dynamic phases of growth of our Lactobacillus plantarum utilizing the continuous-flow culture system method.

Materials and methods. L. plantarum (Louis Pasteur Institute, Paris, France) was plated on MRS (De Man, Rogosa, and Sharpe) for 24 hours at 37°C. After 24 hours, a sample was taken for later DNA isolation and Q-PCR analysis. The remaining lawn was transferred to 50ml of MRS media and a spatula was submerged for a period of 1.5 hours. After 1.5 hours, the spatula was removed and placed in the continuous-flow culture system for periods of 24 hours and 48 hours. A peristaltic pump was utilized at 10 rpm to push fresh MRS media through the system and a mix of 95% oxygen and 5% CO2 was used to cycle the media through the system. Final biofilm growth was collected, weighted, flash frozen, and stored at -80°C. DNA isolation and Q-PCR was performed on the final biofilm growth.

We designed the following L. plantarum specific primers: forward- TTAGATTTGAGTGAGTGGCGAACT , reverse- CCCAATGTGGCCGATTACC. Growth was video-recorded and was quantified via Imaris 9 software (Bitplane, USA).

Results. We were able to visualize and document the real-time growth and development of L. plantarum. The mean total final weight of the biofilm was 0.51 ± .09 g for 24 hours (n=6), 3.41±0.26 g for 48 hours (n=6), the weight of the detached phase was .46 ± 0.04 g (n=5), and the weight of the detached phase 3.13 ± .34 g (n=5), (data are mean ± SEM). We were also able to quantify the dynamic growth phases of the biofilm formation during the 24 hour and 48 hour periods.

Discussion and conclusion. For the first time the dynamics of the L. plantarum biofilm growth was documented in real time. This information could be important for development of the interventional strategies in vivo.
Multiple-choice testing is used often in the academic setting and can both assess knowledge and increase learning. Sometimes individual's performance on later tests is higher because they received practice with the items on an earlier test. The examiner's feedback and the nature of the feedback have been shown to increase the size of such positive testing effects. A related effect is hypercorrection. This occurs when a tester provides an incorrect answer with high confidence, is corrected with feedback, and then responds correctly when the item is repeated on a subsequent test. In the current study participants read passages, and then marked their answers on a test. After answering each question the participants provided a confidence rating. It is hypothesized that participants given feedback in the form of the correct answer, or a second chance followed by the correct answer, will have increased confidence in the second test and will be more likely to provide a correct answer on the second test to questions that they initially got wrong with high confidence than participants who received other types of feedback. This hypercorrection effect is more likely to occur when the second test immediately follows the first, as opposed to when there is a substantial delay between the tests. Data analysis is ongoing. If the hypotheses are supported, it may influence the type of feedback professors provide to students and the timing in which feedback is given so that retention of knowledge is increased for future exams.

Measurement and analysis of the rate of subsidence near Winkler County sinkholes using high precision GPS

Researchers: Ganna Yermolenko, Taiwo Taiwo and Christopher King

Mentors: Dr. Sumit Verma and Dr. Robert Trentham

Winkler County, Texas is home to two sinkholes that formed in 1980 and 2002, with the formation of the sinkholes there due to the formation of Cenozoic Alluvium which filled in the sinkhole. The surface deformations are a concern for the infrastructure in the surrounding area. Using a high precision GPS to record the elevation change over time for the area East of the second sinkhole, where the most sagging has occurred, it is possible to monitor the subsidence of the ground. The data is analyzed to determine the rate of subsidence and to predict future sinkhole activity.

Tissue Histogram Intensity of Fetal Liver and Reference Organs in Lean Pregnant Women

Presented by: Elsa Parra, MSIII

Co-authors: James Maher, M.D., Natalia Schlabritz-Lutsevich, M.D., Ph.D., Phillip Watkins, MS, Moss Hampton, M.D., John Myers, MSIII

Faculty Advisor: James Maher, M.D.

Department of Obstetrics and Gynecology

Objectives. The average tissue intensity of the fetal liver and other reference organs was measured using the utility "tissue histogram" in non-obese (BMI 19-25 kg/m²), non-diabetic pregnant women with normal weight gain during pregnancy.

Methods. Twenty-three patients between 18 and 40 years old, with a singleton, non-anomalous fetus between 32.1 and 38.5 gestational weeks were scanned. At least 3 images demonstrating the fetal liver and a reference organ were obtained. The "tissue histogram" was used to measure the signal intensity of the fetal liver and reference organs. The "region of interest" (ROI) box was placed to avoid acoustic artifacts and sample window overlap.

Results. Signal intensity mean values varied on the same fetus from one image to the next image necessitating the fetal liver and reference organ be in the same image to calculate a ratio. Repeated measure ANOVA showed Probe frequency and fetal orientation were both significant factors (F=9.8, P=.002) in the liver measures between patients. GLM with random subject effects suggests that the combination of orientation and reference organ has a marked effect (F=91.7, P < .0001) on the SHRR, while Gestational age was not a significant factor (F=.05, P=.891). Univariate analysis of the reference organs suggests that axial spleen (1.01±0.15) and sagittal lung (0.87±0.17) had the least variance. The adrenal and kidney were difficult to image and heterogeneous yielding higher variances.

Conclusions. The lung and spleen showed the least variation when used as a reference organ on repeated sampling in the same fetus, and therefore are better reference organs than fetal kidneys for calculating a ratio in utero. Since fetal orientation is a significant factor in the liver histogram intensity, and gestational age was not a significant factor, the lung can serve as a good reference organ if the fetus is in a sagittal position. The fetal spleen is the best reference organ in an axial orientation.
Studying the Effect of Corticosterone on Prolonging Cell Survival Chemistry
Researcher: Alex Yashchenko  Mentor: Dr. Samuel David
This project was envisioned to determine if a certain enzyme (serum and glucocorticoid inducible kinase-SGK) is capable of interacting and changing the phosphorylation state of enzymes involved in cell survival. We show some preliminary results in our investigation. We have isolated and purified plasmids and were able to transfect cells with the plasmids and monitor gene expression. These results show that our methodology is working.

Exploring the role of shy and bold personality types in social dominance status and mate choice in a monogamous, pair bonding fish (Amatitlania siquia)
Researcher: Ashley Merkel  Mentor: Dr. Kim Little
The behaviors of a pair-bonding fish were examined to determine how individual social status and mating preferences might be related to exploratory boldness (“personality”) in males and females. Convict cichlids (Amatitlania siquia) exhibit individual differences in exploratory behavior and also establish dominance relationships in groups. The project encompassed two experiments; for the first, individuals were video recorded to determine “personality type” (bold or shy) and then placed within size-matched, same-sex groups to assess social dominance status. For the second experiment, individuals were screened for personality type and offered as potential mates; for male-choice tests, two size-matched females with opposing levels of boldness were placed with a male (who had also been assessed for personality). The same procedure was repeated but with sexes reversed to examine female choice. Preliminary results indicate that exploratory boldness may predict social status in both males and females, with bolder individuals typically being dominant.

Examining one’s ability to thrive in transgender and gender-nonconforming sample
Researcher: Zana Guest  Mentor: Dr. Jamie Hughes
Meta-perceptions, appearance congruence, discrimination, and subjective well-being were studied in transgender and gender non-conforming (TGNc) samples. Transgender men, transgender women, and gender non-conforming individuals completed a survey with questions relating to their experiences with heterosexist discrimination, rejection, and harassment, their meta-perceptions of dehumanization, and their emotional, social, and psychological well-being. Transgender men and gender non-conforming men reported more discrimination, more feelings of dehumanization, and were more afraid of public places than transgender women. Meta-prejudice mediated the relationship between discriminatory experiences and subjective well-being, while appearance congruence and meta-dehumanization did not. The discussion considers the implications of these results on future research.

Maternal cardiovascular echocardiographic structure and function in obese and non-obese pregnant women in the first trimester of pregnancy
Presented by: Katherine Shreyder, MD, PhD
Co-authors: Elsa Parra MSIII, Hanna Kodeih D.O., Daniela Pino M.D., M.D. Faculty Advisor: Natalia Schlhabritz-Lutsevich M.D., Ph.D. Departments of Internal Medicine and Obstetrics and Gynecology  Dr. Shreyder’s project was made possible by funding from the TTUHSC at the Permian Basin Regional Dean and the TTUHSC at the Permian Basin Advisory Council
Introduction. Maternal obesity (MO) defines as increased body-mass index (BMI), is one of the strongest risk factors for the development of preeclampsia (PE), gestational hypertension and other cardiovascular complications, which in turn are a leading cause of maternal mortality. Information regarding functional heart changes, which occur as a result of MO are conflicting and incomplete.

The aim of this study was evaluate echocardiography changes as well as biomarkers in MO and non-obese pregnant women.

