

# 25th Annual *Permian Basin Research Day*

05.10.16



YOUR LIFE  
*our purpose*

TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER



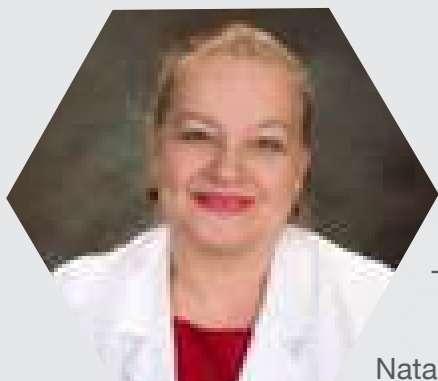
**25th Annual**  
*Permian Basin Research Day*

WELCOME



Welcome to the 25th Annual Research Day at Texas Tech University Health Sciences Center at the Permian Basin, this year along with our friends from The University of Texas of the Permian Basin. It is my pleasure to welcome you on behalf of the faculty and staff of TTUHSC at the Permian Basin, to a full day of research presentations from faculty, residents and students. Innovations in science and specifically in the field of medicine allow for advancements in the treatment of diseases. I hope that you enjoy the presentations and speakers that you encounter today and learn much from the hard work that so many have put effort into.

Gary Ventolini, M.D. is the Regional Dean and Professor of Obstetrics and Gynecology at Texas Tech University Health Sciences Center at the Permian Basin. He came to the TTUHSC School of Medicine from the Wright State University Boonshoft School of Medicine, where he served as the Chair of Obstetrics and Gynecology for six years. Dr. Ventolini's education and experience are both vast and international. He received a Doctorate of Medicine & Surgery from the University of Padova in Padova, Italy. He then served on the faculty of Libre University in Cali, Columbia, before coming to the United States for post-graduate training in Family Medicine in Spartanburg, South Carolina and then joining the faculty of the University of Cincinnati School of Medicine. Dr. Ventolini is board certified in both Family Medicine and Obstetrics and Gynecology.



## **Dr. Natalia Schlabritz-Lutsevich** *Associate Regional Dean for Research*

Welcome, I would like to congratulate residents, students and faculty for their small and big discoveries, which aim to accomplish the ultimate goal – the cure and prevention of diseases, there is no more noble goal than this.

Natalia Schlabritz-Lutsevich, M.D., Ph.D., is the Regional Associate Dean of Research and Associate Professor in the Department of Obstetrics and Gynecology at Texas Tech University Health Sciences Center at the Permian Basin. Dr. Schlabritz-Lutsevich's international medical training began at the State School of Medicine in Minsk, Belarus, where she graduated Summa Cum Laude with her M.D. She then completed a residency in Obstetrics and Gynecology and a fellowship in Laparoscopic Surgery and Reproductive Endocrinology (Germany, Professors: K. Semm and L. Mettler) and post-doctoral research trainings in Molecular Chronobiology (Germany, Dr. J. Olcese) and Maternal and Fetal Medicine (USA, Professor G. Mari). Dr. Schlabritz obtained her Ph.D. in Reproductive Endocrinology in Minsk (Belarus). She was working at the University of Hamburg (Germany) before coming to the United States to join the perinatal research group of world known expert Dr. P. Nathanielsz. Prior to coming to TTUHSC at the Permian Basin, Dr. Schlabritz-Lutsevich was an Assistant Professor at the University of Tennessee Health Science Center in Memphis, TN. She is board certified in Obstetrics and Gynecology in Belarus and Germany.

## **Melissa Waggoner** **Senior Editor**

*Department of Obstetrics and Gynecology*

Melissa Waggoner is the Senior Editor in the Department of Obstetrics and Gynecology at Texas Tech University Health Sciences Center at the Permian Basin. She has an M.S. in Agricultural Communications from Texas Tech University.



# Research Advisory Committee

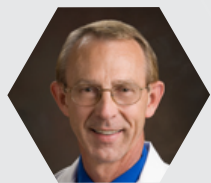
*TTUHSC at the Permian Basin School of Medicine*



Natalia Schlabritz-Lutsevich,  
M.D., Ph.D.



Sandeep Dhindsa, M.D.



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



Jennifer Hinojosa, R.N., C.C.R.C.



Lavi Oud, M.D.



Maira Carrillo, Ph.D.



Jesus Vera-Aguilera, M.D.



Lani Ackerman, M.D.



Babatunde Jinadu, M.D.



James Maher, M.D.



Saju Joseph, M.D.



Dinesh Vyas, M.D.



Bobby Jain, M.D.



Yuliya Belopolsky, MS3



Ramachandra Chemitiganti, M.D.





# Department Research Directors

## *Internal Medicine:*



Lavi Oud, M.D.

Dr. Lavi 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.

## *Psychology:*



Shailesh "Bobby" Jain, M.D., MPH, ABDA

Dr. Bobby Jain is Associate Professor in the Department of Psychiatry, Division of Child & Adolescent Psychiatry at Texas Tech University Health Sciences Center at the Permian Basin. Dr. Jain has been with TTUHSC at the Permian Basin since 2009.

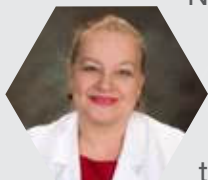
## *Surgery:*



Dinesh Vyas, M.D., MS

Dr. Dinesh Vyas is Associate Regional Chair for Surgery Research at Texas Tech University Health Sciences Center at the Permian Basin. Dr. Vyas has been with TTUHSC at the Permian Basin since 2015.

## *Obstetrics and Gynecology:*



Natalia Schlabritz-Lutsevich, M.D., Ph.D.

Dr. Schlabritz-Lutsevich is the Regional Associate Dean of Research and Associate Professor in the Department of Obstetrics and Gynecology at Texas Tech University Health Sciences Center at the Permian Basin. Dr. Schlabritz-Lutsevich has been with TTUHSC at the Permian Basin since 2014.

## *Family and Community Medicine:*



Vani Selvan, M.D.

Dr. Selvan is Assistant Professor and Research Director in the Department of Family and Community Medicine at Texas Tech University Health Sciences Center at the Permian Basin. Dr. Selvan has been with TTUHSC at the Permian Basin since 2016.

## *Pediatrics:*



Robert Bennett, M.D.

Dr. Bennett is Regional Chairperson and Professor in the Department of Pediatrics, Division of Neonatal Medicine at Texas Tech University Health Sciences Center at the Permian Basin. Dr. Bennett has been with TTUHSC at the Permian Basin since 1990.

# SCHEDULE

8:00 - 8:15

Coffee & Pastries (*Posters and Pre-Recorded Presentation Viewing – Upstairs Administration Building*)

8:15 - 8:30

Welcome - Natalia Schlabritz-Lutsevich, M.D., Ph.D., Associate Regional Dean of Research

## ORAL PRESENTATIONS

8:30 - 8:45

*"Improving Rural Health Care by Rural Track Family Medicine Residency Program: Pecos County"*

Yang Ye, M.D., PGY II, Pamela Gougler, M.D., PGY III, Larry Boyd, M.D.

