

## NOTES

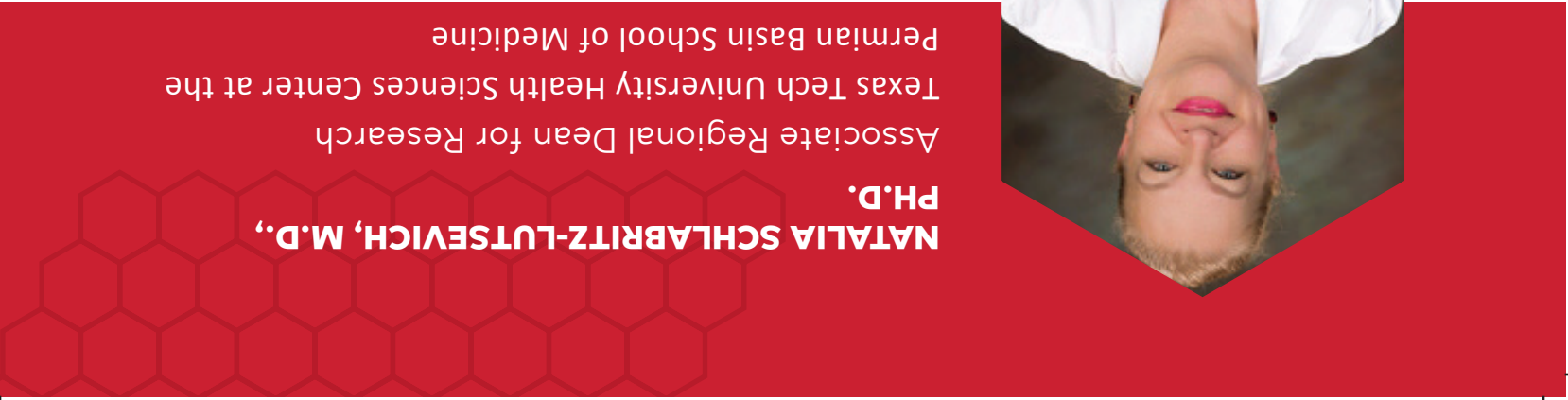


### **MICHAEL S. ZAVADA, PH.D.**

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.

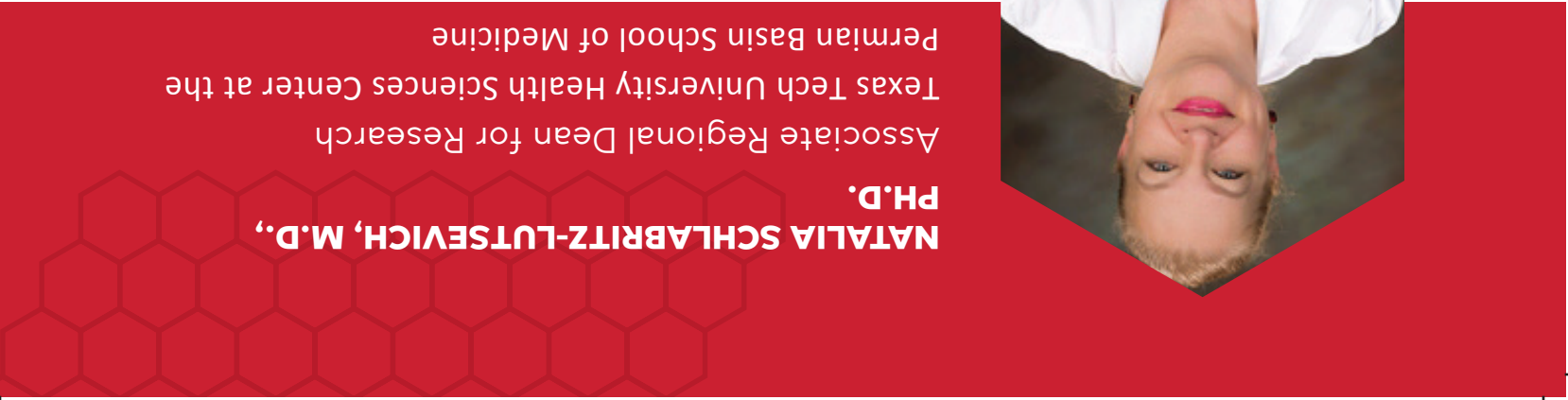


A portrait of Natalia Schlabbritz-Lutsevich, a woman with blonde hair, wearing a white lab coat over a dark top. She is smiling and looking directly at the camera. The background is a solid dark color. The portrait is framed by a white border.

A portrait of Natalia Schlabbritz-Lutsevich, a woman with blonde hair, wearing a white lab coat over a dark top. She is smiling and looking directly at the camera. The background is a solid dark color. The portrait is framed by a white border.

A portrait of Natalia Schlabbritz-Lutsevich, a woman with blonde hair, wearing a white lab coat, smiling. The background is a solid dark blue. The text "NATALIA SCHLABBRITZ-LUTSEVICH, M.D., PH.D." is written in white, bold, uppercase letters across the middle of the image. Below the name, in smaller white uppercase letters, is "Associate Regional Dean for Research" and "Texas Tech University Health Sciences Center at the Permian Basin School of Medicine".

A portrait of Natalia Schlabbritz-Lutsevich, a woman with blonde hair, wearing a white lab coat, smiling. The background is a solid dark blue. The text "NATALIA SCHLABBRITZ-LUTSEVICH, M.D., PH.D." is written in white, bold, uppercase letters across the middle of the image. Below the name, in smaller white uppercase letters, is "Associate Regional Dean for Research" and "Texas Tech University Health Sciences Center at the Permian Basin School of Medicine".



NOTES

RESIDENTS’ RESEARCH SUBCOMMITTEE



**Ritvij Satodiya,  
M.D., PGYI**  
Subcommittee chair  
Psychiatry



**Cristina Penon,  
M.D., PGYI**  
Family & Community  
Medicine



**Hassan Khalid,  
M.D., PGYI**  
Internal Medicine



**Erik Colegrove,  
M.D., PGYI**  
Family & Community  
Medicine



**Olga Olson,  
M.D., PGYI**  
Internal Medicine



**Casey Mraz,  
M.D., PGYII**  
Family & Community  
Medicine



**Meridyth Buschardt,  
M.D., PGYI**  
Internal Medicine



**Jeremy Malouf,  
M.D., PGYII**  
Family & Community  
Medicine



**Samih Alhourani,  
M.D., PGYI**  
Internal Medicine



Natalia  
Schlabritz-  
Lutsevich,  
M.D., Ph.D.,  
Founding  
Committee chair



Craig  
Spellman,  
Ph.D., D.O.



Erik  
Wilkinson,  
M.L.S.



John Bauer,  
M.D.



Bobby  
Jain, M.D.



Kalpana  
Bhairavarasu,  
M.D.



Maira  
Carrillo, Ph.D.



Lavi Oud,  
M.D.



Vani  
Selvan, M.D.



Ramachandra  
Chemitiganti,  
M.D.



NOTES



Bhargavi  
Kola, M.D.



James  
Maher, M.D.



Babatunde  
Jinadu, M.D.



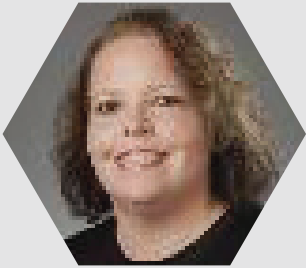
Kushal  
Gandhi, Ph.D.



Katherine  
Shreyder,  
M.D., Ph.D.



Alfredo  
Iardino, M.D.



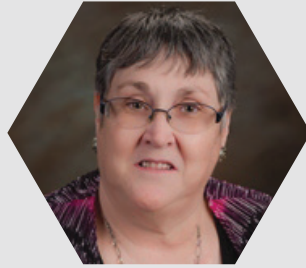
Ailena  
Mulkey,  
LVN, CCRC



Dinesh  
Gowda, M.D.



Zeeshan  
Mansuri, M.D.



Lisa Platner,  
Ph.D.