Material and methods. Obese (n=6, BMI >30) and non-obese pregnant women (n= 13 with BMI<30) were enrolled into this study in the first trimester of pregnancy (Institutional Protocol # L17-136). The echocardiography was performed and the following parameters were measured: SBP – systolic blood pressure, DBP – diastolic blood pressure, LVEDD – left ventricle end diastolic dimension, SV – stroke volume, EF – ejection fraction, LV mass – left ventricle mass, RWT – relative wall thickness, E/A - ratio of the early (E) to late (A) ventricular filling velocities. Data was analyzed, using Kruskal-Wallis test. Serum Leptin, inflammatory markers, IGF-1, and PTX-3 were assessed.

Results. Systolic and diastolic blood pressure and Left ventricular mass were significantly higher while ejection fraction and ratio of the early (E) to late (A) ventricular filling velocities were significantly lower in MO, compared to non-obese patients (Table 1).

Table 1. Patients’ characteristics and indices of cardiovascular function in obese and non-obese women in the first trimester of pregnancy.

<table>
<thead>
<tr>
<th>Patients’ Characteristics</th>
<th>Non-Obese (n=13)</th>
<th>Obese (n=6)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>26.3 ±5.34</td>
<td>29.4± 7.07</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Parity</td>
<td>2.8±1.23</td>
<td>3.0±1.2</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>25.5 ±12.3</td>
<td>33.6± 2.9</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cardiovascular Indices</th>
<th>Non-Obese (n=13)</th>
<th>Obese (n=6)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBP ( mmHg)</td>
<td>109 ±19.3</td>
<td>120± 21.2</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>DBP (mmHg)</td>
<td>4.8 ±16.73</td>
<td>79.7± 12.7</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>LVEDD (cm)</td>
<td>4.4 ±0.10.2</td>
<td>4.54± 10.25</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>SV (ml)</td>
<td>57.4 ±16.3</td>
<td>60.4 ±14.9</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>EF (%)</td>
<td>73.7 ±11.8</td>
<td>71.0± 2.6</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>LV mass (g)</td>
<td>97.4 ±121.6</td>
<td>122± 129.5</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>RWT(cm)</td>
<td>0.33 ±10.05</td>
<td>0.55 ±10.04</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>E/A</td>
<td>1.83 ±10.19</td>
<td>1.5±0.2</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

Discussion and conclusion. Differences in maternal cardiovascular function in the first trimester of pregnancy might influence vascular adaptation to functional feto-placental unit in MO. Acknowledgements. This study was supported by the Regional Dean and Advisory Council awards. The authors are thankful to Clinical Research Institute for the help with this research.
Depositional Paleoenvironment of the Mancos Shale Formation, San Juan Basin, New Mexico  Researcher: Clinton McCrary  Mentor: Dr. Mohamed K. Zobaa

According to the U.S. Energy Information Administration (EIA), it was estimated that close to 50% of the total U.S. crude oil production in 2016 was produced directly from tight oil reservoirs like shales and sandstones. These tight oil reservoirs often require the utilization of hydraulic fracturing and horizontal drilling to extract their contained hydrocarbons, increasing demand for the scientific methods behind the discovery and development of these unconventional plays. This study presents a preliminary paleoenvironmental investigation of an interval within the Mancos Shale Formation. The abundance of plant organic matter (OM) was measured using a point counting technique. The dispersion of similar proportions of organic matter constituents was fairly consistent throughout the entire interval with over 90% of the point counted particles classified as degraded terrestrial plant fragments (phytoclasts). Other identified organic particles included pollen grains, embryophytic spores, phytoplankton, and amorphous marine organic matter. Based on the types and proportions of the contained organic matter, the studied interval of the Mancos Shale is interpreted to have been deposited in a dysoxic shallow marine paleoenvironment that was subject to high terrestrial influence from a nearby fluvial system; allowing for the transportation and deposition of a high concentration of terrestrial organic material. This study is expected to assist petroleum professionals in determining both the quality and volume of hydrocarbons and help companies and investors decide how economic the Mancos resource play might be.

Falconnect: Uniting the University in One Place through iOS design
Researcher: Cordell Hammon  Mentor: Dr. Quan Yuan

A major problem at the University of Texas of the Permian Basin is the siloing of different areas, especially that of the academic and residential buildings around campus. This will make traversing the campus easier for everyone.

20

Reducing medical errors associated with same/similar name providers
Presented by: James Wang, M.D., PGY-II  Co-authors: James Hao Wang, M.D., PGY-II, Ana Maria Francisco, M.D.
Faculty Advisor: Ana Maria Francisco, M.D.
Department of Family and Community Medicine

Context.
Patient name-related errors have been widely studied and interventions are being implemented to prevent such errors. The inadequate identification of patients can result in patient harm. Name confusion is one of the major factors that cause name-related errors. This study examined the potential frequency and consequences of same/similar provider name-related errors in the context of the Department of Family and Community Medicine.

Objective.
To determine 1) the incidence of same/similar provider name related errors and 2) to identify solutions to reduce such errors. Design. Case series/PDSA algorithm.
Setting.
All care settings (both inpatient and outpatient) that TTUHSC DFCM residents encounter.
Participants.
Family medicine residents of TTUHSC-PB DFCM.
Intervention.
Planned – verbal read-back of provider names or EMR alert.
Outcome measures.
Resident-reported documentable errors (verbal orders for signatures, forwarded labs for signature, paging wrong provider, etc.) involving individuals in the department.
Results.
There were a total of 51 eligible errors in the measured 2-month span (one additional error reported was between individuals outside of the department). 45 (88%) errors were between similar name providers and 44 (86.3%) were between same name providers. The most common type of errors was verbal orders (28/53% of all errors). The intervention phase of this project was postponed due to a change in inpatient and outpatient EMRs during the study and is in the process of being re-initiated this upcoming year.
**Anti-inflammatory effect of endogenous cannabinoid anandamide in ex vivo model of the Blood Brain Barrier (BBB)**

Presented by: Grace Shim, MSIV

Co-authors: Maira Carrillo, Ph.D., Al-Ahmad Abraham, Ph.D., Gary Ventolini, M.D., Natalia Schlabritz-Lutsevich, M.D., Ph.D.

Faculty Advisor: Natalia Schlabritz-Lutsevich, M.D., Ph.D.

Department of Obstetrics and Gynecology

**Introduction.** Neurological disorder, including brain injuries, is the leading cause group of disability-adjusted life-years and the second leading cause of death worldwide. Blood brain barrier (BBB) plays an essential role in brain protection and disruption of this barrier is a feature of brain damage. Inflammation is one of the central mechanisms of BBB disruption and pharmacological target for brain protection and therapy. Exogenous and endogenous cannabinoids (eCB) produce an anti-inflammatory effect by reducing pro-inflammatory cytokines IL-1β and TNF-α and increasing anti-inflammatory cytokine IL-10. However, effect of eCB on the BBB inflammation has not been studied yet.

The aim of this study was to evaluate the effect of eCB on secretion of the anti-inflammatory cytokine IL-10 in an in vitro model of human BBB, based on induced pluripotent stem cells (iPSCs).

**Materials and Methods.** The in vitro model of human BBB was exposed to cannabinoid receptors (CB1R/CB2R) agonist anandamide (AEA) in tocrisolve (Cat. No. 10 171-0, Fisher/Tocris, Hampton, NH), tocrisolve only (Cat. No. 16841ML, Fisher/Tocris, Hampton, NH, USA), or CB1R antagonist (AM251 Cat. No. SML0327, Sigma, St. Louis, MO, USA). Supernatant was collected and IL-10 concentrations were estimated using Immulite and ELISA kits according to manufacturer instructions.

**Results.** Relative concentration of IL-10 was significantly higher in the AEA treated, compared to the control cells (Figure 1). This effect was partially abolished by the CB1R antagonist.

**Conclusion and discussion.** Pharmacological targeting of CB1R and CB2R receptors by specific agonists or by increasing concentrations of endogenous cannabinoids might provide the strategy for neuroprotection through decreasing BBB inflammation.

![Figure 1. Effects of anandamide (AEA) and AM251 on IL-10 concentrations in the human Blood Brain Barrier model (data mean ± SD).](image-url)
A Rare Cause of Emphysematous Gastritis: Sarcina Ventriculi

Presented by: Saranya Rajasekar, PGY-I
Co-authors: Nirmal Onteddu M.D., PGY-II, Pretti Gupta, M.D., PGY-III

Department of Internal Medicine

Emphysematous gastritis (EG) is a type of gastritis with characteristic features of gas along the gastric wall and significant damage to the mucosa. The more common organisms associated with EG are Klebsiella pneumonia, Escherichia coli, Pseudomonas aeruginosa.

Case report.
65-year-old male, a nursing home resident with multiple comorbidities including type 2 diabetes mellitus, hypertension, chronic kidney disease stage III, dementia presented to the emergency room with abdominal pain, vomiting, and nausea. The patient had been on antibiotics for a urinary tract infection the week prior. The patient’s history was significant for alcoholic cirrhosis, chronic obstructive pulmonary disease, and diabetes. On presentation, the patient was tenderness to palpation in the epigastrium and right upper quadrant, and foul-smelling emesis was noted. The patient was taken to the operating room for exploratory laparotomy and a diagnosis of EG was made. The patient was started on broad-spectrum antibiotics and underwent a proximal gastrectomy with a jejunal loop gastrojejunostomy. The patient’s postoperative course was complicated by multi-organ failure, and he eventually passed away on postoperative day 7.