Department of Family and Community Medicine

8:45 - 9:00

*"Neonatal Stroke"*

Sonia Joseph, MS3, Dimitrios Angelis, M.D., Robert Bennett, M.D., Manjula Mudduluru, M.D.,

Bhargavi Kola, M.D., Amanda Hughes, NNP

Department of Pediatrics

9:00 - 9:15

*"Randomized Control Trial of Diathermy Versus Scalpel in Abdominal Wall Incision During Repeat Cesarean Delivery"*

Leela Sharath Pillarisetty, M.D., PGY IV, Marin Caliendo, M.D.

Department of Obstetrics and Gynecology

9:15 - 9:30

*"Expanding interprofessional Education Between Healthcare Professionals and First Responders Using Disruptive Technology"*

Thea Murray, B.S., MPH, Elesea Villegas, MPAS, Mat Mclure, EMT, Philip Mammen, M.D., MBA,

Allen Zhong, B.S., Kelly Zhang, B.D., Dinesh Vyas, M.D., Saju Joseph, M.D.

Department of Surgery

9:30 - 9:45

*"Thyrotoxic Periodic Paralysis"*

Linda Esteban, M.D., PGY II, Jenet George, M.D., PGY II, Enrique Tobia, M.D., Nimat Alam, M.D.

Department of Family and Community Medicine

9:45 - 10:00

*"Tissue-Specific MicroRNA Regulation by Obesity"*

Jesus Vera-Aguilera, M.D., PGY III, Stacy Martinez, Cassidy Taylor, Mary Mok, M.D., Yuliya Belopolsky,

Gene Hubbard D.V.M., Gary Ventolini, M.D., Moss Hampton, M.D., Natalia Schlabritz-Loutsevitch, M.D., Ph.D.

Departments of Internal Medicine and Obstetrics and Gynecology

10:00 - 10:15

*"A Composite Model of Survival from Out-of-Hospital Cardiac Arrest Using CARES Data"*

Faculty Speaker: Dr. Hank Abrams, Ph.D.

University of Texas of the Permian Basin

10:15 - 10:30

*"The Relationship Between Ultrasound Finding and Cell Free DNA (NIPT Screening) Positive Predictive Value"*

Curtis Boyd, D.O., PGY IV, James Maher, M.D., Randall Kelly, M.D., Eneko Larumbe, Ph.D.,

Phillip Watkins, M.S., Natalia Schlabritz-Lutsevich, M.D., Ph.D.

Department of Obstetrics and Gynecology

BREAK

3:00 - 3:15 (Posters and Pre-Recorded Presentation Viewing –  
Upstairs Administration Building Hallway)

10:45 - 11:00

*"Comparing the Microfloral Composition of Stool Samples of Patients with Recurrent Clostridium Difficile Infection vs. Transient C. diff Infection"*

Allen Zhong, MS3, Cynthia Reinosos Webb, Iurii Zobocek, Kathryn Furr, Rao Kottapalli, Matthew Grisham

Department of Internal Medicine

11:00 - 11:15

*"Eye Tracking Technology: Application in Psychiatry"*

Feba Thomas, Amna Ahmed, Natalia Schlabritz-Lutsevich, M.D., Ph.D., Bobby Jain, M.D.

Department of Psychiatry

11:15 - 11:30

*"Evaluation of Potential Immune Response of endothelial Cells to VB-111 in vivo"*

Prathibha Nutalapati, M.D., PGY II, Aleksandra Gruslova, Ph.D., Andrew J. Brenner, M.D., Ph.D.

Department of Internal Medicine

11:30 - 11:45

*"Pediatric Orthotics Using 3D Printing"*

Jenet George, M.D., PGY II, Brian Tong, M.D., PGY II, Tara Deaver, D.P.M., Erik Wilkinson, MLS

Department of Family and Community Medicine

LUNCH

11:45 - 12:30  
Outside of TTUHSC Academic Building

12:30 - 12:45

Welcome from Regional Dean – Gary Ventolini, M.D.

KEYNOTE SPEAKER

(Auditorium)

12:30 - 1:45

**Keynote Speaker – "The History of the Discovery of the Steroidogenic Acute Regulatory (StAR) Protein"**

**Douglas M. Stocco, Ph.D.**

Professor Emeritus | Cell Biology and Biochemistry

Texas Tech University Health Sciences Center, Lubbock

**2:00 - 2:15**

*"Fast Track Ventilator Weaning in Patients Undergoing CABG Surgery – An Experience at a Community Hospital"*

Osama Mukarram, M.D., PGY II, G. Catalasan, K. Edison

Department of Internal Medicine

**2:15 - 2:30**

*"Conservative Treatment of a Cesarean Scar Pregnancy Diagnosed via Transvaginal Ultrasonography"*

Diego Beltran Melgarejo, M.D., PGY II, Sarah Burke, M.D., PGY III, James Maher, M.D.

Department of Obstetrics and Gynecology

**2:30 - 2:45**

*"Enhanced Interprofessional Communication and Teamwork in Surgery Using Simulated Clinical Scenarios"*

Department of Surgery

**2:45 - 3:00**

*"Knowledge of Cervical Cancer Among Nepali Women in the Kathmandu Valley"*

Faculty Speaker: Lani Ackerman, M.D., S. Dewane, Ph.D., A. Derthick, Ph.D., S. Karki

Department of Family and Community Medicine

**BREAK**

**3:00 - 3:15** (Posters and Pre-Recorded Presentation Viewing –  
Upstairs Administration Building Hallway)

**3:15 - 3:30**

*"Is There an Increased Incidence of Retroperitoneal Malignancies Due to Fracking?"*

Saju Joseph, M.D., FACS, Yuchen Zhang, B.S., Allen C. Zhong, B.S., Jon D. Price, B.S., Elesea Villegas, PA-C,  
Subhasis Misra, M.D., FACS, Dinesh Vyas, M.D., FACS

Department of Surgery

**3:30 - 3:45**

*"Preventing Primary Cesarean Section: A Quality Improvement Study"*

Brittany Brothers, M.D., PGY II, Jonathan Lugo, M.D., PGY III, Martin Caliendo, M.D.

Department of Obstetrics and Gynecology

**3:45 - 4:00**

*"Evaluation of the Thermal Map of Human Placenta as the First Step to In Vivo Application of Infrared Thermometry"*

Jonathan Lugo, M.D., PGY III, Alan John MS3, James Maher, M.D., Natalia Schlabritz-Loutsevitch, M.D., Ph.D.