7:45-8:00	Breakfast	
8:00-8:15	Opening Ceremony	
8:15-8:30	>Welcome   Dr. Gary Ventolini, professor and regional dean of SOM Dr. Natalia Schlabritz-Lutsevich, Associate Regional Dean for Research	
8:30-8:45	Jonathan Garcia, Lane Williams, and Andrew West, UTPB/TTUHS Real Time Detection of Bacterial Biofilm Growth – Page 19	
8:45-9:00	James Wang, M.D., PGYII, Family Medicine   Reducing Medical Errors Associated with Same/Similar Name Providers – Page 22	
9:15-9:30	Katherine Shreyder, M.D., Ph.D., PGYII, Internal Medicine, Regional Dean's award recipient   Maternal cardiovascular echocardiographic structure and function in obese and non-obese pregnant patients in the first trimester of pregnancy – page 21	
9:30-9:45	Zakaria Hindi, M.D., PGYII Internal Medicine. Regional dean's award recipient. The Role of Signal Induction Regulatory Protein – alpha (STRP-α) in Hepato- phagocytic Syndrome – Page 17	
9:45-10:00	Damien Galindo, 10th Grade, Ector County Independent School District Decomposition in Space	
10:00-10:15	Daya Sharma, Ph.D., associate professor II Computer Information Systems, Odessa College. The Rise of Ransom Ware in Healthcare and HIPPA Compliance	
10:15-10:30	Break	
10:30-10:45	Elsa Parra, MSIII Tissue Histogram Intensity of Feral Liver and Reference Organs in Lean Pregnant Women – Page 20	
10-45-11:00	Alfredo Iardino, M.D., PGYII, Internal Medicine Is Weakness in a Young Men Always MS? – Page 25	
11:00-11:15	Deidre Morales, 10th Grade, Ector County Independent School District The Efficacy of Idonella Sakaiensis in a Microgravity Environment	
11:15-11:30	Jason Osborne, chief innovation officer, Ector County Independent School District Accelerating Science and K-12 Education Outcomes through Novel Citizen Science Methods Development	

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 of the central nervous system such as multiple sclerosis, Alzheimer's disease, amyotrophic lateral sclerosis, Parkinson's and Huntington's disease. Aspernigrin is a natural product isolated from a culture of Aspergillus niger that has shown to dramatically decrease glutamate induced excitotoxicity and may qualify as a potential drug candidate to ameliorate 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 other color additives. For instance, the production of TiO<sub>2</sub> as a color additive surpasses one million tons annually, which represents an enormous source of nanoscale TiO<sub>2</sub> entering environmental compartments, including seawater. Previous work has shown TiO<sub>2</sub> inhibits the nitrogen cycle when introduced to cyanobacteria and inhibits calciferous coral growth of mounding coral species. In order to study the effects of TiO<sub>2</sub> nanoparticles on Favites Pentagona Coral environment, TiO<sub>2</sub> nanoparticles were introduced to a coral specimen in seawater tanks. The water in TiO<sub>2</sub>-exposed coral showed a nitrate spike and the coral suffered a considerable decline in health. Moreover, there was also an evident change in the algal growth pattern when exposed to titanium dioxide. In this work, we present the development of a water chemistry analytical procedure in which the absorbance of a diazotization reaction product, 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 R<sup>2</sup> = 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 Collette- Lester Fear of Death Sale (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 the 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

Masoprolol, also known as nordihydroguaiaretic acid is an antineoplastic drug is 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 as the demand for such treatment increases. In this work, we aim to describe the synthesis of a cross-linked gold nanoparticle-polymer network, in the form of a protective hydrogel containing nordihydroguaiaretic acid extracted from the plant Larrea tridentata. The hydrogel was prepared via polymerization of acrylamide, polyethylene glycol dimethacrylate, poly vinyl alcohol, and Lithium-phenyl-2,4,6-trimethylbenzoylphosphinate. Nordihydroguaiaretic 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	Ritvij Satodiya, M.D., PGYI, 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 Antenatal Evaluation by Ultrasound and Genetic Testing of Idiopathic Infantile Arterial Calcification with Placental Correlation – Page 16
2:15-2:30	Grace Shim, MSIII Anti-Inflammatory Effect of Endogenous Cannabinoid Anadamide in ex vivo model of the blood brain barrier – Page 23
2:30-2:45	Cristina Penon, M.D., PGYI, Family & Community Medicine Twenty-first Century Scurvy – Page 29
2:45-3:00	Break
3:00-3:15	Saranya Rajasekar, M.D., PGYI, Internal Medicine A Rare Cause of Emphysematous Gastritis: Sarcina Ventriculi – Page 24
3:15-3:30	Sajjad Ali, M.D., PGYII, Internal Medicine   Association of the short-term mortality and hyperuricemia in patients with STEMI – Page 27
3:30-3:45	Eugenia Banina, 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





**REBECCA BABCOCK, PH.D.**  
William and Ordelle Watts Professor  
*Chair of Literature and Languages, University of Texas of the Permian Basin*

Dr. Rebecca Babcock is the William and Ordelle Watts Professor, the Chair of Literature and Languages and director of Undergraduate Research at the University of Texas of the Permian Basin. She has a B.A. and an M.A. from the University of Massachusetts Boston and a Ph.D. from Indiana University of Pennsylvania in Indiana, Pennsylvania. Dr. Babcock also will serve as one of the poster judges for TTUHSC at the Permian Basin.



**ALIETHIA DEAN | University of Texas of the Permian Basin**

Aliethia Dean is the assistant of Dr. Rebecca Babcock. A life-time resident of the Permian Basin, Ms. Dean has an Associate's Degree from Midland College and a Bachelor of Arts in Sociology and English from the University of Texas of the Permian Basin. She is currently pursuing an M.A. in English at UTPB and will graduate in spring 2018. She is looking at various Ph.D. programs in technical communications and rhetoric. Ms. Dean will also be serving as one of the poster judges for TTUHSC at the Permian Basin.



**MELISSA WAGGONER | Senior Editor**  
*Department of Obstetrics and Gynecology*

Melissa Waggoner is the senior editor in the Department of Obstetrics and Gynecology at TTUHSC at the Permian Basin. She has an M.S. in agricultural communications from Texas Tech University.



**ISABEL GARZA | Administrative Assistant**  
Isabel Garza is an Administrative Assistant for the Research Department at TTUHSC at the Permian Basin.

FETAL HYPOLGYCEMIA 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

Maternal 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 characterize the fetal sex-specific nutritional regulation of CB1R 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 [M, n=6; F, n=6], in which mothers received 70% of the global feed eaten by CTR, were studied. Quantitative RT-PCR was performed with isoforms' specific primers. 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 ( $\eta^2=0.1779$  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 a proposed Multilevel Interdisciplinary Paradigm (MIP) for a host of disciplines, including psychology, theology, counseling, sociology, social work, medicine, neurology, and nursing. The MIP consists 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) I, 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.



### 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.

## KEYNOTE SPEAKER

### AFZAL A. SIDDIQUI, PH.D.

Grover E. Murray Distinguished Professor

Department of Microbiology and Immunology

Texas Tech University Health Sciences Center



Dr. Afzal Siddiqui is a Grover E. Murray Distinguished Professor at the TTUHSC School of Medicine. Dr. Siddiqui also is the director of the Center for Tropical Medicine & Infectious Diseases. Dr. Siddiqui recently received a grant of over \$2 million for pre-clinical development of a vaccine for schistosomiasis.

Dr. Siddiqui has a bachelor’s degree and two master’s degrees from Aligarh University and a Ph.D. from the University of Western Ontario.

# JUDGES

## ORAL PRESENTATIONS



**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 Department of Internal Medicine at TTUHSC. He is also the executive director of the Clinical 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 of Pre-Recorded Presentations*

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.

### 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 busy and demanding schedule. With that constant stress comes many consequences. These consequences lead to different behaviors and habits, and can eventually lead a person to develop depression. It was hypothesized that the relationship between stress and depression is stronger in college athletes as opposed to non-college athletes. To demonstrate this, participants were given a survey which included a demographic questionnaire to determine if they were an athlete, the Beck Depression Inventory to determine the amount of depression they have experienced, and the Perceived Stress Scale to determine the amount of stress participants are currently feeling. Results are presented and discussed. This topic is important, as the more we can minimize stress in people's lives and help maintain good mental health, the better quality of life college students and athletes can have. 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 researchers have tried to prove that swearing has negative effects on the average person. However, it is hypothesized that those who swear in their daily conversations will have lower levels of both stress and depression. In order to test this theory, participants completed Beck's Depression Inventory (Beck, 1961), The University Stress Scale (Stallman, 2008), and a swearing survey created by the researcher. Results have been analyzed and discussed. 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 Andrews in West Texas. The time scale of the core is in the Permian period of the Paleozoic era which is approximately 275 million years ago. The Permian events are well known for the end of the largest mass extinction in earth's history and the rise of the supercontinent Pangea. Lithology, textures, and Sedimentary structures such as fossils and ocean deposits are all included in the description of the core. This was conducted through the use of hands-on and microscopic views to gain an accurate interpretation. Sedimentary structures that were discovered include various shales, sandstones, carbonates, evaporates, and oil stains. Oil stains is a primary source and the biggest reason you have of discovering drilling that takes place. The more oil stains or oil seeps in rocks, the more chances you have of discovering oil. Oil stains were found through 100 feet of the core section and are mostly cemented in by dolomite and sands. The core is seen to have a shallowing cycle, meaning that this core interval is made up of ocean deposits found in a shallow marine environment. Rocks throughout the core along with exposure surfaces from the top of the core also prove this sequence to be true due to the types of fossils and grains.