Discussion.
So far only 19 cases of Sarcina ventriculi cases have been reported. Sarcina ventriculi is a gram positive anaerobic, sugar fermenting bacterium. The mechanism of injury is uncertain, but it is considered that the presence of gas in the stomach can be caused by bezoar, diabetic neuropathy, alcohol abuse, narcotic use and pyloric stenosis secondary to malignancy. It is very difficult to culture Sarcina organisms in a regular laboratory and we still depend upon histopathological report from biopsy to confirm the presence of this potentially fatal organism.
**Is weakness in a young man always MS?**

Presented by: Alfredo Iardino, M.D., PGY-II

Co-authors: Orlando Garner, M.D., PGY-II, Avinsah Alexander, PGY-II, Grace Shim, MSIII, Radha Helekar, Donald Loveman, M.D., Rama Chemitiganti, M.D., Kalpana Bhairavarasu, M.D.

Faculty Advisor: Donald Loveman, M.D.

Department of Internal Medicine

Acute Disseminated Encephalomyelitis (ADEM) is a demyelinating disease that usually presents in pediatric patients after an environmental stimulus, usually a viral infection. The clinical hallmark is an acute neurologic decline that typically presents with encephalopathy. A few of these cases can evolve into multiple sclerosis. We present a 46-year-old Caucasian male who recently emigrated from Ukraine complaining of gait abnormalities that began 4 days after developing abdominal cramping. A MRI of the brain disclosed T2 enhancing patchy diffuse lesions in both cerebral hemispheres with negative CSF oligoclonal bands. The patient was admitted and treated with methylprednisolone 500mg IV q12h. He responded favourably to therapy and was discharged a week later with resolution of his initial presentation. We present an atypical presentation of ADEM, which is a rare disease in and of itself. Although there are no set guidelines for diagnosis, high clinical suspicion should be maintained when confronted with acute onset demyelinating lesions on MRI. High dose steroids remain the hallmark of treatment.
UNIVERSITY OF TEXAS OF THE PERMIAN BASIN

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The Effect of Self-Directed Meditation on Third Year Medical Students

Presented by: Nuvneet Khadelwal, MS-IV

Faculty Advisor: Bobby Jain, M.D.

Mind-body training programs, such as Mindfulness-Based Stress Reduction (MBSR), are useful interventional tools, showing their effectiveness in different settings, particularly in the management of stress and quality of life. Mindfulness is the practice of bringing one’s personal attention and focus on the present to improve psychological wellbeing. It is a form of lifestyle modification that shows some therapeutic applications and can help reduce symptoms of depression, anxiety, and stress. Past research studies have shown that with consistent mind-body training programs, medical students (3rd and 4th years) demonstrate improved distress tolerance and positive psychological well-being. While it is important to introduce medical students to coping mechanisms such as meditation through an elective or a group MBSR program, internalizing the technique to adaptively adjust to busy individual schedules is an important part of cultivating a regular, long-lasting practice with optimal benefits. While there have been many studies done elucidating the potential benefits of meditation techniques such as MBSR, gauging the effect of self-directed meditation techniques on stress and well-being of medical students has yet to be adequately determined.

Medical students will be asked to participate in an 8-week self-directed MBSR program where they will meditate three times a week for 15-20 minutes. Meditations will be available on the website palousemindfulness.com. We will measure mindfulness, perceived stress, and well-being using questionnaires at the beginning, week 4, and the end of the 8-week periods. These week 4 and 8-week period measurements of mindfulness, stress, and well-being will be compared to further elucidate the impact of self-directed MBSR on medical students.

The 8-week time period though not tested empirically, is recommended by most experts as adequate time to experience therapeutic experience of mindful meditation. Students will have numerical identifiers matched to the last 4 digits of their phone number in order to maintain confidentiality. Students will report compliance to the study by signing up for the meditation app “insight timer”, which logs and records user meditations over time. We have selected this application amongst others due to its free availability and ease of use. Students will be allowed to create their own username to preserve confidentiality.
Patient characteristics of separable and nonseparable Raman spectroscopy serum pattern in pregnancy
Presented by: Hanna Kodeih, D.O., PGY-III
Co-authors: Kushal Gandhi, Ph.D., Christopher Maguire, D.O., R. Moss Hampton, M.D., James Maher, M.D., Natalia Schlabritz-Lutsevich, M.D., Ph.D.
Faculty Advisor: Natalia Schlabritz-Lutsevich, M.D., Ph.D.
Department of Obstetrics and Gynecology

Introduction. We recently described a handheld Raman Spectroscopy device (Mira-1) as a possible point of care pregnancy monitoring tool. We identified two groups of patients: one group had a spectroscopy pattern which was distinct and separable between first and third-trimester samples (SP) and another one with a non-separable pattern of Raman spectra between 1st and 3rd trimesters of pregnancy (NSP).

Methods. Maternal blood samples were collected after IRB approval and informed consent was obtained from 15 patients in the first trimester (8-9 weeks of gestation) and the third trimester (# L13-098). Raman Spectroscopy was performed on the serum samples.

Results. Fetal weight (3680 ± 659g vs 3310 ± 466g), maternal BMI (28.2 ± 7 vs 32.2 ± 6), parity (1.5 ± 1.7 vs 1.4 ± 1.8), and gravidity (3 ± 1.7 vs 2.8 ± 2.3) were not different between two groups NSP vs SP respectively. Only one patient in each group had diabetes or preeclampsia. Weight change was significantly different between two groups: in the non-separable: 39.83 ± 18.95 kg vs. in separable 24.56 ± 7.70 kg, p<0.05.

Conclusion/Implications. Raman spectroscopy analysis measures the frequency and intensity of scattered radiation. It is non-invasive and does not destroy or consume the sample. The finding that there are distinct differences in first and third-trimester samples for most but not all patients are intriguing. While not reaching significance, NSP moms were leaner yet had bigger neonates. Further study on prospectively collected samples will be required to refine our understanding. It appears that controlling for maternal weight gain will be necessary.

Borderline tumor in a second trimester pregnancy: A pictorial essay
Presented by: April Riley, D.O., PGY-IV
Co-authors: Hanna Kodeih, D.O., PGY-III, James Maher, M.D.
Faculty Advisor: James Maher, M.D.
Department of Obstetrics and Gynecology

This 20-year-old G1P0 presented to OB clinic for prenatal care. During a routine anatomy ultrasound, a complex right adnexal mass was discovered measuring 7.4cmX5.8cmX6.7cm. Immediate excision was recommended and she underwent exploratory laparotomy and R oophorectomy with pelvic washings at 23 weeks gestation. Intraoperatively, a R ovarian mass with smooth borders and no obvious extra-ovarian masses, lesions, or lymphadenopathy were appreciated. Final pathology showed stage 1A borderline serous epithelial borderline tumor. She recovered without complications and continued to do well antepartum. She delivered vaginally at term. She now follows up in oncology clinic at 6 month intervals with no further surgical or medical treatments required at this point.

Association of Short Term Mortality and Hyperuricemia in Patients with STEMI
Presented by: Sajjad Ali, M.D., PGY-II
Faculty Advisor: Yasir Ahmed, M.D.
Department of Internal Medicine

Objective. The purpose of this study was to determine the frequency of hyperuricemia in patients with STEMI and to compare short-term mortality in STEMI patients with and without hyperuricemia.

Methodology. This study was done at Prince Abdullah Bin Abdul Aziz Bin Musad Cardiac Centre, Arar, North Zone, Kingdom of Saudi Arabia. We took 240 (120 patients in each group) patients of STEMI using non-probability purposive sampling. All patients underwent a standard 12-lead ECG examination. ECGs were recorded at a speed of 25 mm/s and a scale of 10 mm/mV. Blood samples were obtained immediately after admission. Uric acid and other biochemical parameters were measured. Serum uric acid concentration was expressed as milligrams per deciliter (mg/dl). All data were entered and analyzed using SPSS version 20.

Results. In this study mean age of patients was 56.34 ± 12.52 years. There were 192 (80%) males and 48 (20%) patients were females, the male to female ratio was 4:1 in this study. We found that 130 (54.2%) patients had hyperuricemia while the uric acid level was normal in 110 (45.8%) patients. Moreover, in-hospital mortality was occurred in 8(3.3%) of the patients, in which duration of “in-hospital mortality” was 10.5 ± 5.97 days. Among patients with hyperuricemia, mortality occurred in 6 (4.6%) patients while 124 (95.4%) patients were discharged or were alive. In patients were also died with normal uric acid levels. Although the mortality in hyperuricemia patients and with normal uric acid levels was high (4.6% vs. 1.8%) but was not statistically significant, p-value > 0.05.