Department of Obstetrics and Gynecology

**4:00 - 4:15**

*"Effect of Intranasal Insulin on LH Concentrations"*

Faculty Speaker: Sandeep Dhindsa, M.D., Adnan Haider, M.D., Mary Mok, M.D.,

Natalia Chaar, M.D., Rama Chemitiganti, M.D.

Department of Internal Medicine

**4:15 - 4:30**

Posters and Pre-Recorded Presentations – Upstairs Administration Building Hallway

**4:15**

**AWARD PRESENTATIONS**



## **Douglas Stocco Ph.D.**

*Professor Emeritus, Cell Biology and Biochemistry,  
Texas Tech University Health Sciences Center, Lubbock*

# THANK YOU



Douglas Stocco, Ph.D. is Professor Emeritus in the Department of Cell Biology and Biochemistry at Texas Tech University Health Sciences Center. He received a B.S. in 1967 and an M.S. in 1969 from the University of Windsor in Windsor, Ontario, Canada. He then went on to the University of Toronto, where he received a Ph.D. in 1972 and performed two years of postdoctoral research at UCLA. In 1974 he joined the faculty of TTUHSC, where as a faculty member he also served as Executive Vice President for Research as well as the Dean for the Graduate School of Biomedical Sciences. Dr. Stocco's research career focused on the mechanisms involved in the regulation of steroid hormone biosynthesis. His laboratory identified and characterized the novel protein – Steroidogenic Acute Regulatory or StAR protein, which is indispensable in the biosynthesis of steroid hormones. Dr. Stocco has published over 200 peer-reviewed original scientific articles, book chapters and review articles, most of which are on StAR and related studies. In recognition of his work, Dr. Stocco received an NIH Research Career Development Award in 1985, and an NIH MERIT Award in 1996. Among many distinctions, in 2012, Dr. Stocco was awarded the Carl G. Hartman Award for lifetime achievement in reproductive biology from the Society for the Study of Reproduction. Most recently Dr. Stocco was presented with the Dean's Lifetime Achievement Award at TTUHSC.

# JUDGES

## Oral Presentations



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

*Department of Internal Medicine*

Dr. Spellman has been a Professor of Medicine, Division of Endocrinology at Texas Tech University Health Sciences Center at the Permian Basin and the Director of the MCH Diabetes Center at Medical Center Hospital since 2007. He received his Ph.D. in Pathology from the University of Utah and his D.O. from the Texas College of Osteopathic Medicine.



**Ramachandra Chemitiganti, M.D.**

*Department of Internal Medicine*

Dr. Chemitiganti is the Regional Chairman and an Associate Professor in the Department of Internal Medicine at Texas Tech University Health Sciences Center at the Permian Basin. He received his M.D. from Gandhi Medical College in Hyderabad, AP, India.



**Linda Montgomery, Ph.D.**

*Department of Psychology, University of Texas of the Permian Basin*

Dr. Montgomery is an Associate Professor in the Department of Psychology at the University of Texas of the Permian Basin. She has a Ph.D. from Memphis State University in Clinical Psychology.

# JUDGES

## Poster Presentations



**Michael S. Zavada, Ph.D.**

*University of Texas of the Permian Basin*

Dr. Zevada is the Dean of the College of Arts and Sciences and Professor of Biology at the University of Texas of the Permian Basin. He holds a Ph.D. in Ecology/Evolutionary Biology from the University of Connecticut, Storrs.



**Babatunde Jinadu, M.D.**

*Department of Pediatrics*

Dr. Jinadu is an Associate Professor and Medical Director in the Department of Pediatrics at Texas Tech University Health Sciences Center at the Permian Basin. He has an M.D. from College of Physicians & Surgeons in New York, New York.



**Maira Carrillo, Ph.D.**

*Department of Obstetrics and Gynecology*

Dr. Carrillo is a Research Associate in the Department of Obstetrics and Gynecology at Texas Tech University Health Sciences Center at the Permian Basin. She completed her Ph.D. in Biology at the University of North Texas in 2012.

# JUDGES

## *Pre-Recorded Presentations*



**Lani Ackerman, M.D.**

*Department of Family and Community Medicine*

Dr. Ackerman is the Resident Program Director, Associate Chair of Rural and Global Health and Associate Professor of Family and Community Medicine at Texas Tech University Health Sciences Center at the Permian Basin. She has an M.D. from Texas A&M Health Sciences Center, College of Medicine.



**Bhargavi Kola, M.D.**

*Department of Pediatrics*

Dr. Kola is the Vice Chair and an Assistant Professor in the Department of Pediatrics at Texas Tech University Health Sciences Center at the Permian Basin. She studied medicine at Gandhi Medical College in Hyderabad, India.





**25th Annual**  
*Permian Basin Research Day*  
ORAL PRESENTATIONS



# **Improving Rural Health Care by Rural Track Family Medicine Residency Program: Pecos County Memorial Hospital Experience**

**Presented by: Yang Ye, M.D., PGY II, yang.ye@ttuhsc.edu**

**Co-author(s): Pamela Gougler, M.D., Larry Boyd, M.D.**

**Faculty Advisors: Pamela Gougler, M.D., Larry Boyd, M.D.**

**Department of Family and Community Medicine**

## **INTRODUCTION**

With the increasing shortage of rural physician in West Texas, the effort has been tried to improving rural health care by establishing family medicine rural track after 2014. But the real outcome of rural residency program patient care has not been systemically studies in West Texas. Here we are providing the status of patient care by rural track residency group in order to assess the impact of rural family medicine track on the rural health care delivery.

## **METHOD**

We collected patient care volume in outpatient, inpatient (including OB, observation), procedures from the period of 21 months before the rural residency program (phase A), compared with those 21 months (same seasons) after the rural residency was established (phase B). The residency group includes one attending and two residents, the non -resident group includes all other providers.

## **RESULTS**

1) For inpatient admission, the resident group has seen 939 and 808 admissions in phase A and phase B respectively, a 14% reduction of inpatient volume, the non-resident group has 3734 and 3736 inpatient admissions in phase A and phase B respectively, a 0% reduction of inpatient volume ( $p=0.14$ , t-test). 2) For outpatient, the residency group had 9269 and 9168 patient visits respectively in the phase A and phase B. 3) in phase B, the residents participated in 45% (52/115) of the EGD and 38% (16/42) colonoscopy procedures in the same attending group. 4) Also in phase B, the rural residents delivered 21% of newborns (58/280, vaginal and C-section combined).

## **CONCLUSION**

The current study showed that residency group has reduced inpatient admission as compared to the same attending group without resident's period. Rural track residents participated full spectrum of family medicine care by doing EGD, colposcopy and OB procedures. Improving patient-physician communication, patient education are attributed to the improvement of rural health care by the rural track family residency program. There is still room to incorporate more rural family medicine residents to the rural health care team.