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 24hours 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-TTACATTGAGTGAGTGGCGAACT, 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  $0.51 \pm .0.09$  g for 24 hours (n=6),  $3.41 \pm 0.26$  g for 48 hours (n=6), the weight of the attached phase was  $.46 \pm 0.04$  g (n=5), and the weight of the detached phase  $3.13 \pm 0.34$  g (n=5), (data are mean  $\pm$  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.

PRE-RECORDED PRESENTATIONS

VANI SELVAN, M.D.

Department of Family and Community Medicine

Dr. Selvan is assistant professor and research director in the Department of Family and Community Medicine at TTUHSC at the Permian Basin. Dr. Selvan has been with TTUHSC at the Permian Basin since 2016.



SHORT PRESENTATION

BOB CAMPBELL

During our closing this year, Mr. Bob Campbell will be doing a reading. Campbell is a writer based in the Permian Basin. He has written for both the Odessa American and the Midland Reporter-Telegram. Campbell will read from Monica’s Apples, The Floating Speck, Gerard Manley Hopkins, Elijah-John the Baptist, Gideon’s Fleece, The Ghost Melchizedek and Billy the Kid’s Last Dance





TTUHSC AT THE PERMIAN BASIN

RESEARCH DAY WORK STATIONS

- Biofilm Growth and Formation**

– Andy West, MSIII, Gary Ventolini, M.D.

**How Human Placenta Works**

– Research Lab members,  
Natalia Schlabritz-Lutsevich, M.D., Ph.D.

**Novel Team Building Training: From the Corporations to Healthcare**

– David Banh, M.D.

**Big Decisions Curriculum**

– Lisa Platter, Ph.D.

**Diverse Applications of xCELLigence Real-Time Cell Analysis: From Bacterial Biofilms to Parasitic Worms**

- xCELLIGENCE, San Diego, CA

**Frontiers in Microscopy**

– Nikon Instruments Inc., Melville, NY

**Nutrients as Medications**

– Kalpana Bhariavarasu, M.D.

**3D Printing**

– Erik Wilkinson, MLS

**Video Messages from top clinician-scientists to the Permian Basin Research Forum**

– organized by Ritvi Satodiya, M.D.

Baltier, Varitza, Cummings, Jacqueline, Moreland, Ashley, Campbell, Kynnie

Faculty Mentor: Dr. Kevin Harris

SPRS stands for Society for the Psychology of Religion and Spirituality, or division 36 from the American Psychological Association (APA). In psychology, the field of religiosity 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 religiosity, spirituality, faith, or sacredness. In this survey, we will be using terms from two previous studies, the Defining Religiosity, 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 and 7 being important. The participants will be rating each term on importance in four different areas, Religiosity, Spirituality, Faith, and Sacred. 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.

Stock Market Data Analysis Generator

Dominguez, Sierra Faculty Mentor: Quan Yuan

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 is large amounts of data collected in order to predict highly possible outcomes. In this research, we focus on developing a Python User Interface that retrieves stock market historical data to present general visualization and analysis that can demonstrate patterns or relationships between the fields analyzed. Although, the user encounters a simple user interface, the back end incorporates data manipulation, storage, and processing. 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.

**CANNABINOID-RECEPTORS MEDIATED REGULATION OF LONG-CHAIN POLY-UNSATURATED FATTY ACID (LC-PUFA) TRANSPORTER (MSFD2A) IN PLACENTAL AND BLOOD-BRAIN (BBB) BARRIERS.**

English, Jay Faculty Mentor: Samuel David

Legalization of recreational marijuana raised issues regarding effects of exogenous cannabis in pregnancy. The cannabinoids family is comprised of 66 chemical products with the common structure of Cannabis sativa (Δ9Tetrahydrocannabinol-THC), which binds to CB1R and CB2R main cannabinoid receptors. Exogenous cannabinoids are working through the mechanism of “kick-starting” the endogenous cannabinoid system (ECS). ECS are derivative of LC-PUFA. The LC-PUFA transporter- MSFD2A - is essential for the BBB integrity and placental synctialization. Both receptors (CB1R and MSFD2A) are expressed in placenta and fetal brain, however, their role in the regulation of brain and placenta functions remains to be elucidated.

## 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.

## 2018 PERMIAN BASIN RESEARCH FORUM

### *Oral Presentations*

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 increase 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 requested with attention to 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 decrease 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 46XX, and a normal MicroArray. Placental pathology 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 condition is generally found postnatally from known consanguineous relationships. 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.

2018 PERMIAN BASIN RESEARCH FORUM

UNIVERSITY OF TEXAS OF THE PERMIAN BASIN

*Poster Presentations*



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)<sub>n</sub>; 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 (destabilization) 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-α) in Hemophagocytic Syndrome

Presented by: Zakaria Hindi, M.D., PGY-II

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.

Departments 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 phorbol myristate acetate (PMA) to activate and differentiate macrophages into M1) and subsequently were treated with a Lipopolysaccharide/Interferon-gamma (LPS/IFN-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. To understand the role of SIRP-α during phagocytosis, we added anti-SIRP-α Ab to block SIRP-α receptors in conditions treated with IFN-gamma/LPS combination. We found that phagocytosis rates decreased significantly in the SFM condition treated with LPS/IFN-gamma combination when compared to conditions treated with LPS/IFN-gamma combination alone.

**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-α, when interacts with CD 47, can normally inhibit phagocytosis during non-inflammation settings. However, in the presence of macrophages stressors, SIRP-α expression increased and can became pro-phagocytic. Moreover, blocking SIRP-α receptor during activation led to decreased phagocytic activity against RBCs. And so, our findings should be confirmed and supported by experimenting on animal models.

**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 secondary to an increasing number of warts on his feet, one of the warts was excised, placed into an empty pill capsule, and ingested by the patient. On follow-up 2 months later no warts were observed on the patient's knees or feet, and he reports no recurrence of warts 11 years later. The second patient was a 21-year-old female with a similar history of multiple treatment-refractory warts on both hands. One of the warts was excised and ingested by the patient, and on follow-up two months later no warts were observed on her hands and she 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.

**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 dermatophytes and their associated 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 narrow down the main bacterial players 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 diseases, type 2 diabetes, hypertension, and depression. According to American College of Sports Medicine (ACSM, 2017), adults should include 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 (2012). With college students being an at-risk population for physical inactivity, it is important to determine what motivates college students to engage in PA and their perceived 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 at 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.

Gray Matter Thickness as a Possible Predictor for Reading Ability

Researcher: 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 (Matrin 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

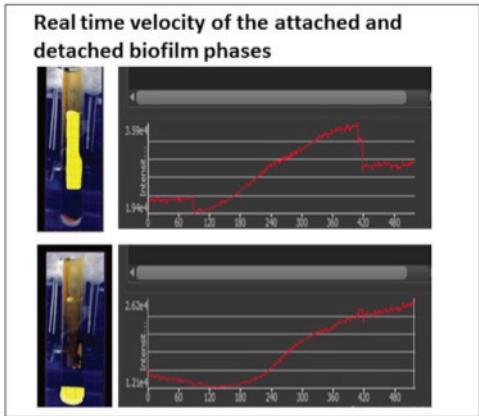
UTPB, Department of Biology and

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 24hours 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-TTACATTTGAGTGAGTGGCGAACT, 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± .009 g for 24 hours (n=6), 3.41±0.26 g for 48 hours (n=6), the weight of the attached phase was .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.





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 (lung, spleen, kidney/adrenal) were obtained. (Three measurements per organ for each image.) 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.

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. When this occurs, it is called a testing effect. Feedback has 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 completed a multiple-choice test followed by a cued-recall test 5 minutes or 48 hours later. After each multiple-choice question, participants either received no feedback, the correct answer, a second chance to identify the answer, or a second chance followed by the correct answer. On both tests, 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 show a hypercorrection effect. This means that for items that appear on both tests they 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 correction is increased for future exams.

Researcher: Rubee Mendoza

Mentor: Dr. Emily A. Farris

UTPB 2018 URP Talk: Multiple-Choice Testing Feedback and Hypercorrection

Winkler County, Texas is home to two sinkholes that formed in 1980 and 2002, with the formation of the sinkholes there were a number of surface features created. Surface features such as compression ridges, Horst and Graben faulting, and sagging. The sinkholes and the structures are believed to be a result of a dissolution of salt in the Salado Formation, this dissolution had created a void space which caused the formations above the Salado to cave in and form the sinkholes. The sinkholes are directly above the Permian Capitan Reef; this formation contains water. Due to the Capitan Reef' is below the salt formation, it had caused the sinkholes to fill with water from Cenozoic Alluvium which is the ground water table in that area. The surface deformations are a concern for the infrastructure in the surrounding area. Using a high precision Global Positioning System, we calculate the rate of subsidence by recording the elevation change over time for the area East of the second sinkhole, where the most sagging has occurred.