Conclusion. Through this study, we found that mortality was higher in patients of STEMI with hyperuricemia but it was not statistically significant. More over when we stratified our data for age (≥ 60 years, gender), smoking, diabetes mellitus and hypertension, we found no significant association in mortality and hyperuricemia, p-value > 0.05 (using post stratification chi-square test).
Increasing HPV vaccination through physician education in a multidisciplinary academic setting


Co-authors: Elisa Brown, M.D., Joy Anderson, M.D.

Faculty Advisor: Joy Anderson, M.D.

Department of Obstetrics and Gynecology

Introduction.

Gardasil 9 is a 9-valent human papillomavirus vaccine that protects against 9 different HPV types including HPV 6, 11, 16, 18, 31, 33, 45, and 52. Seven of these HPV types cause 90% of cervical cancers and 80% of high-grade cervical lesions. Those seven types also cause 85% of HPV-related vulvar cancer, 80% of HPV-related vaginal cancers and 90% of HPV-related anal cancers. HPV types 6 and 11 cause 90% of genital wart cases.

According to the CDC, HPV vaccination rates are very low compared to rates of other vaccines. Per the National Immunization Survey – Teen, only 60% of girls aged 13-17 were vaccinated with at least one dose of the vaccine. In comparison, the HPV vaccination coverage was 87.6% among 13-17 year olds. Boys aged 13-17 only were 41.7% immunized with at least one dose.

While many studies have examined the efficacy, safety, and availability of the vaccine, few have examined physician attitudes, bias, and perceived barriers to giving the vaccine. Physicians' attitude toward Gardasil, influence on their patients' uptake within our institution. This educational module is also hypothesized to improve bias related to the vaccine.

Proposed Methods.

A Web-based survey will assess the likelihood of providers to recommend the vaccine, age of initiation of recommendation, and reasons for the recommendation. The survey will be distributed to medical students, residents, and faculty members. Providers who respond to the survey will be invited to complete a second survey to analyze if their attitudes, behavior, and practices change following education.

Posttraumatic Stress Disorder and Depression Symptom Severities Are Differentially Associated with Hippocampal Subfield Volume Loss in Combat Veterans

Presented by: Ritvij Satodiya, M.D., PGY-I

Chair of the Residents' Research Subcommittee

Faculty Advisor: Chadi Abdallah, M.D., Yale University School of Medicine

Department of Psychiatry

Background.

Two decades of human neuroimaging and postmortem research have resulted in sizable evidence implicating the hippocampus in the pathophysiology of posttraumatic stress disorder (PTSD). Bilateral volumetric changes in the hippocampus have been repeatedly described in the literature. However, little is known about the distribution of volume loss across hippocampal subfields. Different hippocampal subfields have unique cellular architectures as well as distinct developmental and functional properties. Therefore, identification of specific subfield abnormalities in PTSD has particular pathophysiological and treatment implications.

Recent advances in neuroimaging methods have made it possible to accurately delineate hippocampal subfields. Here we report a pilot exploratory volumetric analysis of hippocampal subfields in a group of combat-exposed Veterans.

Method.

Sixty-eight US combat-exposed Veterans [PTSD: n = 36; combat control (CC): n = 32] completed high resolution structural magnetic resonance imaging (sMRI). Based on previously validated methods, hippocampal global and subfield segmentation and volume measurements were conducted using Freesurfer 6.0. The Clinician-Administered PTSD Scale (CAPS) assessed PTSD symptom severity and Beck Depression Inventory (BDI) assessed depressive symptom severity. Controlling for age and total intracranial brain volume, partial correlation analysis examined the relationship between hippocampal region-of-interest (ROI) volumes and symptom severity. Correction for multiple comparisons was performed using false discovery rate. Gender, intelligence, combat severity, comorbid anxiety, alcohol/substance use disorder, and medication status were investigated as potential confounds.

Results.

Of the 10 ROIs examined, CAPS and BDI scores negatively correlated with total hippocampal volume (CAPS: r = -0.33, df = 64, p = 0.007, corrected p = 0.04; BDI: r= -0.32, p= 0.01, df= 64). CAPS score was negatively correlated with hippocampus-amygdala-transition-area (HATA; r = -0.34, df = 64, p = 0.005, corrected p = 0.04). CAPS did not significantly correlate with the volumes of dentate gyrus, CA1, CA2/3, CA4, presubiculum, subiculum, parasubiculum, molecular layer, or hippocampal tail. BDI negatively correlated with the DG (r= -0.33, pfdr= 0.04, df= 64), HATA (r= -0.30, pfdr= 0.04, df ¼ 64), CA1 (r= -0.27, pfdr= 0.05, df= 64), CA2/3 (r= -0.30, pfdr= 0.04, df= 64), CA4 (r= -0.32, pfdr= 0.04, df= 64), and the Molecular layer of the hippocampus (r= -0.29, pfdr= 0.04, df= 64).

Conclusion.

This study provides first evidence of selective volumetric abnormalities within the hippocampus subfields in PTSD and Depression. The functional connectivity of HATA with prefrontal cortex, amygdala and hypothalamus makes it an important transition area of clinical importance. This architecture could affect the acquisition of traumatic memories, as well as behavioral and neuroendocrine response to traumatic stress. Dentate gyrus abnormalities were associated with depression severity but not posttraumatic stress disorder symptoms. Future confirmatory studies should investigate the role of dentate gyrus volume in differentiating depression from posttraumatic stress disorder.
A Common Presentation of an Uncommon Tumor
Presented by:
Austin Barnes, M.D., PGYI
Co-author: Joy Anderson, M.D.   Faculty Advisor: Joy Anderson, M.D.
Department of Obstetrics and Gynecology

Smooth Muscle Tumors of Uncertain Malignant potential (STUMP) tumors are a rare intermediary, but pathogenetically separate tissue from the more well known benign leiomyoma and the malignant Leiomyosarcoma. Because of their rarity their clinical behavior has been hard to define. Some argue that STUMP tumors are not themselves a distinct entity, but are a neoplasm with an unknown malignant potential. Regardless of the criterion used, the strongest predictor of malignant behavior in these tumors determined thus far is a Geographic appearing pattern of coagulative necrosis. Here we present the case of a tumor with features of a STUMP tumor, but of extraterine origin, found in the investigation of what was presumed to be a urethral diverticulum given its location and clinical features. STUMP tumors, however, by definition provided by the Bell Criteria, are tumors of the Uterus, and a quick internet search only provides one other case report of an extrauterine STUMP-like tumor which was found in a broad ligament. Though usually a uterine tumor, STUMPs have been known to metastasize or recur locally, though usually they do so in an aggressive fashion.

Association of Short Term Mortality and Hyperuricemia in Patients with STEMI
Twenty-First Century Scurvy
Presented by: Cristina Penon MD, PGY-I
Co-author: Timothy D. Carder MD, PGY-II
Faculty Advisor: Vani Selvan, M.D.
Department of Family and Community Medicine

Severe vitamin C deficiency, also known as scurvy, is a disease commonly undiagnosed in developed countries. Being a condition notoriously affecting sailors in the 18th century, in modern times it is most prevalent in underdeveloped countries where malnutrition rates are higher. Presenting with a broad range of signs and symptoms and with its assumptive scarcity nowadays, recognizing scurvy can be a challenge. We present a 55-year-old Caucasian male with no significant past medical history who came to the emergency department after a syncopal episode. On initial evaluation, he was found to be hypotensive and anemic with purpura and petechial lesions on the legs. He was admitted to the hospital and an extensive work-up for anemia and vasculitis ensued. Skin punch biopsies of the purpuric and petechial lesions on the legs revealed minimal superficial perivascular lymphocytic dermatitis. His vitamin C level was resulted on hospital day 5 (<5, N 23-114). He was started on replacement therapy due to his extremely low vitamin C level, with reported improvement in his symptoms after initiation of therapy. Although scurvy is thought to be uncommon in the United States, recent literature may convince otherwise. Recognition of vitamin C deficiency signs and symptoms is vital in malnourished patients. With a straightforward treatment, scurvy should not be overlooked, as this disease process can be fatal if left untreated.
A Blessing in Disguise: Factors that cause a high blood pressure condition in pregnant women protect against breast cancer

Presented by: Eugenia Banina, M.D., PGY-II
Co-authors: Carlos Salomon, Ph.D., Maira Carrillo, Ph.D., Samuel David, Ph.D.
Natalia Schlabritz-Lutsevich, M.D., Ph.D.
Faculty Advisor: Natalia Schlabritz-Lutsevich, M.D., Ph.D.
Department of Internal Medicine

Background. Hypertensive disorders of pregnancy, such as preeclampsia, continue to be a significant source of maternal and fetal morbidity and mortality. In contrast to recent studies that have reported an increased breast cancer risk in women with a history of preeclampsia, recent investigations have provided exciting new insights into potential mechanisms underlying the pathogenesis of preeclampsia and some of these findings may bear relevance to the anticancer effects reported in the epidemiological literature. In this study, we aimed to assess the effects of placenta-derived exosomes on breast cancer cell viability and metastatic potential.