## **Neonatal stroke: A case series**

**Presented by: Sonia Joseph, MS3**

**Co-authors(s): Dimitrios Angelis M.D., Robert Bennett M.D.,  
Manjula Mudduluru M.D., Bhargavi Kola M.D., Amanda Hughes N.N.P.**

**Faculty Advisor: Dimitrios Angelis, M.D.**

**Department of Pediatrics**

### **BACKGROUND**

Neonatal stroke is an important complication to consider when assessing a newborn as it has the potential for chronic sequelae. Injury to cerebral tissue occurs either by a disruption in arterial blood flow to the brain from a thrombus or embolism, also known as perinatal arterial ischemic stroke (PAIS), or from an interruption by a thrombus in a major cerebral vein, otherwise known as cerebral sinus venous thrombosis (CSVT).

### **OBJECTIVE**

The objective of this study was to investigate the causes and clinical presentation of neonatal stroke, making distinctions between PAIS and CSVT. The immediate neonatal outcomes are also explored in an effort to establish associations between the variety of ways these patients presented and the necessary follow up after the diagnosis is assigned.

### **METHODS**

This was a retrospective chart review over three neonates that presented with signs of neonatal stroke over 1 year (2014-2015). We first explored the case of a term male infant born to a 37 year old with no known risk factors at 39.5 weeks gestation (GA) via uncomplicated vaginal delivery and weighed 2610 grams.

The next patient is a 37.4 GA male infant weighing 3480 grams at birth. Immediately following delivery, the infant had central apnea, resulting in positive pressure ventilation and chest compressions. He required prolonged mechanical ventilation.

Third: preterm female infant born at 33 GA, weighing 1720 grams. The patient's mother was a 23-year-old G1P0 admitted with severe pre-eclampsia and chest pain, for which she received one dose of betamethasone and magnesium sulfate.

### **RESULTS**

All three patients presented here survived. They were discharged home on full enteral feeds and no oxygen requirements. Both of the term infants were transferred to a tertiary center for direct evaluation by a neurologist and hematologist and were eventually followed conservatively. Regarding the preterm baby with extensive CSVT, the possibility of a coagulation disorder was discussed with the hematologist. As a result, she was discharged home on low molecular weight heparin.

### **CONCLUSION/ SIGNIFICANCE**

Trends and detailed incidence and prevalence are not available for this region, to our knowledge. Careful monitoring needs to be implemented for this rare outcome in the future. As the presentation of neonatal stroke is not the same in every infant, importance must be placed on identifying the potential risk factors and birth history of patients that have an increased likelihood of having this diagnosis. While the management of perinatal strokes is supportive, early recognition allows for the focus to be placed on treatment of underlying conditions and preventing further injury.

# **Randomized Control Trial of Diathermy Versus Scalpel in Abdominal Wall Incision During Repeat Cesarean Delivery**

**Presented by: Leela Sharath Pillarisetty, M.D., PGY IV, [leela.pillarisetty@ttuhsc.edu](mailto:leela.pillarisetty@ttuhsc.edu)**

**Faculty Advisor: Martin Caliendo, M.D.  
Department of Obstetrics and Gynecology**

## **INTRODUCTION**

The rate of primary cesarean delivery has increased in United States and more women prefer elective repeat cesarean delivery. This increased rate of cesarean delivery is associated with short- and long-term maternal complications. Among the approaches used to reduce the rate of the postoperative complications is to improve the surgical technique, which could contribute to more than two-fold decrease in post-operative morbidity. During surgical procedures, one of the widely used approaches to decrease blood loss, surgery time, and thus post-operative complications is tissue dissection by electrosurgery or diathermy, which is defined as the process of applying high-frequency electric current to tissues to cut, coagulate, and desiccate. The major purported disadvantages of electrosurgical skin incisions are fears of deep burns; with resultant scarring, slower wound healing, and increased postoperative pain. However, recent meta-analyses showed decreased incision time, blood loss and post-operative pain with no significant difference in wound infection rates or scar.

## **OBJECTIVE**

The main objective of this study is to compare scalpel vs. diathermy in making abdominal wall incision including skin in pregnant patients undergoing repeat elective cesarean delivery. To our knowledge there are no studies of this kind in pregnant women undergoing Cesarean deliveries.

We hypothesize that the abdominal wall incisions made by diathermy compared to scalpel during repeat cesarean delivery will have less incision time, less blood loss, as well as less postoperative pain.

## **METHODS AND METHODOLOGY**

This is a randomized prospective study. Patients from Texas Tech OBGYN clinic and also from Medical Center Hospital, Odessa, Texas will be recruited and divided into two groups, group one will undergo incision of the entire abdominal wall with diathermy, which includes skin, subcutaneous tissue, rectus muscle until the peritoneal cavity is visible. In group Two Scalpel will be used to achieve the same aim.

## **RESULTS**

Expected results will be the finding of less operative time, blood loss, postoperative pain, in diathermy abdominal wall incisions compared to scalpel incisions, in pregnant women undergoing repeat cesarean deliveries.

## **CONCLUSION/SIGNIFICANCE**

To our knowledge, this study will be the first to compare the results of diathermy vs scalpel in making abdominal wall incisions in pregnant women undergoing cesarean deliveries.

## **ACKNOWLEDGEMENTS**

The author would like to acknowledge the contribution of the Texas Tech University Health Sciences Center Clinical Research Institute for their assistance with this research.



# **Expanding Interprofessional Education Between Healthcare Professionals and First Responders Using Disruptive Technology**

**Presented by: Elesea Villegas, M.P.A.S.**

**Department of Surgery**

**Co-Author(s): Thea Murray B.S. M.P.H., Elesea Villegas M.P.A.S.,  
Mat Mclure E.M.T., Philip Mammen M.D. M.B.A., Allen Zhong B.S.,  
Kelly Zhang B.S., Dinesh Vyas M.D., Saju Joseph M.D.**

## **INTRODUCTION**

Interprofessional education has been shown to positively impact collaborative learning amongst healthcare professionals. However, studies have not been conducted to analyze whether interprofessional education can translate to positive learning outcomes between healthcare professionals and other members involved in the care of patients. First responders represent a large group of individuals that vary greatly in terms of levels of education and medical knowledge. In most of the United States, EMS, firefighters, and police officers, represent the most common first responders in trauma situations. In many developing countries and rural parts of the US, access to trauma sites by first responders is limited due to distance from the scene and distance to medical professionals.

## **METHODS**

Pre-hospital first responders, such as EMTs and firefighters, were recruited along with medical and PA students to participate in a collaborative course on Point of Care Ultrasound in the trauma triage. The didactic sessions were run by qualified trauma physicians. Medical and PA students led a hands-on training session on use of hand held ultrasound. The students and first responders collaborated to identify abnormal findings on ultrasound and discussed changes in management. The course covered pathophysiology and ultrasound findings for cardiac tamponade, tension pneumothorax, and assessment of the Internal Jugular vein for vascular volume. Finally, management of abnormal findings were discussed and techniques were taught by the first responders. A post-course questionnaire was administered to assess the effectiveness of the training and whether improved care would result. Finally, the educational content and IPE format was assessed with interviews and open questions.