Researcher: Ganna Vermolenko, Taiwo Taiwo and Christopher King

sinkholes using high precision GPS

Mentors: Dr. Sumit Verma and Dr. Robert Trentham

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 patients in the first trimester of pregnancy | Presented by: Katherine Shreyder, MD, PhD

Co-authors: Elsa Parra MSIII, Hanna Kodeih D.O., PGY-III, Daniela Pino M.D., PGY-II, James Maher

M.D. Faculty Advisor: Natalia Schlabritz-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.

	Non-Obese (n=13)	Obese (n=6)	p-value
Patients’ Characteristics			
Age (years)	26.3 ±5.34	29.4± 7.07	>0.05
Parity	2.8±1.23	3.0±1.2	>0.05
BMI (kg/m²)	25.5 ±2.3	33.6± 2.9	<0.05
Cardiovascular Indices			
SBP ( mmHg)	109 ±9.3	125± 12.6	<0.05
DBP (mmHg)	68.8 ±6.73	79.7± 12.7	<0.05
LVEDD (cm)	4.41 ±0.2	4.54 ±0.25	>0.05
SV ( ml)	57.4 ±6.3	60.4 ±4.9	>0.05
EF ( %)	73.7 ±1.8	71.0± 2.6	<0.05
LV mass (g)	97.4 ±21.6	122.6 ±29.5	<0.05
RWT(cm)	0.33 ±0.05	0.35 ±0.04	>0.05
E/A	1.83 ±0.19	1.5 ±0.2	<0.05

**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.

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 been implemented to prevent such errors. However, same and similar provider name-based errors are a common, yet understudied source of medical errors in both primary care and medicine overall.

**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 TTHSC DFCM residents encounter.

**Participants.** Family medicine residents of TTHSC-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%) of those errors were between providers with the same first and last name. The most common source of errors was in the inpatient setting (33 [65%], 30[90%] of which were between same/similar name providers [SSNPs]), followed by outpatient (11[21%], 7[64%] of which were between SSNPs), and finally administrative/IT (8[16%], all of which were between SSNPs). The most common type of errors was verbal orders (28[55% of all errors]).

**Conclusions.** There was a very noticeable difference in the number of errors between providers with similar/same names as compared to providers with different names. 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.

Depositional Paleoenvironment of the Mancos Shale Formation, San Juan Basin, New Mexico  
Researcher: Clinton McCrary  
Mentor: Dr. Mohamed K. Zobaa  
Geology Program, University of Texas of the Permian Basin

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 analysis of the Cretaceous-aged Mancos Formation in the San Juan Basin, located in northwestern New Mexico. Seven core samples representing an approximately seven-meter section were palynologically processed and microscopically examined for their organic matter content. 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, phytolankton, 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 online part of the campus. There is not a convenient one-stop-shop for students to access canvas, their my.utpb.edu page, or the university calendar. We seek to change that with Falconnect. Falconnect is an iOS app compatible with all iPhones and iPads made within the last decade. It was developed in swift using xcode, Apple's proprietary coding software. Moreover, Falconnect follows the standard MVC model. The app will serve as hub for the university. It will direct students to the previously mentioned canvas, my.utpb.edu, the university calendar, as well as the athletics page. Furthermore, using google api, there will be a map of the university with pins marking the locations of the various academic and housing buildings around campus. This will make traversing the campus easier for everyone.



2018 PERMIAN BASIN RESEARCH FORUM  
UNIVERSITY OF TEXAS OF THE PERMIAN BASIN

Oral Abstracts

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

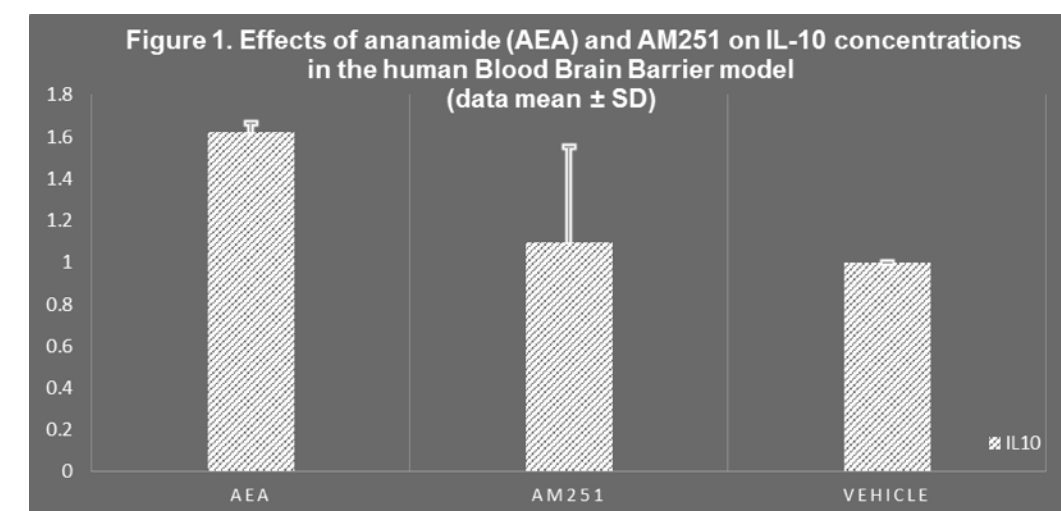
**Introduction.** Neurological disorder, including brain injuries, is the leading cause group of disability-adjusted life-years and the second leading cause of death world-wide. Blood brain barrier (BBB) plays an essential role in the brain protection and disruption of this barrier is a feature of brain 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-1b and TNF-a 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 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. 16841MIL, 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 manufacture 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.



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 pneumoniae, 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 complaints of abdominal pain, nausea, vomiting and cough for three days. He was discharged from critical care unit two weeks earlier, for sepsis from Pseudomonas urinary tract infection and intubated for respiratory failure. On admission he was afebrile, tachycardia (heart rate 130), tachypnea (respiratory rate 22), blood pressure 126/88 mmHg. Physical examination was positive for altered mental status not oriented to place or person, epigastric tenderness, distended abdomen with positive bowel sounds. Laboratory examination revealed white count 21.4 cells/dl, Hemoglobin 14.0 g/dl, platelets 350 cells/dl, INR 1.21, sodium 140 meq/l, potassium 4.2 meq/l, chloride 101 meq/l, bicarbonate 22 meq/l, blood urea nitrogen 30 mg/dl, creatinine 1.4 mg/dl, procalcitonin of 0.84 ng/dl. Computer tomography (CT) abdomen reported marked distention of the stomach with pneumatosis in the wall, consistent with emphysematous gastritis and portal venous air present in the liver. He was empirically treated with antibiotics piperacillin-tazobactam, meropenem, Linezolid, clindamycin and miconazole. The next day esophagogastroscopy was performed and he was found to have normal esophagus, there were few clean based ulcer in gastroesophageal junction and there was a bluish discoloration in the proximal stomach in the fundus just distal to the gastroesophageal junction possibly due to ischemic gastritis and adequate tissue biopsies were taken. Surgical team was consulted and given his comorbidities family decided to go with hospice. Pathology report revealed Sarcina ventriculi gastritis, immunohistochemical stain for Helicobacter pylori was negative and stain for fungal elements were negative.

**Discussion.** So far only 19 cases of Sarcina ventriculi cases have been reported ~ 6. Sarcina ventriculi is a gram positive anaerobic, sugar fermenting bacterium. The mechanism of injury is uncertain, it is considered that delayed gastric emptying and carbohydrate stasis in association with acidic content of gastric juices provide an ideal culture medium for this organism. Also, the local accumulation of acetaldehyde and ethanol formed from carbohydrate fermentation by the organism could induce stomach and duodenal injuries. A preexisting mucosal defect provides the nidus for emphysematous gastritis to develop, rather than direct invasion of Sarcina species into the gastric wall ~ 6. Delayed gastric emptying 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.