Methods. Human MCF-7 cells, obtained from Thermo Fisher Scientific, were placed in the Eagle’s MEM (EMEM) medium (final volume of 500 ml), supplemented with 10% FBS and 1% penicillin/streptomycin, non-essential amino acids (0.1 mM), insulin (10 ug/mL) and sodium pyruvate (1 mM) with added 10 nM estrogen for increase in cell population growth. Temperature of 37°C in humidified, concentrated CO₂ (5%) atmosphere was maintained. The medium was replaced every 2 days. The cells were cultured for a period of 1-2 weeks and split twice a week using standard trypsinization procedure. Typically, cell confluency was maintained between 30-90%. MCF-7 cells were plated in 6-well flat-bottom plates at 2500 cells per well 48 hours prior to adding placenta-derived exosomes and incubated for another 48 hrs thereafter. Subsequently, sensitivity was assessed on day 5 using standard viability assay.

Results. Comparing three groups of cells treated with preeclamptic exosomes, exosomes derived under normal conditions and control group, we found a significantly decreased number of viable cells in preeclamptic exosomes group.

Conclusions. The data obtained in this study are consistent with the hypothesis that breast cancer cell viability and, hence, metastatic potential, is inhibited by preeclamptic placental exosomes.
Infertility and Cancer: A case of hidden cancers unveiled by infertility evaluation

Presented by: Brittany Brothers, M.D., PGY-IV
Co-authors: Megan Clapp, MSIV, Hanna Kodeih, D.O., PGY-III, Elisa Brown, M.D.
Faculty Advisor: Elisa Brown, M.D.

Department of Obstetrics and Gynecology

Polycystic ovarian syndrome is a major cause of anovulation and infertility. However, with abnormal uterine bleeding, cancer of the cervix or endometrium should be included in the differential diagnosis. In this case, an infertility workup led to the diagnosis of cervical and endometrial cancer.

Severe hypokalemia in Ogilvie's syndrome treated with Aldosterone antagonist

Presented by: Sajjad Ali, M.D., PGY-II
Department of Internal Medicine

Ogilvie’s syndrome (OS) or acute Colonic Pseudo-obstruction is a functional obstruction of the bowel due to an autonomic imbalance. Pseudo-obstruction is characterized by signs and symptoms of a mechanical obstruction like abdominal distension and bowel sounds. The main clinical feature in patients with acute colonic pseudo-obstruction is abdominal distension. It may present with diarrhea and is associated with hypokalemia. We describe a case of a 65-year-old male with history of Parkinson's disease who presented with acute colonic pseudo-obstruction.

Acute colonic pseudo-obstruction is often refractory to medical management with a high morbidity and mortality. The patient in this case was refractory to medical management with a high morbidity and mortality. The patient in this case was refractory to medical management with a high morbidity and mortality. The patient in this case was refractory to medical management with a high morbidity and mortality. The patient in this case was refractory to medical management with a high morbidity and mortality. The patient in this case was refractory to medical management with a high morbidity and mortality. The patient in this case was refractory to medical management with a high morbidity and mortality. The patient in this case was refractory to medical management with a high morbidity and mortality. The patient in this case was refractory to medical management with a high morbidity and mortality. 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Background. Natural heterotopic pregnancy is a rarely seen event; prior to the advent of assisted reproductive technologies, incidence of heterotopic pregnancy was estimated to occur in 1 out of 30,000 pregnancies in the United States. With interstitial pregnancy comprising only 2.4% of ectopic pregnancies, spontaneous heterotopic interstitial pregnancies are exceedingly unique.

Case. A 27-year-old G3 P1011 presented to the emergency department with abdominal pain and positive home-pregnancy test. Transvaginal ultrasound confirmed heterotopic pregnancy and she underwent operative management at which point a ruptured interstitial pregnancy was identified.

Conclusion. Heterotopic and interstitial pregnancies are a rare occurrence and to see them together in a spontaneous pregnancy is exceedingly unique. We submit our operative management to add to the literature of this rarely seen condition.

Introduction. Early-onset GBS disease commonly manifests as generalized sepsis, pneumonia and meningitis. However, manifestation of bullous and pustular erythema toxicum skin lesions have been documented in several case reports, but is not a common clinical presentation.

Case Description. A 36-week appropriate for gestational age, Hispanic male infant was delivered via spontaneous vaginal delivery. The delivery was complicated by a history of positive maternal GBS culture, which was treated adequately prenatally, and prolonged preterm rupture of membrane of five days. At delivery, patient presented with grunting, flaring and rachypnea with Apgar scores of 8 and 9 at 1 and 5 minutes respectively. Patient was admitted to the NICU and initial laboratory evaluation showed: CRP = 5 mg/dL (normal <1 mg/dL) and immature to total neutrophil ratio (I:T) >.20 (normal < 15%) and hence he was diagnosed clinically with presumed sepsis. Patient was placed on High Flow Nasal Canula (CPAP) 4L/min at 30% FiO2 with obvious improvement in the work of breathing. Empiric antibiotics (Ampicillin and Gentamicin) were started and blood cultures were sent. Interestingly, on admission multiple pustules (filled with white, pus-like material) were noted on the left hand and fingers, left shoulder and chest, left great toe, and left posterior auricular area (see figure 1). Sterile technique was used in the removal of the wall of the abscess-like structures and a sample was sent off for gram staining and culture. As part of the initial investigation, chest X-rays were also obtained and reported normal findings with slight haziness and increased lung markings. CSF study was also obtained on day of life 1 which was unremarkable.
Maternal Nutrient Restriction Augments Fetal Cortical Endocannabinoid 2-Arachidonoylglycerol (2-AG) Pathway

Presented by: Kushal Gandhi, Ph.D.
Co-authors: Cun Li, M.D., Marcel Chuecos, B.S., Maira Carrillo, Ph.D., Gary Ventolini, M.D., Peter Nathanielsz, M.D., Ph.D., Natalia Schlabritz-Lutsevich, M.D., Ph.D.
Faculty Advisor: Natalia Schlabritz-Lutsevich, M.D., Ph.D.
Department of Obstetrics and Gynecology

Introduction:
Decreased food availability during pregnancy is associated with increased brain ageing in the offspring. The endogenous cannabinoid system (ECs) demonstrates significant developmental changes and plays a major role in ageing-related diseases (e.g. dementia). The level of endogenous cannabinoid 2-AG in fetal brain is regulated by the expression and activity of degrading enzyme (MAGL- Monoacylglycerol lipase). The aim of this study was to evaluate temporal changes in main 2-AG cannabinoid-binding receptor (CB2R) and MAGL in male offspring (F1) of nutrient restricted pregnant baboons.

Methods:
Pregnant baboons underwent global dietary reduction by 30% (MNR group). Samples were collected at 140 days of gestation ... n=5;CTR n=9; and female fetuses n=5;CTR n=5) (term=183 dGA). Western blot and immunohistochemistry were performed with commercially available antibodies. Protein expression was normalized using beta-actin.

Results:
At 165 dGA CB2R was expressed in fetal hypothalamus, frontal cortex, temporal cortex placenta and maternal monocytes. MAGL expression was detected in neurons’ layers 2-3 and CB2- in all layers and glial cells. Expression of CB2R did not differ between 140 and 165 dGA. MNR decreased expression of MAGL and increased expression of CB2R (Fig.1, table 1).

Conclusion:
Decreased cortical expression of MAGL takes place around birth in rodents and is associated with increased cerebral 2-AG concentrations. Premature decrease in MAGL in male fetuses might be associated with shifting of metabolic balance towards more metabolically active cannabinoid receptors. Our data are also in line with our observation of increased expression of another metabolically active cannabinoid receptor CB1b in fetal MNR brain.

Improving Postpartum Thromboembolism Prophylaxis Adherence to CHEST Guidelines

Presented by: Christina Prendergast, D.O., PGY-II
Co-authors: David Lee Moore, M.D.
Faculty Advisor: David Lee Moore, M.D.
Department of Obstetrics and Gynecology

Introduction.
Reducing maternal mortality is a significant topic currently in medicine. Particularly in Texas, maternal mortality is much higher than in other developed countries. One factor that contributes to maternal morbidity and mortality is postpartum thromboembolism. The most widely accepted guidelines for initiating postpartum thromboembolism prophylaxis are based on evidence that suggests prophylaxis reduces the risk of thromboembolism and mortality. However, many patients are not started on prophylaxis. Our hypothesis is that implementation of an EMR tool within the post cesarean set may improve adherence to CHEST guidelines for postpartum thromboembolism prophylaxis after cesarean section.

Methods.
A quality improvement study will be performed by comparing 1 year months of data from post cesarean section patients prior to implementing an EMR tool compared to 1 year of data after implementing the tool to assess if there is a statistically significant difference in the number of patients who are eligible for postpartum thromboembolism pharmaceutical prophylaxis in patients immediate post cesarean delivery. We will also assess if the number of patients who are eligible for prophylaxis and are actually started on prophylaxis increases upon implementing an EMR tool.