## **RESULTS**

26 participants were involved in this pilot program. 20 were first responders, 6 were students from the PA and medical schools. 95% of first responders found the training helpful and felt it would reduce mortality in trauma patients. 100% of students found the course helpful and felt ultrasound would be useful in trauma triage.

## **CONCLUSIONS**

Interprofessional Education is effective when first responders are incorporated in the educational curriculum. Furthermore, we extended the collaborative learning environment outside of the traditional models of medical personnel. .

## **ACKNOWLEDGEMENTS**

The authors would like to acknowledge the assistance of the Texas Tech University Health Sciences Center Clinical Research Institute for their assistance with this research.

## **Thyrotoxic Periodic Paralysis**

**Presented by: Linda Esteban, M.D., PGY II, [linda.esteban@ttuhsc.edu](mailto:linda.esteban@ttuhsc.edu)**  
**Co-author(s): Jenet George, M.D., PGY II, Enrique Tobias, M.D., Nimat Alam, M.D.**  
**Faculty Advisor: Nimat Alam, M.D.**  
**Department of Family and Community Medicine**

Thyrotoxic Periodic Paralysis (TPP) is a muscle disease characterized by episodes of painless muscle weakness after heavy exercise or changes in diet. The infrequency in which it is encountered, especially in West Texas, makes TPP a diagnostic challenge.

A 31-year-old Hispanic male presented to the emergency room complaining of upper and lower extremity weakness, which started 5 days prior to admission, which became progressively worse particularly after starting a vigorous exercise regimen. On the day of admission, he was unable to ambulate. Patient's past medical history includes Graves' disease which was previously treated with methimazole but medication was discontinued due to noncompliance. On the physical examination, abnormalities included 2/5 upper extremity weakness and the 1/5 lower extremity weakness with hyporeflexia. Initially in the ER, potassium level was 1.8 mEq/L (reference range 3.6–5.0 mEq/L) and TSH was found to be 0.0 mU/L (reference range, 0.50–6.80 mU/L). EKG showed sinus rhythm with a prolonged Q-T interval. Urine drug screen was positive for cocaine. Patient was admitted to the critical care unit for close monitoring of electrolytes, 110 mEq of oral potassium was given over the next 24 hours, and patient's weakness and hypokalemia had resolved. On day two of admission, Propranolol was held due to cocaine use and Methimazole 10mg every eight hours was restarted. On day 3, patient was discharged in stable condition with stable vital signs. This case illustrates that hypokalemia is a hallmark sign of TPP and the potential for close monitoring of potassium replacement in order to resolve the periodic paralysis. Although TPP in this hispanic patient is sporadic, it is important to recognize.

## **Tissue-Specific MicroRNA Regulation by Obesity**

**Presented by: Jesus Vera-Aguilera, M.D., PGYIII, [jesus.vera-aguilera@ttuhsc.edu](mailto:jesus.vera-aguilera@ttuhsc.edu)**

**Department of Internal Medicine**

**Co-author(s): Stacy Martinez, Cassidy Taylor, Mary Mok, M.D., Yuliya Belopolsky, Gene Hubbard, Gary Ventolini, M.D., Moss Hampton, M.D., and Natalia Schlabritz-Loutsevitch, M.D., Ph.D.**

**Faculty Advisor: Natalia Schlabritz-Loutsevitch, M.D., Ph.D.**

### **INTRODUCTION**

Pregnancy-related liver disorders contribute to maternal mortality all over all over the world; however, they are often under-recognized. Specifically obesity is the risk factor of hepatic pathology. The absence of sensitive markers of liver diseases in pregnancy is the burden to early diagnosis and intervention. miRNAs are endogenous, noncoding, single-stranded RNAs, ~22 nucleotides in length which silence gene expression by binding to the 3'-UTR of target mRNAs, thereby suppressing their translation or promoting their degradation. Recent studies, including our own work (AJOG, suppl. 2014,S44) have provided significant insights into the biology and the relevance of the miR-29 family of microRNAs to hepatic ageing and cardiovascular remodeling. Transcriptional activation of miR29 is triggered by DNA damage and oxidative stress. There are no data available regarding pregnancy-related hepatic miR29 activation in any model studied. The goal of this study was to evaluate maternal hepatic miR29 family expression in pregnant baboons.

### **MATERIALS AND METHODS**

RNA extraction was performed using 50 mg tissue by real-time PCR performed in Roche Light Cycling Cyclor 96 (Life Technologies, USA) to evaluate the presence of the mir-29 family (miR-29a, miR-29b, and miR-29c) and U6 snRNA. Taqman microRNA probes (hsa-miR-29a, hsa-miR-29b, hsa-miR-29c and U6 snRNA) and FastStart Essential DNA Probes Master Mix (Roche Diagnostics GmbH, Mannheim, Germany) were used to quantify synthetic microRNA spike-ins and cellular microRNAs in real-time PCR assays according to the manufacturer's protocols. Individual real-time PCR assays were performed in a 20 µL reaction volume on LightCycler® 96 System, (Roche, Laval, QC). Data was quantified using the delta-delta Ct method.

### **RESULTS**

miR29c expression was decreased ( $p=0.077$ ) in the liver of obese pregnant mothers (Table 1). There were no signs of the fatty liver disease, when evaluated histologically.

### **CONCLUSION**

Our results are in line with the recent funding of decreased miR29c expression in patients with NASH and our own data, showing decrease in vascular miR29c expression in maternal obesity. Mir29c might be involved in the mechanisms, linking cardiovascular disorders to hepatic fat accumulation and thus could represent the target for pharmacological intervention.

# **The Relationship Between Ultrasound Finding and Cell Free DNA (NIPT screening) Positive Predictive Value**

**Presented by: Curtis Boyd, DO, PGY IV, [Curtis.boyd@ttuhsc.edu](mailto:Curtis.boyd@ttuhsc.edu)  
Co-author(s): James Maher, M.D., Randall Kelly, MD, Eneko Larumbe, Ph.D.,  
Phillip Watkins, M.S., Natalia Schlabritz-Lutsevich, M.D., Ph.D.  
Faculty Advisor: James Maher, M.D.  
Department of Obstetrics and Gynecology**

## **OBJECTIVE**

As part of ongoing ultrasound quality improvement study, we examined the effect of anatomy findings on antenatal ultrasound on the likelihood of a affected infant after a positive NIPT screen

## **METHODS**

We examined the Recent NIPT screens and compared the NIPT results to the post natal diagnosis. We looked at the effect of ultrasound findings on the Positive Predictive value of the NIPT.