A Rare Cause of Emphysematous Gastritis: Sarcina Ventriculi

Presented by: Saranya Rajasekar, PGY-I

Co-authors: Nirmal Oteddu M.D., PGY-II, Pretti Gupta, M.D., PGY-III

Department of Internal Medicine

“Gray Matter Thickness as a Possible Predictor for Reading Ability”  
Jules Holton

“Bacterial Species Identification and Differentiation from Patients with Dermatophyte associated Onychomycosis”  
Jonathan Gomez Garcia

“Physical Activity Behaviors in College Students”  
Avra Monica Cirilo

“The Identification of a Synthetic Intermediary: Silver Nanoparticle Synthesis”  
Alec Loya

“Scattered photon intensity as a tool to calibrate the size of Au and TiO2 nanoparticles”  
Levi Ramirez

SCHEDULE | APRIL 20, UNIVERSITY OF TEXAS PB

12:00-1:00	Lunch
12:00-1:00 & 2:30-3:15	Poster Presentations
1:00-5:00	Oral Presentations
1:00-1:15	“Depositional Paleoenvironment of the Mancos Shale Formation, San Juan Basin, New Mexico”   Clinton McCrary
1:15-1:30	“Falconnect: Uniting the University in One Place through iOS design” Cordell Hammon
1:30-1:45	“Studying the Effect of Corticosterone on Prolonging Cell Survival Chemistry” Alex Yashchenko
1:45-2:00	“Exploring the role of shy and bold personality types in social dominance status and mate choice in a monogamous, pair bonding fish (Amatitlania siquia)” Ashley Merkel
2:00-2:15	“Examining one’s ability to thrive in transgender and gender-nonconforming sample” Zana Guest
2:15-2:30	Break
2:30-3:15	“Multiple-Choice Testing Feedback and Hypercorrection” – Rubee Mendoza
3:15-3:30	“Measurement and analysis of the rate of subsidence near Winkler County sinkholes using high precision GPS” Ganna Yermolenko, Taiwo Taiwo, and Christopher King
3:30-3:45	“Novel characterization of silver nanoparticles utilizing a laser system” Nick Hernandez

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 T-2 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.

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 adjust to busy individual schedules adaptively 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 end of the 8-week period. This 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. This application is commonly used to measure time spend in medication. We have selected

this application amongst others due to its free availability and ease of use. They will be allowed

to create their own username to preserve confidentiality.

## UNIVERSITY OF TEXAS OF THE

## PERMIAN BASIN ACKNOWLEDGEMENTS

A very special “thank you” to Dr. Diane Post as

the founder of the Undergraduate

Research day.

Thank you to Dr. Mike Zavada, Interim Assistant VP for

Research and Sponsored Programs,

and Dr. Ana Martinez-Catsam,

Interim Dean of Graduate Studies

and Research, for their support of the

Undergraduate Research Day.

Special Recognition to Dr. Babcock,

Mrs. Alliehia Dean and Ms. Shelby Bullock for

organizing and/ or staffing this year's events.

Much gratitude to the Undergraduate Research Committee

who ensure the quality of the research presented:

Dr. Kyle Beran, Dr. Joanna Hadjicostandi,

Dr. Ann Marie Smith, Dr. Rachel

Harlow, Dr. Marcos Lugo and Dr. Prakash Pai.

Thanks to the following for assisting with the

Undergraduate Research Workshop:

Dr. Joanna Hadjicostandi, Dr. Jamie Hughes,

Dr. Rachel Harlow, Dr. Samuel David,

Dr. Kimberly Little, Dr. Athena Oldham,

Dr. Robert Trentham, Dr. Mohamed Zobaa

and Dr. Ann Marie Smith



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 1 st and 3d 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:  $39.83 \pm 18.95$  kg vs. in separable  $24.56 \pm 7.70$  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  $56.34 \pm 12.52$  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  $10.5 \pm 5.97$  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,  $p\text{-value} > 0.05$ .

**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 ( $\geq 60$  years, gender), smoking, diabetes mellitus and hypertension, we found no significant association in mortality and hyperuricemia,  $p\text{-value} > 0.05$  (using post stratification chi-square test).

**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 ( $r = -0.33$ ,  $pfd r = 0.04$ ,  $df = 64$ ), HATA ( $r = -0.30$ ,  $pfd r = 0.04$ ,  $df = 64$ ), CA1 ( $r = -0.27$ ,  $pfd r = 0.05$ ,  $df = 64$ ), CA2/3 ( $r = -0.30$ ,  $pfd r = 0.04$ ,  $df = 64$ ), CA4 ( $r = -0.32$ ,  $pfd r = 0.04$ ,  $df = 64$ ), and the Molecular layer of the hippocampus ( $r = -0.29$ ,  $pfd r = 0.04$ ,  $df = 64$ ).

**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.

**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 HPV vaccination series in 2014. Boys aged 13-17 only were 41.7% immunized with at least one dose. In comparison, the Tdap vaccination coverage was 87.6% among 13-17 year olds.

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, as well as their perceived barriers and bias against the vaccine, are of utmost important in the attempt to increase vaccination uptake. Attempting to affect change in physicians' attitude and their counseling of patients through educational programs is an important next step in improving low vaccination rates. Our institution at Texas Tech offers the Gardasil vaccination across several different clinics. At this time, our uptake of the vaccine is unknown. Educational programs regarding the vaccine as well as funding for the vaccine is expected to increase the 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 comfort level discussing the vaccine. This will be given to obstetrician/gynecologists, pediatricians, and family medicine physicians as well as clinic staff within a multidisciplinary academic setting. These physicians and clinic staff will then complete an interactive education session consisting of information about the vaccine and suggestions for how to speak to patients about the vaccine. An open ended question will be asked to providers who attend the educational module to determine their perceived barriers for providing vaccination within our clinic setting. Clinics will be provided with educational materials regarding Gardasil to give to patients in English and Spanish. Following the education efforts, the physicians will complete a second survey to analyze if their attitudes, behavior, and practices change following education.

## **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 extrauterine 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 his left proximal arm and bilateral 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

\*Dr. Banina'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

**Background.** Although hypertensive disorders of pregnancy, such as preeclampsia, continue to be a significant source of maternal and fetal morbidity and mortality, there is emerging evidence that effects of the preeclamptic syndrome persist into later life. In contrast to recent studies that have reported that formerly preeclamptic women are at increased risk for cardiovascular disease, it appears that preeclampsia may be associated with a decreased risk of breast cancer.

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. Placental ischemia is regarded to be a primary factor in preeclampsia and the ischemic placenta produces a variety of factors that generate profound effects on endothelial cell function and the cardiovascular system during pregnancy. Moreover, several of these factors are reportedly elevated many years after preeclamptic pregnancies.

Therefore, identifying potential connections between placental dysfunction and future cancer risk is an important endeavor towards realizing novel therapeutic regimens for cancer patients.

**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 exosomes.

2018 PERMIAN BASIN RESEARCH FORUM

*Pre-Recorded Presentations*

NOTES

2018 PERMIAN BASIN RESEARCH FORUM

*Poster Abstracts*

Inertility and Cancer: A case of hidden cancers unveiled by infertlity 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 report we present a patient with primary infertility and abnormal uterine bleeding who presents to clinic for infertility workup. She was discovered to have primary synchronous cervical and endometrial cancer. We discuss implications and treatment of cancers as well as implications for further fertility options.

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 of the small or large bowel in the absence of a mechanical cause. Pseudo-obstruction may be acute or chronic and is characterized by the presence of dilation of the bowel on imaging. The main clinical feature in patients with acute colonic pseudo-obstruction is abdominal distension. It may present with diarrhea and is associated with We describe a case of a 68-year-old male with history of Parkinson's disease who presented with severe abdominal distension, watery diarrhea, and persistent hypokalemia. CT abdomen and pelvis without contrast showed Sigmoid volvulus with distention of the colon above the volvulus. That was subsequently treated with aldosterone antagonist spironolactone and he improved significantly.

Colonic pseudo-obstruction is characterized by profuse watery diarrhea that has hyponatremia and hyperkalemia usually. It is seen in a variety of medical and surgical conditions, but its exact cause remains unknown. It is thought to result from an imbalance of sympathetic and parasympathetic input in the distal colon. The diarrhea is secretory and driven by potassium secretion rather than the inhibition of sodium reabsorption or chloride secretion, which are the most common pathophysiologic mechanisms of secretory diarrhea. The persistent hypokalemia in our patient was very slow to improve despite aggressive oral and intravenous repletion of potassium because of the high potassium losses in the stool. This is most likely mediated through the increased expression of maxiK or BK channels in the colonic mucosa. Aldosterone is theorized to have a role in the regulation of BK channels. Spironolactone was subsequently tried and resulted in significant improvement of the diarrhea and hypokalemia. Thus, this case suggests an unusual therapeutic approach for the treatment of Ogilvie's syndrome-associated diarrhea and hypokalemia.

Early administration of Spironolactone may decrease hospital stay in patients with Ogilvie's syndrome presenting with diarrhea and persistent hypokalemia.