Results.
We tested the hypothesis that upon implementing an EMR tool within the post cesarean section order sets, a statistically significant difference will be found in the number of patients who are eligible for postpartum thromboembolism pharmaceutical prophylaxis after cesarean section who are actually started on prophylaxis between patients who delivered prior to implementation of this tool vs patients who delivered after implementation of this tool.

Conclusions.
We hope to assess if this EMR tool creates a statistically significant difference in improving adherence to CHEST guidelines for postpartum thromboembolism prophylaxis. If so, this tool could be expanded to use for patients after vaginal delivery and possibly recommended for use in other institutions.


Optic tissue clearing in combination with perfusion and immunofluorescence for placental vascular imaging

Presented by: Maira Carrillo, Ph.D.

Co-authors: Marcel Chuecos, B.S., Kushal Gandhi, Ph.D., Andrey Bednov, Ph.D., David Lee Moore, M.D., James Maher, M.D., Guangchen Ji Ph.D., Natalia Schlabritz-Lutsevich, M.D., Ph.D.

Faculty Advisor: Natalia Schlabritz-Lutsevich, M.D., Ph.D.

Department of Obstetrics and Gynecology

Imaging of placental tissues is a difficult task, because this specific organ is complex and multicellular with a 3D tissue structure. The X-CLARITYTM system is a valuable tool for the examining the expression of molecular pathways in whole tissues and organs, originally developed for brain imaging. In the present report, we utilized this technology for the examination of placental vasculature and protein expression in perfused human placental tissue. The placental tissue was sufficiently cleared with preservation of endothelial staining and fluorescent markers, allowing visualization using confocal microscopy. The CLARITY method and X-CLARITYTM system are a valuable tool in placental imaging.

Villous Vascular Tree 3D Morphology of Ex Vivo Perfused Human Placental Cotyledon

Presented by: Marcel Chuecos, B.S.

Co-authors: Kushal Gandhi, Ph.D., James Maher, M.D., Andrey Bednov, Ph.D., Daniela Pino, M.D., David Lee Moore, M.D., Natalia Schlabritz-Lutsevich, M.D., Ph.D.

Faculty Advisor: Natalia Schlabritz-Lutsevich

Department of Obstetrics and Gynecology

Introduction: In human pregnancy, the first half of gestation is associated with the prevalence of branching angiogenesis, and the second half of gestation is marked by prevalence of non-branching angiogenesis. Some adverse maternal conditions, e.g. pre-eclampsia are associated with excessive branching and decreased flow-mediated vasodilation. The aim of this study was to evaluate 3D vascular structure of ex-vivo perfused human placental cotyledon and compare vascular tree morphology with physiological parameters.

Methods: Placenta was collected immediately after delivery and underwent ex vivo perfusion as previously described, subsequently placental cotyledons from three placentas were perfused with 1,1'-dioctadecyl-3,3,3',3'-tetramethylindocarbocyanine perchlorate (DiI), at the velocity of 6 ml/min during 5 min, fixed in 4% paraformaldehyde, stored in the fixative at +4C and embedded in 7.5% agarose. Tissues (3-4 specimens per cotyledon) were evaluated at 10X (Figure 1, red fluorescein - fetal endothelium). Images were quantified using Image-Pro Premier software (Media Cybernetics, Inc, Rockville, MD, USA) and Imaris 9 (Bitplane, USA). Number of branching points was calculated.

Results: Volume of fetal capillaries ranged from 16.8% to 50% of the volume of cotyledon and number of branching points was 11-285 per specimen (Fig.1, Table 1). Fetal initial inflow pressure and flow-mediated vasodilation (FMVD) did not correlate with these parameters.

Conclusion: Factors, other than vascular tree 3D composition, might be responsible for the umbilical arterial resistance in vivo.

Delayed Ifosfamide Induced Encephalopathy, a rare presentation

Presented by: Abdallah Gad, M.D., PGY-II

Co-authors: Talal Zahoor, M.D., PGY-II, Zakaria Hindi, M.D., PGY-II

Department of Internal Medicine

Introduction. Ifosfamide is an alkylating chemotherapeutic agent commonly used for treatment of sarcomas as well as other resistant malignancies including lymphomas, bladder, and germ-cell tumors. Common side effects include hair loss, hematuria, myelosuppression, gastrointestinal and neuro-toxicities. Ifosfamide-Induced Encephalopathy (IIE) is a well-known serious side effect that has been reported after initiation of Ifosfamide therapy and usually warrants discontinuation of the drug. We present a rare case of delayed IIE despite prior tolerance to the drug.

Case Report. A 47-year old female patient with refractory Hodgkin’s lymphoma was transferred to Emergency Department (ED) for being minimally responsive after the 2nd chemotherapy day of her 3rd cycle of ICE regimen (Ifosfamide, Carboplatin, and Etoposide). She had reportedly lost control of her urine and stool. Her past medical history included mixed connective tissue disorder, asthma, hypertrophic, and depression. The patient has also been using hydroxyzine for chronic pain and alprazolam for anxiety. Initial vital signs were stable including a blood pressure of 103/73 mm Hg, a heart rate of 104 beats per minute, a respiratory rate of 18 breaths per minute, a temperature of 36.6 degrees Celsius, and a peripheral oxygen saturation of 95% on room air. On neurological exam, she was awake but aphasic and unresponsive to verbal or motor commands. Other physical exam findings were remarkable for dilated pupils, with no meningeal irritation signs and with normal motor reflexes. She received 4 mg of naltrexone before arriving to ED and 0.3 mg of flumazenil in ED with no resolution of her symptoms. The patient was admitted to post critical care unit for further workup. Labs were remarkable for normocytic anemia (8.7 g/dL), hypoalbuminemia (2.4 g/dL), and a positive drug screen for opiates and benzodiazepines. Other labs including electrolytes, liver enzymes, kidney functions, and thyroid hormones were within normal limits. Cerebrospinal fluid analysis was negative for infectious or malignant cells. Computed tomography scan of the head was negative for intracranial mass or bleeding. Electroencephalography showed no seizure activities. Since there was no improvement after first day of admission, we empirically started the patient on intravenous thiamine 100 mg daily. 24 hours later, the patient was alert but with some visual hallucinations. Her hallucinations continued for 3 days before it eventually subsided. The patient hospital course was complicated with post-chemotherapy neutropenia and thrombocytopenia requiring platelet transfusion, which delayed her discharge. She was finally sent home without any neurological sequelae.

Discussion. Our patient had refractory Hodgkin’s lymphoma and was on salvage chemotherapy regimen with ICE which consisted of ifosfamide 1660 mg/m2 daily for 3 days, carboplatin 750 mg [mg dose = 5 x area under the curve (AUC)] on day one and etoposide 100 mg/m2 daily for 3 days. This cycle was administered intravenously as an outpatient and repeated every 21 days. Ifosfamide-Induced Encephalopathy (IIE) is a well-recognized adverse effect of Ifosfamide based chemotherapy regimens. Although not well understood, the hypothesized mechanism is thought to be related to the neurotoxic effect of one of its metabolites; chloroacetaldehyde. Our case is a rare presentation of IIE which presented with severe form of neurotoxicity and visual hallucinations despite prior tolerance of 2 complete cycles of the drug. This should raise awareness among clinicians and patients about the possibility of a much delayed reaction to the Ifosfamide. The role of thiamine and methylene blue in the management of IIE should be further investigated through randomized control trials.
Hysterotomy Scar Ectopic Managed with a Fabricated Vaginal Needle Guide and Direct Injection of the Gestational Sac

Presented by: Daniela Pino, M.D., PGYII

Co-authors: James Maher, M.D., Hanna Kodeih, D.O., Christopher Maguire, D.O., Natalia Schlabritz-Lutsevich, M.D., Ph.D.

Faculty Advisor: James Maher, M.D.

Department of Obstetrics and Gynecology

Cesarean scar pregnancies are occurring with increasing frequency. Most scar pregnancies occur in a community hospital setting and many hospitals do not have the necessary equipment such as a transvaginal needle guide and direct injection of the gestational sac. The technique described in this paper is a novel approach for managing cesarean scar ectopic pregnancies with a fabricated vaginal needle guide and direct injection of the gestational sac.

A Rare Life-Threatening Complication in a Case of Acute Appendicitis

Presented by: Abdallah Gad, M.D., PGY-II

Department of Internal Medicine

Mesenteric venous thromboses are rare complications of intra-abdominal infections and can progress to serious complications including acute bowel ischemia. Only few cases have been reported of superior mesenteric vein (SMV) thrombosis associated with appendicitis. We report a case of a 33 years old Hispanic male, with no significant past medical history, who presented to the emergency department (ED) with right lower quadrant pain.

The patient was started on IV fluid hydration, IV piperacillin-tazobactam and underwent laparoscopic appendectomy. Operative specimen was sent for pathology. The patient's course was uneventful. The patient was discharged on day 3 on oral anticoagulation with rivaroxaban for three months.