## **RESULTS**

Out of 109 NIPT screens performed by MPS, we had 44 performed for Anomaly detected on US exam. There were 10 Abnormal NIPT results out of the 44 cases done for an abnormal ultrasound. All ten were confirmed abnormal on karyotype either amnio, fetal blood or placenta. There were 65 screens performed with NIPT where the ultrasound failed to demonstrate any anomalies or ultrasound markers for aneuploidy. These were a combination of indications for screening including age, historical risk factors, or positive serum analyte screen. None of the patients had a positive NIPT and all of the patients had an uneventful pregnancy and their babies have done well. No karyotype was performed. Another 4 patients were evaluated by NIPT by referring providers and they were sent for consultation after the NIPT was reported as positive. (Monosomy X in 2 cases, Monosomy 13 in one, and 47 XXY in one). In all 4 cases the ultrasound was negative for anomaly or markers. Of the 4 cases, 3 have either an amnio which confirms a normal karyotype or have had postnatal karyotype reported normal. The last patient has declined amnio and will have post-natal evaluation of the karyotype.

## **CONCLUSIONS**

NIPT is a powerful new screen for common aneuploidies. The sensitivity and specificity of the test are fixed test characteristics. The positive predictive value of the test is predicated upon the prevalence of the disease in the general population under study. The widespread adoption of the NIPT in lower risk populations has presented a clinical challenge in counselling patients with a positive result. Our findings suggest that the ultrasound results significantly alters the prevalence of an abnormality on the population and therefore, the likelihood of an affected fetus after a positive NIPT screen.

## **ACKNOWLEDGEMENTS**

The authors would like to acknowledge the contribution of the Texas Tech University Health Sciences Center Clinical Research Institute for their assistance with this research.

# **Comparing the Microfloral Composition of Stool Samples of Patients with Recurrent Clostridium Difficile Infection vs. Transient C. diff infection**

**Presented by: Allen Zhong, MS3**

**Co-author(s): Cynthia Reinosos Webb, Iurii Zobocek, Kathryn Furr, Rao Kottapalli, and Matthew B. Grisham**

**Faculty Advisor: Matthew B. Grisham**

*Clostridium difficile* is a common cause of nosocomial infections and antibiotic-associated diarrhea in the developed world, causing diarrhea, abdominal pain, fever, and mortality (~6.9%, 14,000 deaths per year). Although C. diff. can be found in the normal gut flora, more virulent, antibiotic resistant, and community acquired strains have become a serious threat to public health. Dysbiosis of the gut flora allows C. diff. to proliferate and become pathogenic, causing C. diff. infections (CDI). Recurrent C. diff. infections (RCDIs), defined as infection within 10 weeks of resolution of an initial infection, have been reported to occur in as many as 25% of initial CDIs. RCDI patients contribute to the majority of C. diff. associated mortality. There has been little investigation into the microbiological basis of why some patients are doomed to recurrent infections and some can be easily treated after a single infection. Stool was collected from patients who tested positive for an initial CDI. The microbiotal composition of stool samples between patients without reoccurring infection and patients with reoccurring infection will be compared using next-generation DNA sequencing. It is hypothesized that stool samples from RCDI patients will have a statistically significant greater proportion of the bacterial phylum Enterobacteriaceae, decreased proportions of Firmicutes, Bacteroidetes and decreased Shannon diversity index compared to transient CDI patients. There have been 33 samples collected from patients who had an initial CDI event, 5 of which eventually became recurrent infections. Getting adequate sample quantity collection has been problematic. Attempts to include samples from other sources to increase the speed of sample collection have been made. It is the hope that by learning more about the molecular basis of RCDI, more effective therapy and prevention strategies can be developed to decrease RCDI-associated morbidity and mortality. For their contribution to this research, the authors would like to acknowledge the assistance of the Texas Tech University Health Sciences Center Clinical Research Institute.



# Eye Tracking Technology: Application in Psychiatry

**Presented by: Alan John, MS3**

**Co-author(s): Feba Thomas, Amna Ahmed, Natalia Schlabritz-Lutsevich, MD, PhD,  
and Bobby Jain, M.D.**

**Faculty Advisor: Bobby Jain, M.D.  
Department of Psychiatry**

## INTRODUCTION

Recent progress in the development of diagnostic tools lead to the manufacturing of devices that allow for the tracking and analyses of eye movement. Eye movement is controlled and coordinated by several mechanisms involving brain and muscular function. Specifically, eye-tracking technology has been applied to evaluate depression and anxiety. Eye tracking systems sample gaze direction at rates between 60 and 2000 Hz and provide a continuous measure of attentional selection performed via eye movements (EMs; “overt attention”). The aim of this study was to evaluate eye-tracking as a diagnostic tool for diagnosis of depression, using one-item Faces Mood Likert Scale (FMLS) with the clinical standard of assessment of depression using Public Health Questionnaire – 9 scale (PHQ-9).

## MATERIAL AND METHODS

26 adults (aged 18 – 65 years) with MDD, as diagnosed by clinical assessment and with severity assessed by PHQ – 9 scale (mild, moderate, or severe) were asked to rate the severity of the depressive symptoms on a FMLS. The individuals were monitored by the eye tracking software device while they are in the process of choosing the right expression of the faces on the FMLS corresponding to their respective moods. Using equipment available from Tobii X2 Series Eye Trackers (USA) the following parameters were registered: time spent to first fixation, total duration of the gaze fixation and time spent, evaluating the graphics on the FMLS. (IRB protocol #L14-178). Data was compared to FMLS and the PHQ-9.

## RESULTS

The time spent to first fixation on the scale of happy faces



was 36.79 msec, 37.61 msec, 44.25 msec, 39.7 msec, 20.09 msec, 26.42 msec, 55.51 msec (respectively), while total duration of fixation was 4.47 msec, 31.75 msec, 42.48 msec, 11.65 msec, 3.71msec, 21.04 msec, 27.26 msec and total time spent on the picture 5.07 msec, 37.58 msec, 50.11 msec, 12.33 msec, 4.52 msec, 25.03 msec, 34.43 msec.

## CONCLUSION

Eye tracking technology could represent a useful tool for the rapid diagnosis of psychiatric disorders.

## ACKNOWLEDGEMENTS

The authors wish to acknowledge the contribution of the Texas Tech University Health Sciences Center Clinical Research Institute for their assistance with this research.

## **Evaluation of Potential Immune Response of Endothelial Cells to VB-111 in vivo**

**Presented by: Prathibha Nutalapati, M.D., PGY II, prathibha.nutalapati@ttuhsc.edu  
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1 Cancer Therapy and Research Center, The University of Texas Health Science  
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### **OBJECTIVE**

VB-111 is an anti-angiogenic gene-therapy agent, which is currently in Phase II clinical trial for combinatorial therapy in Glioblastoma multiforme (GBM). VB-111 was found to be safe and well-tolerated in patients with recurrent GBM. Due to clinical observation that patients who developed pyrexia (40.30C) have shown increased survival in comparison to patients with no febrile reaction, we evaluate the potential immune response of VB-111 in mice models.