NOTES



NOTES

Heterotopic Interstitial Pregnancy: A Case Report

Presented by: Chase Patterson, M.D., PGY-I

Co-authors: April Riley, D.O., PGY-IV, Joy Anderson, M.D.

Faculty Advisor: Joy Anderson, M.D.

Department of Obstetrics and Gynecology

**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.

Pustular Skin Lesions in a GBS Infected Newborn: A Case Report

Presented by: Duy Hoang, MSIII

Co-authors: Dimitrios Angelis, M.D., Manjula Muduluru, M.D., Amanda Hughes, NNP, Robert Bennett, M.D.

Faculty Advisor: Dimitrios Angelis, M.D.

Department of Pediatrics

**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 tachypnea 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.

**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 thromboembolism prophylaxis is the CHEST guidelines. However, it is likely that there are missed patients who would qualify for postpartum thromboembolism pharmacoeutical prophylaxis such as Lovenox but are not started on treatment. This is a quality improvement study aimed to assess whether an EMR tool would effectively assist physicians in determining necessity of postpartum thromboembolism pharmacoeutical prophylaxis in patients immediate post cesarean delivery.

**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 pharmacoeutical prophylaxis based on CHEST

guidelines but were not. We will work with the EMR department of Cerner to develop the EMR tool to

be implemented in a post op order set be used in all Texas Tech postpartum patients immediately after

cesarean section. Currently, the only standard protocol at this institution that all patients are started on

below the knee SCD's after cesarean section and pharmacoeutical prophylaxis is started at the discretion

of the physician. Statistical analysis will be performed comparing the two groups to see if the EMR tool

improved adherence to CHEST guidelines for postpartum thromboembolism pharmacoeutical prophylaxis

after cesarean section.

**Results.** Test 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 pharmacoeutical 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-CLARITY™ 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-CLARITY™ 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 31-285 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, myelo-suppression, 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, hypothyroidism, and depression. The patient has also been using hydrocodone 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 infections 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/m<sup>2</sup> daily for 3 days, carboplatin 750 mg [mg dose = 5 x area under the curve (AUC)] on day one and etoposide 100 mg/m<sup>2</sup> 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 chemotherapeutic regimens. Although not well understood, the hypothesized mechanism is thought to be related to the neurotoxic effect of one of its metabolites; chloracetaldehyde. 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.



**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 thrombosis (SMVT) complicating acute appendicitis. Early recognition requires high index of suspicion and is imperative in successful treatment of such a life threatening condition. We present a case of a young adult who presented with severe acute appendicitis with associated SMVT who was successfully treated with intravenous antibiotics, appendectomy, and anticoagulation.

A 33 years old Hispanic male, with no significant past medical history, presented to the emergency department (ED), complaining of severe right lower abdominal pain. Pain initially started 4 days prior to presentation, was colicky in nature, not radiating, not associated with oral intake, and was gradually progressing to the point he had to come to the ED. He also reported subjective fever, chills and anorexia. He denied nausea, vomiting or change in bowel habits. Initial vital signs were stable including a blood pressure of 135/72 mmHg, a heart rate of 86 bpm, a respiratory rate of 18 bpm, a temperature of 98.7 F, and a peripheral oxygen saturation of 99% on room air. Physical exam was significant for right lower quadrant tenderness without guarding or rebound tenderness. Lab work was unremarkable except for elevated white blood cell count of 12.8 [103/ $\mu$ L], with normal amylase and lipase. Computed tomography of the abdomen revealed acute appendicitis with associated central superior mesenteric vein thrombosis. Pain was controlled in the ED with intravenous (IV) morphine. The patient was started on IV fluid hydration, IV piperacillin-tazobactam and underwent laparoscopic appendectomy. Operative specimen was sent for pathology and showed acute necrotizing appendicitis with peri-appendicitis. The patient tolerated the procedure well and post operative course was uneventful. The patient was discharged on day 3 on oral anticoagulation with rivaroxaban for three months.

Hypонатremia with hyperkalemia in infancy is an uncommon but potentially life-threatening emergency. Although it is the typical presentation of congenital adrenal hyperplasia (CAH), other causes should be considered as CAH is now part of the newborn screen. Awareness of this condition and a high index of suspicion is necessary in correctly diagnosing an infant presenting hyponatremia and hyperkalemia due to its atypical presentation. We describe a 2-month old with a congenital urinary tract malformation presenting with transient pseudohypoadosteronism secondary to urinary tract infection which resolved after treatment with bicitra and cefdinir. Awareness is essential so that urine cultures and empiric antibiotics are immediately obtained in infant with hyperkalemia, even if afebrile, in addition to CAH panel and aldosterone levels for workup. Appropriate electrolyte correction and antibiotic therapy is suggested for treatment of this condition.

**Presented by: Jason Huang, MSIII**  
**Co-authors: Arpita Vyas, M.D., Dinesh Gowda, M.D.**  
**Faculty Advisor: Dinesh Gowda, M.D.**  
**Department of Pediatrics**

**Transient pseudohypoadosteronism in 2-month old associated with urinary tract infection**

**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 to facilitate direct injection of a hysterotomy scar ectopic. We have now successfully treated two advanced hysterotomy scar ectopics with positive cardiac activity and a beta HCG level of greater than 75,000 using a fabricated needle guide and direct injection of the gestational sac.

**Type I Chiari Malformation Presenting in an Adult** Authors: Orlando Garner, M.D., PGYII, Saranya Rajasekar, M.D., PGYII, Ana Ramirez, M.D., PGYII, Alfredo Iardino, M.D., PGYII  
Department of Internal Medicine

Type I Chiari malformations (CMs) are an acquired or congenital disorder characterized by the presence of the cerebellar tonsils at 5mm or below in the spinal canal. This can result in abnormal cerebrospinal fluid flow and produce headaches, syrinx or hydrocephalus. CMs are still considered a rare disease and their prevalence in the US is estimated at less than one percent . We depict the case of a 44-year-old male who presented to the emergency department complaining of nausea, vomiting, vertigo, and a 2-day history of headaches exacerbated with Valsalva manoeuvres. He was initially admitted for possible ischemic stroke and underwent a CT scan of the brain which was unremarkable. Further work-up with MRI disclosed cerebellar herniation 6.5mm below the foramen magnum (Figure 1). The patient was treated symptomatically and was discharged home with an appointment with neurology for follow-up MRI. CMs seem to be more prevalent in the female population. Patients most commonly manifest with headaches and paraesthesia, sometimes accompanied by nausea, dysphagia, dysphonia, clonus, muscle atrophy, and cerebellar symptoms. Treatment has not been defined. Observation is advised in asymptomatic patients even with significant tonsillar herniation and surgical decompression can be performed in patients with severe symptoms.

**Hepatic Mascaraed: A Rare Case** Presented by: Alfredo Iardino, M.D., PGYII  
Co-author: Yasir Ahmed, M.D. Faculty Advisor: Yasir Ahmed, M.D.  
Department of Internal Medicine

Hemophagocytic lymphohistiocytosis is a life-threatening condition which is usually triggered by autoimmune disorders, viral infections and malignancy like lymphomas. We present a 60-year-old-Hispanic female with past medical history of hypertension and systemic lupus erythematosus presenting with fever, generalized weakness and shortness of breath for 3 weeks. Computed Tomography (CT) Scan of abdomen and chest showed multiple hepatic and splenic irregular hypodense lesions. Later liver biopsy revealed classical Hodgkin Lymphoma (HL) with positive Epstein-Barr virus (EBV) staining and elevated serum EBV virus DNA level. Incidentally, Liver biopsy disclosed hemophagocytosis in some cells. HLH associated HL is a very uncommon condition that can cause severe systemic symptoms acting as the perfect mimic of septic shock, deviating the clinical eye towards treating with antibiotics and not addressing in a timely manner the real etiology of the patient condition.

**Killer Looks: Cardiomyopathy Induced by Anabolic Androgenic Steroid Abuse**  
Authors: Orlando Garner, M.D., PGYII, Alfredo Iardino, M.D., PGYII, Ana Ramirez, M.D., PGYII, Maty Yakoby, M.D., Craig Spellman, Ph.D., D.O. Faculty Advisor: Craig Spellman, Ph.D., D.O.  
Department of Internal Medicine

Body builders use anabolic-androgenic steroids to increase muscle mass, but abuse of these hormones has been related to cardiomyopathy in the past. A 60-year-old Caucasian male body builder with past medical history of male hypogonadism on testosterone replacement therapy, allegedly preparing for a weight lifting competition and receiving stem cell infusions from his trainer, is transferred to the ICU for worsening shortness of breath, after failing treatment for community acquired pneumonia. Chest X ray upon transfer was suggestive of pulmonary edema, transthoracic echo showed an ejection fraction of 25-30%, patient was taken for cardiac catheterization which yielded non-ischemic cardiomyopathy and testosterone levels was supratherapeutic. Anabolic-androgenic steroid abuse can be a cause of cardiomyopathy in patients who have no other risk factor for such disease.