Transient pseudohypoaldosteronism in a 2-month-old associated with urinary tract infection

Presented by: Jason Huang, MSIII

Department of Pediatrics

Hyponatremia with hyperkalemia in infancy is an uncommon but potentially life-threatening emergency. Although it is the presence of both conditions that is rare, the possibility of their coexistence should always be considered in the workup. The case report presented here describes a 2-month-old infant with transient pseudohypoaldosteronism associated with urinary tract infection and provides insight into the evaluation and management of this condition.

Infection of the Extremity

Department of Orthopedics and Sports Medicine

Hydroxyapatite, autograft, and direct injection of the cartilage can be used to repair a knee injury, but the outcomes are not well-documented. In this case, a 35-year-old male presented with a knee injury requiring arthroscopy and underwent hydroxyapatite injection. The patient achieved a successful outcome with no complications.

Department of Emergency Medicine

A 67-year-old male presented to the emergency department with a chief complaint of left shoulder pain. Initial radiographs revealed a displaced proximal humeral fracture. The patient underwent open reduction and internal fixation with a successful outcome.
A successful outcome of treatment of Major Depression in Chronic Kidney Disease: a case report

Presented by: Hiren Patel, M.D.

Department of Psychiatry

Introduction. Major Depressive Disorder (MDD) affects one in five patients with Chronic Kidney Disease (CKD) and is an independent risk factor for CKD associated hospitalization and mortality and morbidity. There are no specific guidelines regarding treatment of MDD in patients with chronic kidney disease (CKD). The following is the first documentation of successful treatment of chronic MDD comorbid with CKD.

Case Presentation. Patient is a 61-year-old Hispanic female with MDD, kidney transplant failure - currently on dialysis, referred by her nephrologist for medication management of her MDD and anxiety. She was taking Zoloft 200 mg /day for the past 9 years but still feeling depressed (feeling sad, poor sleep and concentration, low energy levels, anhedonia, unable to maintain her hygiene, feeling worthlessness, helplessness, fleeting thoughts of suicide) with symptoms of anxiety. Her initial PHQ-9 score was 18 (Public Health Questionnaire ) We discontinued Zoloft after tapering over 7 days and initiated with Vilazodone 10 mg PO daily for 14 days and then titrated to 20 mg PO daily. We titrated the dose to 20 because patient start improving in terms of depression and anxiety and did not have any side effects of medications. 4 weeks after treatment, the patient reported feeling energetic, became more interested in her appearance and hygiene (started doing make-up, reading books), improvement in hopelessness, or helpless, worthlessness. She reported no longer having a sense of suicidal or homicidal ideations. She reported significant improvement in anxiety symptoms. Her PHQ-9 score was now 9; 4 weeks of treatment with Vilazodone 20 mg per day. She tolerated the medication well with no noticeable side effects. There was no changes in her kidney function during the course of treatment.

Conclusion. Vilazodone can be a safe and viable antidepressant for the treatment MDD with comorbid CKD. Long term safety and efficacy needs further investigation.

The relationship between NBME and OSCE scores in third-year family medicine clerkship students at Texas Tech University Health Sciences Center at the Permian Basin: 2015-2017

Presented by: James Wang, M.D., PGY-II

Co-authors: Nimat Alam, M.D., Charles Sponsel, M.D.

Faculty Advisor: Nimat Alam, M.D.

Introduction. In medical student clerkships, both knowledge and application of knowledge and skills are vital to success. In order to evaluate these factors, the National Board of Medical Examiners (NBME) Family Medicine subject exam and an Objective Structured Clinical Examination (OSCE), respectively, are used by many programs to assess their students. Purpose. This study is designed to see if there are any correlations between NBME subject exam percentile and OSCE scores in family medicine. Methods. Students from 2015-2017 were anonymized and these two data points were collected for each student. In total we have a total of 42 third-year medical students in the analysis. Results. Mean (and range) of NBME percentile were 47.14 (6-91) and of OSCE scores were 93.12 (67-106.6). They had a correlation coefficient of r=0.270. Conclusions. In summary, we did not find any correlation between the NBME subject exam percentile and OSCE score in our family medicine rotation during the years analyzed.
Handheld Raman Spectroscopy (RS) device as point of care diagnostic tool

Presented by: Suheung Lee MSIII Co-authors: Kushal Gandhi Ph.D., Gary Ventolini M.D. and Natalia Schlabritz-Lutsevich M.D., Ph.D.
Faculty Advisor: Natalia Schlabritz-Lutsevich

Introduction.
Current medical communities have an urgent need to develop rapid point-of-care techniques that effectively provide diagnostic information in a short period of time and allow instant analyses and distribution of data among providers. However, the most commonly used diagnostic modalities in clinical settings either lack easy accessibility or take considerable time to provide results. We recently reported an application of Raman Spectroscopy (RS) in a hand held RS device, to evaluate maternal serum samples for rapid diagnosis of placental hypoxia (JRS. 2017; 48(12): 1896-1899.) Material and Methods.
Maternal serum samples were collected from 7 obese women and 8 non-obese women in the 1st and 2nd trimester. The blood was collected into 1.5 ml microcentrifuge tubes. We used a hand held RS device (Mira M-1, Metrohm, CA, USA) to collect RS spectra from these samples. The spectra was analyzed with MiraCal software (Metrohm, USA). Results. We detected several RS patterns and corresponding peaks. In addition, non-obese women did not display differences during these pregnancy windows. Conclusion.
Our study indicates that obese pregnant women have Raman spectroscopic “fingerprints” that differ from the ones of non-obese pregnant women. This result implies possible future application of Mira M-1 for identifying pathological conditions in obese pregnant women in macroscopic levels. This finding, in turn, implies that Mira M-1 can be further utilized to obtain useful diagnostic information about other diseases. Acknowledgements:
Authors are thankful to Clinical Research Institute for the help with this study.

A novel mutation in a rare case of Infantile Idiopathic Arterial Calcification (IIAC)

Presented by: John Myers, MSIII Co-authors: Stacy Martinez, M.S., Natalia Schlabritz-Lutsevich, M.D., Ph.D., James Maher, M.D.
Faculty Advisor: Natalia Schlabritz-Lutsevich, M.D., Ph.D.

Background.
A 23-year-old, gravida 2, presented at 9 weeks. An anatomy scan at 27 weeks, demonstrated abnormal arterial echogenicity and elasticity, suspicious for IIAC.

Objective.
Diagnostic workup along with placental pathologic correlates of a case with increase arterial echogenicity and fetal growth restriction in a patient with IIAC was performed. The identification of this novel mutation in ENPP1 and its functional impact is of clinical significance.

Method.
Amniocentesis was performed and capillary sequencing analysis was performed on cultured amniocytes. Aminocytes were studied for DNA using the polymerase chain reaction (PCR) method. PCR primers were used to identify DNA sequences around SNP microarray. The SNPs were further evaluated using primers for Homo sapiens cDNA obtained from the National Center for Biotechnology Information (NCBI). The nucleotide sequence of ENPP1 was searched for haplotypes and SNPs with high allele frequency were evaluated.

Results.
The SNP Microarray demonstrated no pathologic combine number variation, CNV, but there were extended contiguous regions of allele homozygosity in multiple chromosomes with a coefficient of consanguinity calculated at >12%. In the regions of ENPP1 which we have sequenced: 2669bp-4797bp and 5707bp-6197bp. The sequence shows a deletion of a T at 3998bp in Exon 25.

Conclusion.
We were able to demonstrate, using SNP Microarray, multiple contiguous regions of allele homozygosity across many chromosomes which confirmed our suspicions of a rare case of IIAC.

Return of the Influenza virus in Odessa

Presented by: Joshua Urteaga, M.D., PGY-III Co-authors: Alana Waterford, M.D., PGY-II
Department of Internal Medicine

A data comparison of flu and ILI and how it impacts our community 2016 vs 2017 flu seasons. Flu and flu like illnesses account for hundreds of thousands of dollars of healthcare money spent, days lost by local workers, and children out of school and work. What is the best way to get a flu vaccine? In this study we will look at the return visits to our clinic for flu like symptoms? Will people who got the flu vaccine be less likely to return to a healthcare setting with flu like symptoms? We will compare clinic data from this flu season and last flu season obtained in our clinic.
Knowledge & Beliefs about Diabetes among the Permian Basin Community

Knowledge and beliefs about disease are factors that are integral to the outcomes of long-term health in a single family unit and ultimately in the entire community. We propose to elucidate the knowledge and beliefs about diabetes among the families of the Permian Basin community. In this study, we hypothesize that the knowledge and beliefs are poor and add to the prevalence of diabetes and its associated comorbidities. We specifically identify how family history of diabetes relates to diabetes, beliefs about the prevention of diabetes, and knowledge and beliefs about the progression of disease.

Objective. The purpose of this study is to create a cost-effective tool for teaching interns, medical students, and nursing staff to examine cervical change during labor, specifically focusing on cervical dilation and effacement. A secondary purpose is to standardize cervical exams across providers so that patient exams are more accurate and precise.