### **EXPERIMENTAL DESIGN**

Human umbilical vein endothelial cells (HUVEC) were cultured in F-12K base media supplemented with cell growth supplements (ECGS), followed by addition of VB-111 (1x10<sup>11</sup> viral particles) and incubated for 48 hours. Adsorption of VB-111 from media was performed by using Adenovirus type 5 hexon antibody (TC31-9C12.C9), which is followed by immunoprecipitation using protein G agarose magnetic beads. Confirmation of immunoprecipitation of VB-111 from media was analyzed by Western blot. NCRNU-F nude female mice (n=6) were stereotactically injected into the brain with 1x10<sup>6</sup> U251\_luc human GBM cells. When tumors reached detectable level measured by IVIS Lumina system, mice were randomized into two different groups (control and treatment) and received IV injection of cell media (200uL). Treatment group received immunoprecipitated media after use of VB-111, control group – media from HUVEC cells not treated with VB-111. All mice were monitored over two weeks for tumor size and survival. All data was statistically analyzed by t-test, considering P less than 0.05 to be significant.

### **RESULTS**

There is no difference in survival time in both treatment and control groups. No therapeutic effect is observed in tumor growth after two weeks of IV infusion. No statistically significant difference is resulted in tumor measurements between control and treatment groups on day 0, 3, 5, 7, 14 after inoculation (p>0.2).

### **CONCLUSION**

No in vivo tumor response was observed after injection of immunoprecipitated HUVEC media, indicating that there is no immune response from endothelial cells after culturing with VB-111. Further studies will be performed in vivo in GBM bearing mice models by injecting immuno-adsorbed pre and post-infusion sera from patient's receiving VB-111 who developed pyrexia and by performing cytokine analysis on sera from patient's obtained at different time points during first cycle of VB-111 infusion by Luminex multiplex assay.

## **Pediatric Orthotics Using 3D Printing**

**Presented by: Jenet George, M.D., PGY II, [jenet.george@ttuhsc.edu](mailto:jenet.george@ttuhsc.edu)**

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**Faculty Advisor: Tara Deaver, D.P.M.**

**Department of Family and Community Medicine**

This research proposes to determine and compare the efficacy of kiddy orthotics to alternative “Techthotics” with the use of a 3D printer. The current standard of care for pathologic pediatric flat foot is the use of kiddyorthoses. Pathologic flat foot is a problem that largely affect children age 2-6. Conservative treatment continues to be the main focus to preventing surgery. According the the American college of foot and ankle surgeons, custom fit orthotics aid in developing the structure and function of the foot. However, cost becomes a barrier for many children and their families so it becomes relevant to develop a new cost efficient Techthotics with the use of a 3D printer.

# **Fast Track Ventilator Weaning in Patients Undergoing CABG Surgery – an Experience at a Community Hospital**

**Presented by: Osama Mukarram, M.D., PGY II, [Osama.mukarram@ttuhsc.edu](mailto:Osama.mukarram@ttuhsc.edu)  
Co-author(s): Catalasan, G., Edison, K.**

## **BACKGROUND**

Prolonged mechanical ventilation occurs in approximately 10% of all cardiac surgeries adding to the cost of hospitalization and potential for risks associated with prolonged mechanical ventilation. Use of strict weaning protocols have shown to reduce the mean duration of ventilation by 25%, duration of weaning by 78% and the total length of ICU stay by 10% . It has been shown that nurses and allied health care professionals adhere to standardized protocols better than physicians.

## **METHODS**

This was a prospective analysis of efficacy of RN and RT driven Fast track ventilator weaning protocol at Midland Memorial Hospital between March and October 2015. Patients undergoing CABG surgery between January 2012 and February 2014 were extubated using conventional extubation approach and acted as controls. Early extubation was defined as extubation within 6 hours from transfer to ICU.

## **RESULTS**

174 patients (132 males and 42 females) underwent CABG surgery between January 2012 and February 2015. Average age of patients in this group was 64.84 years. 35.1% of the patients were extubated successfully within 6 hours of ICU transfer and mean duration of ventilator use was 29.99 hours. 42 consecutive patients underwent CABG surgery between March and October 2015. Their average age was 62.3 years (37 males and 5 females), 42.86% of these patients were extubated successfully within 6 hours of ICU transfer with mean intubation time of 12.38 hours. The Z score of the difference between the percentage of people successfully extubated within 6 hours of ICU transfer was 0.94 with a p-value of 0.34. However mean duration of ventilator use was reduced by 17.61 hours. With the use of the protocol our patients spent on an average 17.21 hours less on the ventilator than before.

## **CONCLUSION**

Our intervention here shows effective utilization of health care associated personal in small to medium sized ICUs to minimize hospital stay and reduce the incidence of prolonged ventilation in patients undergoing CABG surgery.

## **Conservative Treatment of a Cesarean Scar Pregnancy Diagnosed via Transvaginal Ultrasonography**

**Presented by: Sarah Burke, M.D., PGY III, sarah.burke@ttuhsc.edu**  
**Department of Obstetrics and Gynecology**  
**Faculty Advisor: James Maher, M.D.**

A cesarean scar pregnancy (CSP) is a rare form of an ectopic pregnancy where a pregnancy implants within the scar of a previous cesarean delivery. Consequences of an undiagnosed CSP can be serious and potentially fatal. These consequences include placenta accreta/percreta/previa, uterine rupture, and hemorrhage, which can require hysterectomy.

Our patient was a 26-year-old G3P2002 that presented to the emergency room complaining of vaginal bleeding and nausea for 5 days. Patient was hemodynamically stable and did not demonstrate any abdominal tenderness on exam. Quantitative  $\beta$ -hcg was 102,819 mIU/mL. Transvaginal ultrasound demonstrated a live gestation measuring 7 weeks and 3 days. The pregnancy was noted to be located in the lower uterine segment with no overlying myometrium between the gestation and the bladder. Additionally there was noted to be increased color Doppler flow surrounding the gestation, vascularized lacunae within the placenta, and an outward bulging of anterior uterine contour (3). Surgical and medical management of this condition were discussed with the patient. Patient desired future fertility at the time of presentation to our facility. She received local methotrexate injection into gestational sac via transvaginal ultrasound guidance. There was still fetal heart activity on ultrasound the following day. She then subsequently received transvaginal ultrasound guided intracardiac injection of potassium chloride on hospital day 3. She was discharged home shortly after this procedure. She returned the following day for quantitative  $\beta$ -hcg which trended down to 78,675 mIU/mL.

Unfortunately the patient was lost to follow-up and presented to outside facility 15 days after initial treatment. She presented there complaining of worsening pelvic pain. Quantitative  $\beta$ -hcg at outside facility was noted to be less than 1,000. Patient requested hysterectomy for definitive management of her pain. Outside physician reported that there was no fetus identifiable on ultrasound at their facility and that grossly it appeared that there was a large clot in the lower-uterine segment at the time of hysterectomy.