**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 . (2-7). 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 hopeless, 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.  
Department of Family and Community Medicine

**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.

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.

Department of Obstetrics and Gynecology

**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 hydrops on antenatal ultrasound, suspected to be from IIAC. DNA from amniocytes

was further evaluated using primers for Homo sapiens ectonucleotide pyrophosphatase/phosphodiesterase 1 (ENPP1), to determine the causative mutation.

**Method.** Amniocentesis was performed and capillary sequencing analysis was performed on cultured amniocytes. Amniocytes were isolated for DNA using the phenol/chloroform/isoamyl alcohol method. PCR

was performed using primer sets that make up the whole ENPP1 gene. The PCR products were sent for cleanup and capillary sequencing. After delivery, placenta was evaluated by placental histopathology with

**Results.** Placental pathology demonstrated decidual vasculopathy with medial hypertrophy of the spiral arterioles, multiple infarcts with villous ischemia, dys trophic calcifications and microgranular calcifications around villous capillaries. 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... II and 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 H1 and how it impacts our community 2016 vs 2017 flu seasons. Flu and H1 like illness accounts for hundreds of thousands of dollars of healthcare money spent, days lost by local workers, and children and teachers missing days of school.

This year, hundreds of people were vaccinated for the flu in our Odessa clinics and nationwide. Were vaccinated people in our local area with and without comorbid illness less likely to return with flu like symptoms?

In this study we will look at those patients in our clinic who were both vaccinated and not vaccinated for the flu. We will see how many of those patients had return visits to our clinics for flu like symptoms after vaccination.

This study will look at if people who got the flu vaccine were 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 clinics.

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 Mira M-1 (Metrohm, CA, USA), a hand-held Raman spectrometer, for rapid diagnosis of placental hypoxia (JRS. 2017; 48(12): 1896-1899.). **The objective** of present study was to evaluate Mira M-1 as a diagnostic tool for separating normal and abnormal pregnancy patterns. **Materials and Methods.** Maternal serum samples were collected from 7 obese women and 8 non-obese women in the 1st and 2nd trimesters of pregnancy (IRB protocol # L17-136). Each sample was aliquoted in cryogenic vials, stored at -80°C. RS of each aliquot were obtained with Mira M-1, and the spectra was analyzed with MiraCal software (Metrohm, USA). **Results.** We detected several RS patterns and corresponding peaks. In addition, we found differences between the 1st and 2nd trimester of pregnancy in the obese women, whereas the 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 pathologic conditions in obese pregnant women in macromolecular levels. This finding, in turn, implies that Mira M-1 can be further utilized to obtain useful diagnostic information about other diseases, in a faster and more accessible fashion than other current diagnostic modalities do. **Acknowledgements:** Authors are thankful to Clinical Research Institute for the help with this study.



A Case of Posterior Reversible Encephalopathy Syndrome Associated With Sepsis

Presented by: Orlando Garner M.D. PGY-II,

Co-Authors: Alfredo Iardino M.D. PGY-II, Ana Ramirez-Berlitz M.D. PGY-III

Faculty Advisors: W.R. Davis M.D., FACP, Professor

Department of Internal Medicine

**Introduction.** Posterior reversible encephalopathy syndrome (PRES) is a neurological disorder characterized by parieto-occipital vasogenic edema seen on magnetic resonance imaging (MRI). It encompasses a constellation of symptoms, including vision loss, headaches, seizures, and elevated blood pressure. A myriad of conditions has been associated with it, including immunological diseases, pre-eclampsia, eclampsia, renal failure, and cytotoxic drugs, but infection and sepsis has been reported as a possible cause for this disorder.

**Case Presentation.** We present a case of a 19-year-old Caucasian male with known type 1 diabetes mellitus (T1DM) who presented to the emergency department with acute onset of bilateral visual loss and headaches; he had been discharged 2 weeks prior after a prolonged hospital stay due to severe diabetic ketoacidosis (DKA) and S. aureus community acquired pneumonia (CAP). Physical examination revealed a diaphoretic young adult male in apparent distress due to headache with blood pressure of 220/115 mmHg, respiratory rate of 20, heart rate of 105, temperature of 98.5°F, no nuchal rigidity, pupils equal and reactive to light, bilateral basal crackles upon chest auscultation, scrotal and pedal edema, Glasgow coma scale (GCS) 15/15 without any focal neurological deficits. Lab work was remarkable for glucose of 257 mg/dL. Cerebrospinal fluid disclosed white blood cells count of 5 cells/ $\mu$ L, glucose of 66 mg/dL and protein of 31 mg/dL. CT scan without contrast showed no acute intracranial pathological findings. Patient had a generalized tonic-clonic seizure while awaiting MRI, the findings of which were consistent with PRES. He was admitted to the intensive care unit with a nicardipine drip for strict blood pressure control and levetiracetam for seizure management. Symptoms resolved completely after 4 days of in-hospital treatment and he was discharged home on antihypertensive and anticonvulsant therapy with levetiracetam, with instructions to follow up with neurologist in 3 weeks.

**Discussion.** PRES is a rare disease that has been increasingly reported as MRI becomes more commonplace. Usually it is associated with immunological disease, pre-eclampsia and cytotoxic therapies but several case reports and a retrospective study done by Bartynski have demonstrated an association with sepsis, especially those caused by gram-positive bacteria. Our patient was admitted 2 weeks prior the onset of PRES due to severe DKA and CAP caused by S. aureus identified on sputum culture and he was still exhibiting edema caused by the aggressive fluid resuscitation required during that admission. Most cases of PRES exhibit visual disturbances, headaches, seizures and hypertension, all of which were manifested by our patient. Diagnosis is made based on clinical presentation and MRI findings. The mainstay of treatment remains symptomatic along with strict blood pressure control and seizure prevention. Prognosis is good, with most patients having a full neurological recovery within days, without any significant sequelae.

Knowledge & Beliefs about Diabetes among the Permian Basin Community

Presented by: Jasmin Aldridge, MS3

Faculty Advisor: Vani Selvan, M.D.

Department of Family and Community Medicine

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 the development of diabetes, knowledge about diabetes, beliefs about the prevention of diabetes, and knowledge and beliefs about the progression of disease. A qualitative research survey was administered to 200 patients of the Texas Tech Family Physicians Clinic in Odessa, TX during 2012. The data will be analyzed using a multiple linear regression model. The results of this analysis can yield a better understanding of what specific knowledge and beliefs are most important to target when seeking to educate about diabetes. An improvement in the knowledge and beliefs could lead to overall better outcomes in compliance, management and prevention of generational progression of disease. If the data continues to trend showing a good fund of knowledge and beliefs about diabetes, further investigation into what psychosocial factors can be improved in the future will be warranted.

Teaching the cervical exam: a cost-effective simulation

Presented by: Lyndsay Rodriguez, M.D., PGY-3

Co-author and Faculty Advisor: David Moore, M.D.

Department of Obstetrics and Gynecology

**Objective.** The purpose of this study is 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.** Survey. 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.





Optimization of Constipation and Management in Nursing Home Residents:

A Quality Improvement Initiative

Presented by: Myrna Z. Bosques, M.D.,

Co-authors: Maria J. Montero, M.D., PGY-I, Lilitana Andrade, M.D., Le Chau, M.D.,

Nimat Alam, M.D., Anna Francisco, M.D., Debbie Smith, M.D.

Department of Family and Community Medicine

Constipation may negatively impact on one's quality of life, and may affect overall wellbeing. The prevalence of constipation among nursing home (NH) residents is high, ranging from 44% to 80%. The reasons for these might be numerous, but include reduced mobility, comorbidities and polypharmacy. Although, it might be overlooked as a trivial problem, constipation has serious impact on patients. At the very least it causes pain and discomfort, nausea and reduce appetite. It is important for nursing home staff to recognize the signs and symptoms of constipation and to quickly initiate treatment, as chronic constipation can lead to fecal impaction, fecal incontinence, hemorrhoids, anal fissures and rectal prolapse. The Bristol Stool Scale (BBS) is a medical aid designed to classify stools forms into seven categories; another tool aid is the Bowel Function Index (BFI) that was developed to evaluate bowel function in opioid-treated patients with pain.

Our goals are to educate nurses to early recognition of constipation, using the BBS and the BFI, to provide staff with and algorithm of management of constipation, improve the treatment of acute constipation, encourage better use of laxatives when an episode has passed, prevent complications such as bowel obstruction and delirium, and provide cost saving through reduce hospital admission for this cause.