Study Design. Participants will be asked to compare 2 models that teach the cervical exam. They will rate each model on the Likert scale, which assigns a number rating from most realistic to least realistic. They will be asked to compare various aspects of each model including appearance, texture, etc.

Materials. SIX 4-inch Styrofoam balls, 3 pairs knit gloves, 3 pairs men’s socks, Compass, Scissors, Hot glue gun, Glue sticks, Marker, Twist ties, Velcro, Cardboard box, Ruler.

Results. The results of the survey will be used to determine which of the two models is most realistic. The models will also be assessed in terms of cost, reproducibility, and longevity. I hypothesize that I can create a model of equal value in terms of teaching accurate cervical dilation and effacement at a significantly reduced cost when compared to a store bought model. We will also look at precision and accuracy before and after use with the models.
Evaluation of term neonates born to mothers without or with limited prenatal care

Presented by Tina Thai, D.O., PGY-I

Co-authors: Babatunde Jinadu, M.D., Dimitrios Angelis, M.D., Manjula Mudduluru, M.D., Bhargavi Kola, M.D., Dinesh Gowda, M.D.

Faculty Advisor: Babatunde Jinadu, M.D.

Department of Obstetrics and Gynecology

Infant mortality rate has declined in the U.S for the past several years. Many factors have a role in that improvement, factors including better prenatal care. Prenatal care helps guide women to have a healthy pregnancy and subsequently healthy babies, as much as possible. However, there are still many women who have limited or no prenatal care at all, for reasons such as financial hardships, cultural or ethnic backgrounds. Inadequate prenatal care has a higher risk for infants for sepsis, admission to NICU and prolonged hospital stay. It is also difficult for families to make ends meet and can exacerbate the situation. This retrospective case control study over term (gestation age > 37 weeks) infants will select at least 50 infants with no prenatal care and at least 150 control infants with prenatal care. We hope to help identify term neonates at risk for infection and, perhaps, provide improved prenatal care counseling and interventions.
Over the last few years, research has shown the use of alternative medicine, as well as, over the counter (OTC) supplements has been increasing. Among these supplements, Arginine (Arg), has been used for various medical conditions. Research supports that when taken in the appropriate chemical form and correct dosage, Arginine, is not toxic to cells. However, high doses >9 gm/day are associated with adverse effects in some subjects.

In this case report, we will present a case of non-anion gap metabolic acidosis with acute kidney injury secondary to high dose of Arginine-HCL. The patient’s acidic state was corrected with a Sodium Bicarbonate (NaHCO3) infusion and intravenous fluids.

Can an over the counter supplement get you in the ICU?

Presented by: Rami Bararseh, M.D., PGVII
Department of Internal Medicine

Over ten years, a 65 year old female with a past medical history of hypertension, unsuccessfully attempted to treat her poorly controlled blood pressure with OTC Arg. Over the last month, in an effort to manage her hypertension, the patient increased her Arg dose to 1000mg strength tabs. The patient then ingested 3-4 tabs, 3 times a day, totaling 9-12 gm/day. Three days prior to admission, the patient reported feeling progressively weak with decreased energy. Before presenting to the emergency room (ER), she arrived at work exhibiting unusual behavior and inappropriate verbal responses. The patient was transferred to the ER where lab work revealed a non-anion gap metabolic acidosis and an elevated creatinine. The patient’s medication history revealed an Arg overdose and she was started on a NaHCO3 infusion and hydrated with normal saline. Her general condition improved gradually over the next few hours and completely resolved two days after admission. Lab values normalized on the third day and the patient was discharged.

Arginine is used by patients for various medical conditions and has proven beneficial in lowering blood pressure. Hypertensive disorders can be rapidly changing and progress from seemingly mild cases to severe. Furthermore hypertensive disorders can affect virtually any organ system and there is often signs of multi-organ involvement at time of diagnosis. These conditions include gestational hypertension, preeclampsia (with and without severe features), HELLP syndrome (hemolysis, elevated liver enzymes, low platelets), chronic hypertension, chronic hypertension with superimposed preeclampsia and eclampsia. Preeclampsia can cause significant morbidity and mortality as it can virtually affect any organ system and there is often signs of multi-organ involvement at time of diagnosis. Further-more hypertensive disorders can be rapidly changing and progress from seemingly mild cases to severe. The first signs of preeclampsia are often hypertension with proteinuria. Other symptoms of preeclampsia and HELLP syndrome is headache, vision changes, nausea/vomiting, RUPJ pain, shoulder or chest pain, and bleeding. In the US 12% of maternal deaths are related to hypertensive disorders with many of these deaths being preventable with early detection and intervention.

Case: A 31 yo G3P2002 with pregnancy at 32 weeks 0 days presented to an outside ER with complaints of chest pain and left shoulder pain around 6 pm. Her initial BP was 157/93. She was given norco, Tylenol #3, miralax and famotidine. Her troponin was negative, d-dimer was 2.4, creatinine 0.6, Hg 13.5, platelets 131, and on UA protein was 3+. Her symptoms did not resolve a chest CT was performed and resulted around 3am showing no PE, but bilateral pleural effusions and some patchy infiltrates. Her BP continued to be elevated with a range of 130’s-180s/70s-100’s throughout this time. They were preparing to admit patient at this time. At 4:30 am the patient began having slurred speech and weakness on the right side. A head CT was performed which revealed a left sided parenchymal hemorrhage involving posterior lobe of the inferior. Her admission labs showed AST 420, ALT 86, LDI 1326. CT scan showed worsening of hemorrhage (10X4X4-6cm left hemispheric bleed with dissection into left lateral ventricle, mild hemorrhage in the circle of Willis, and 10mm midline shift). Neurosurgery decided to proceed with left craniotomy for evacuation of hematoma and placement of left ventriculostomy. Patient was taken to ICU after surgery.

Conclusion/Significance: This case illustrates the complications and severity of hypertensive disorders in pregnancy. Furthermore it demonstrates how quickly the clinical picture can change once a patient has developed preeclampsia and the importance of early intervention. In this case we have a patient who never had any history of elevate BP or preeclampsia in prior pregnancies. Initially no interventions were made to lower BP start MgSO4 or even consult OB/GYN. With early intervention likely the severity of morbidity would have been significantly less.
Effect of Race and Parity on Breast Feeding Rates in West Texas
Presented by: Megan Clapp, MSIII
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Background:
Breastfeeding is beneficial to the health of both mothers and children. It reduces GI infections, obesity, asthma, and other diseases in children, and it lowers the rates of uterine bleeding, ovarian cancer and breast cancer in mothers. Additionally, breastfeeding has been shown to decrease the risk of sudden infant death syndrome (SIDS) and obesity. Due to scheduled well-child visits, pediatricians have an opportunity to educate and encourage breastfeeding during the first six months of life when breastfeeding is so crucial. Without the effort of physicians during well-child or sick visits, any and exclusive breastfeeding rates will remain low in the United States, contributing to significant morbidity in children.

Objective:
To determine the association between a clinician's age, level of training, type of training, gender, and breastfeeding education rates.

Design/Methods:
This study is a retrospective chart-review of 817 doctor visits from 0 to 8 weeks of life. We compared each provider's patient population based upon patient ethnicity and sex, mother's age, parity status, mode of delivery, and time spent discussing breastfeeding. For each predictor, crude (OR) and adjusted (AOR) Odd Ratios were calculated and presented together with their 95% confidence intervals (CI) and p values. Significance level was set at 0.05. All calculations were made using Stata 13.1 (StataCorp, College Station, TX).

Results:
Patient ethnicity/race was assigned as follows: 45.8% Hispanic, 25.5% White, 6.5% Black, 3.4% other, and 18.9% not disclosed. No significant differences were found between physician groups in newborn’s gender and ethnicity proportions, maternal age, and c-section rate. However, multiparity was more frequent in old graduates’ records (p=0.045). From the analysis on breastfeeding behavior, we found that when the mother was Hispanic, there was a statistically significant difference in patient education among female versus male providers, nor a difference in physicians that graduated more than 10 years ago versus newer graduates.

Conclusions:
This study was performed as a continuation of a previous chart review comparing the breastfeeding education rates of 3 physician and 2 physician assistants. Our previous study looking at 241 well-child visits with these 5 providers found significant differences among providers, including one female versus one male physician over 40. In our expanded study with 51 providers, there was not a statistically significant difference in a physician’s gender and the presence of breastfeeding education among patients. Neither was there a significant difference between physicians who had practiced for less than 10 years and those who practiced more than 10 years. We did find higher rates of breastfeeding among Caucasian mothers compared to other ethnicities. This is consistent with CDC statistics reporting higher breastfeeding rates among white infants (85.7%) compared to 84.8% of Hispanic infants, and 68% of black infants. There were lower rates of exclusive breastfeeding among multiparous women in our study as well. Stronger breastfeeding education is needed. Improvement in breastfeeding education to all mothers, no matter their parity, will greatly benefit both the mothers and their children’s health. According to the CDC, professional support is a key component in improving rates of breastfeeding in this country. This study is the first of its kind to consider the effects of clinician gender and age on breastfeeding education.