The purpose of this pilot project is to explore the possibility of using the BSS and the BFI to improve recognition of constipation, and application of a constipation management algorithm by nursing staff caring for residents of skilled nursing facility (SNF), and long term care(LTC) at Mabee Health Care center, located at The Village at Manor Park, Midland Texas. One to two 30 minutes education sessions will be implemented to the nursing staff of the SNF and LTC between February and March 2018. Pre-intervention evaluation will be obtained in order to assess basic knowledge on constipation, as well as BSS and BFI application. After pre-intervention evaluation, staff will be provided with a written and also picture of the BSS and BFI, so they can better ask patients about sign and symptoms of constipation, and then apply the constipation management algorithm. The intervention period is estimated to be of 6-8 weeks. Post-intervention evaluation will then be implemented and data will be analyzed. Data will be obtained from Mabee Rehabilitation Center and LTC residents charts, seen by physicians from the project team, and also from pre and post intervention evaluations questionnaires applied to nurses. This data is routinely access in our normal scope of work.

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

Comparative use of piperacillin/tazobactam versus meropenem in patients with sepsis secondary to pneumonia requiring empiric broad-spectrum coverage  
Presented by: Timothy Carder, M.D., PGY-II  
Co-author: Bao Pham, M.D., PGY-III, Janel Liane Cala, Pharmacy Resident  
Department of Family and Community Medicine

Carbapenems are a novel class of beta-lactams that have a wide spectrum of coverage against multi-drug resistant pathogens, such as extended-spectrum producing beta-lactamase [ESBL]. Carbapenem-resistant Enterobacteriaceae [CRE], have resulted in both healthcare and community settings as a result of expanded use of carbapenems, and are a growing threat in the fight against antibiotic resistance. The purpose of this study is to determine the difference in clinical outcomes between treatment with piperacillin-tazobactam versus meropenem for broad-spectrum coverage in sepsis secondary to pneumonia. The meropenem arm will only include patients who do not meet criteria to start meropenem as empiric therapy. Patients will be screened with ICD-9/10 codes for sepsis secondary to pneumonia (A41.9 [sepsis, unspecified organisms], R65.21 [severe sepsis with septic shock], J18.9 [pneumonia, unspecified organisms]). This study will be a retrospective chart review of 4500 identified patients between November 2010 to October 2016. Patient demographics (age, sex, weight, race), WBC, baseline temperature, heart rate, respiratory rate, blood pressure, platelets, bilirubin, GCS, ICU length of stay and average hospital length of stay data will be collected and assessed. Microbiologic cultures from admission, baseline comorbidities, and antibiotic treatment in addition to piperacillin/tazobactam and meropenem will also be considered and documented. Groups will be divided into those that received piperacillin-tazobactam or meropenem for empiric treatment of sepsis and pneumonia. SOFA scoring will be calculated per patient and groups will be further subdivided according to severity of SOFA score (0 – 9 [ < 20% mortality], 10 – 14 [ > 20 and < 60% mortality], 15 - 24 [ > 90% mortality]). All-cause mortality and early clinical response will be assessed and evaluated between treatment groups.

## HELLP! Lives in Danger: A case of Preeclampsia complicated by hemorrhagic stroke

Presented by: Amanda Stuelpnagel, M.D. PGYII

Co-author: Elisa Brown M.D

Faculty Advisor: Dr. Elisa Brown M.D.

Department: OB/GYN

**Introduction:** Pregnancy is complicated by hypertensive disorders 5-10% of the time. Hypertensive disorders of pregnancy are diagnosed after 20 weeks gestation and when the blood pressure is 140/90 or greater. 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 affect virtually any organ system and there is often signs of multi-organ involvement at time of diagnosis. Furthermore 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, RUQ 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 hematoma involving posterior limb of the interior capsule measuring 3.4X2.8X3.7cm with adjacent subarachnoid hemorrhage. At this time she was given a 4G bolus of MgSO4 and the decision was made to transfer her for higher level of care.

Upon presentation to us patient had received the MgSO4 bolus but did not have a continuous dose going, and no hypertensive medications had been given. Her initial BP 160/99, she was lethargic and needed to be aroused with sternal rub to follow commands. She could not move her right side and had 0/5 strength in upper and lower extremity. Based on initial presentation in outside ER and labs obtained there diagnosis of preeclampsia was made. It was felt all of her symptoms and her hemorrhage stroke were secondary to preeclampsia with severe features. Repeat labs were obtained at this time.

**Interventions:** Proceeded with STAT c-section and consulted neurology and neuro-surgery. Per their recommendations ordered repeat CT scan to immediately follow c-section. A viable female infant weighing 1100g and apgars 8/9 was delivered and was taken to NICU in stable condition. The procedure went well and the patient was taken to CT by the CCU team. Neurology was present for consultation at the conclusion of the case and recommended patient be placed on Keppra. Her labs showed HELLP syndrome platelets 66, AST 417, ALT 396, LDH 1326. CT scan showed worsening of hemorrhage (10X4X4.4cm 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 had a patient who never had any history of elevated BP or preeclampsia in prior pregnancies. Initially no interventions were made to lower BP, start MgSO4 or even to consult and OB/GYN. With early intervention likely the severity of morbidity would have been significantly less.

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

Presented by: Rami Bararseh, M.D., PGYII

Department of Internal Medicine

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 acidotic state was corrected with a Sodium Bicarbonate (NaHCO3) infusion and intravenous fluids.

For 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 for both acute and long term use. Substantial amounts of orally administered Arg do not enter the systemic circulation in adults as 40% is degraded by the small intestine in the first pass metabolism. Arginine is available in different chemical structures including Arginine Hydrochloride (Arg-HCL). The hydrochloride compound is added to improve solubility. The side effects of this supplement are largely related to the HCL group which results in a rapid drop in the pH causing metabolic acidosis and leading to hyperkalemia from displacement of intracellular potassium. However, this was not the case in our patient as she presented with hypokalemia.

Arginine, a cationic amino acid, markedly impairs bicarbonate reabsorption in the proximal convoluted tubules. Hence, Arg induces a proximal renal tubular acidosis with hypophosphatemia and without a renal phosphate leak. Infusion of arginine mono-hydrochloride causes profound impairment of bicarbonate reabsorption. Also, the effect of cationic amino acids in HCL generation contribute to overall metabolic acidosis. Few case reports attributed acute kidney injury with supplemental use of creatine containing supplements. Although Arg was part of the chemical composition of the supplement, it was not discussed as a direct cause. On the other hand, creatine is one of the products of Arg degradation.

Management is mainly supportive with NaHCO3 infusion, hydration, and correction of electrolyte abnormalities. Despite the toxic dose, early presentation assisted in reversing metabolic acidosis and acute kidney injury while preventing mortality. However, fatalities have been documented in the pediatric population due to reports of overdosing. Far too often, supplements listed as part of the patient's home medications are overlooked by healthcare providers. Medical professionals should be more aware of the potential side effects of supplements in order to identify the supplement as a possible direct cause or interaction with other medications. In addition, the general population should be educated and have a firm understanding of safe supplement usage and accurate dosing.

Legalization of recreational marijuana raised issues regarding effects of exogenous cannabis in pregnancy. The cannabinoids family is comprised of 66 chemical products with the common structure of Cannabis sativa (Δ<sup>9</sup>Tetrahydrocannabinol-THC), which binds to CB1R and CB2R main cannabinoid receptors. Exogenous cannabinoids are working through the mechanism of “kick-starting” the endogenous cannabinoid system (ECS). ECS are derivative of LC-PUFA. The LC-PUFA transporter- MSFD2A - is essential for the BBB integrity and placental syncytialization. Both receptors (CB1R and MSFD2A) are expressed in placenta and fetal brain, however, their role in the regulation of brain and placenta functions remains to be elucidated.

**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 cervical cancer in mothers. However, rates of any and exclusive breastfeeding decline steadily and quickly from birth to 6 months of age. Physicians plays an important role in educating and encouraging mothers to breastfeeding. 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 type of feeding. We also compared the frequency with which each provider discussed 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 multiparity was significantly associated with lower odds for breastfeeding (AOR=0.61, 95% CI = 0.42-0.89). The odds for exclusive breastfeeding were larger in white ethnicity patients compared to Hispanic patients, showing a moderate effect size (AOR=2.32, 95% CI = 0.42-0.89). Surprisingly, there was not a statistically significant difference in patient education among female 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 physician under 40 who discussed breastfeeding significantly more often than a 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 among all ethnicities, with emphasis on non-Caucasians with lower levels of exclusive breastfeeding. 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.