Given the relative rarity of CSP, what we know about the clinical course following conservative management of this condition is limited to a few case series. Some case series report that it can take up to 9 weeks to clear  $\beta$ -hcg. Resolution of the gestation sac may take 5 months or more (2). Single local injection with methotrexate is reported to be successful in 73.9% of cases (1). However, meta-analyses of known case reports and series seem to indicate that patient's with quantitative  $\beta$ -hcg greater than 100,000 mIU/mL are more likely to require surgical management (1). Although this patient did eventually require surgery for pain control as per maternal request, I would not consider this case a failure of conservative management as her indication for surgery was not uterine rupture, hemorrhage, or continued growth of fetus. This case demonstrates that conservative management is a reasonable treatment course, albeit in a much more compliant patient, for those who desire future fertility even when presenting quantitative B-hcg exceeds 100,000 mIU/mL.



# **Enhanced Interprofessional Communication and Teamwork in Surgery Using Simulated Clinical Scenarios**

**Presented by: Allen Zhong**

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## **INTRODUCTION**

In 2005 the Joint Commission estimated that poor communication was the primary cause of 65% of hospital sentinel events between 1995-2004. In 2008 wrong-site surgery was the number 1 event in the country. When these events are analyzed, poor communication and failure of the surgical team are the most common underlying cause. These events have led to significant changes in the operating room and a renewed interest in team training. While the emphasis within the hospital has been on teamwork and communication, medical school education has not adapted these new techniques. This has led to a significant number of students never working in multidisciplinary teams prior to graduation and student dissatisfaction.

When effective teams are analyzed there have been 3 key aspects to success:

1. Role definition and expectation
2. Early identification of roles, tasks, and team leader
3. Respect and communication between team members.

## **METHODS**

We developed an interprofessional curriculum for medical students, PA students, and nursing students to help promote communication and teamwork in the simulated surgical scenarios. Students are briefed prior to simulation and teams are formed. The team is allowed to spend some time interacting and developing rapport. Nursing students are then introduced into the clinical scenario and allowed to assess prior to calling for the medical and PA students. The team is allowed to manage the clinical scenario for 15 minutes. After completion of the scenario debriefing and film review is done with faculty insight. Circular evaluation and team dynamics are also used to encourage student engagement.

## **RESULTS**

Since implementation 51 students have participated. Of all participants 66% have shown growth and improvement on post-curriculum survey. 100% of participants believe the curriculum was educational and met their needs. 20% of students have requested to repeat the curriculum. Amongst nursing students the majority felt better equipped to work in a surgical setting and felt comfortable to speak up during sentinel events. Medical students showed the greatest decline in their abilities when faced with moral and ethical scenarios.

## **CONCLUSIONS**

This data indicated that formalized communication training utilizing simulation scenarios enhances teamwork amongst students. Furthermore, early training of students allows for the fundamental aspects of communication and teamwork prior to entrance into clinical practice.

By exposing students to interprofessional education, we have shown that student satisfaction and perceptions of learning have significantly improved. Finally, we have identified knowledge gaps within medical student education that can be crucial to medical practice.

# **Is There an Increased Incidence of Retroperitoneal Malignancies Due to Fracking?**

**Presented by: Kelly Zhang**

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Faculty Advisor: Saju Joseph, M.D. F.A.C.S.  
Department of Surgery**

## **INTRODUCTION**

Retroperitoneal neoplasms are rare with an annual incidence of 2.7 cases per 1,000,000. In rural West Texas there is a large amount of environmental exposure to chemicals involved in hydraulic fracturing. We suspect that chemical exposures have increased our incidence of retroperitoneal neoplasms.

## **METHODS**

We did a retrospective review of all retroperitoneal neoplasms seen over the past 4 years. The total patient population of the region is 300,000 served by 3 hospitals.

We reviewed patient demographics and work history. Patients that lived further than 50 miles from the hospital or that recently moved to the area were excluded.

## **RESULTS**

The expected number of cases should be 3.24 cases/4yrs. We saw a total of 9 cases that met the inclusion criteria. This represents a 278% increase over expected.

5 patients had sarcomas, 2 had cystic neoplasms, 1 had a primary retroperitoneal neuroendocrine tumor, and 1 had a lymphangioma.

6/9 patients or their spouse worked in the oilfields.

## **CONCLUSIONS**

We found a 278% increase incidence of retroperitoneal malignancies in this population. 2/3 had been exposed to chemicals involved with oil manufacturing. 1/3 had passive exposure living in this area.

We believe that the incidence of retroperitoneal malignancies is substantially higher than what we report.

Many patients are referred to tertiary centers and there are other institutions providing care in the area.

We recommend extensive exposure history on any patient with a retroperitoneal neoplasm. Also, we believe a national registry be developed to track patients. Finally, improved public health monitoring for possible causes of this malignancy is imperative going forward.

# **Preventing Primary Cesarean Section: A Quality Improvement Study**

**Presented by: Brittany Brothers, M.D., PGY II, [brittany.brothers@ttuhsc.edu](mailto:brittany.brothers@ttuhsc.edu)**

**Co-author(s): Jonathan Lugo, M.D. PGY III**

**Faculty Advisor: Martin Caliendo, M.D.**

**Department of Obstetrics and Gynecology**

## **INTRODUCTION**

The goal of Healthy People 2020 is a cesarean section rate of 23.9% in women who meet the criteria of being a Nulliparous Term Singleton gestation in a Vertex presentation (NTSV) (1). As of 2007 the current rate is 26.9% (2). Of those women who undergo a primary cesarean delivery, about 90% will go on to have a repeat cesarean (3). There is an increased risk of maternal complications with cesarean section, especially with multiple cesarean deliveries (3). Therefore an effective strategy is needed to safely avoid primary cesarean delivery. In February of 2012, the Eunice Kennedy Shriver National Institute of Child Health and Human Development, the Society for Maternal Fetal Medicine, and the American College of Obstetricians and Gynecologists held a workshop focused on identifying factors leading to and opportunities to reduce unnecessary primary cesarean delivery and develop practice recommendations.

## **OBJECTIVE**

To determine whether the implementation of a labor protocol, based on definitions from the Consortium on Safe Labor (CSL), will reduce the cesarean section rate among a nulliparous term singleton vertex (NTSV) population.

## **METHODS**

This is a Quality Improvement project with the purpose of assessing a change in the Primary Cesarean Section rate. The following outlines the components of this project.

A formal educational lecture took place on October 26, 2015 for the Texas Tech University Health Sciences Center of the Permian Basin Obstetrics and Gynecology residents and faculty providing information about the standardized labor management protocol for low risk, nulliparous, singleton, term, vertex pregnant patients based on recommendations from the joint workshop.

## **PRELIMINARY RESULTS**

Preliminary data collection shows a total of 74 nulliparous, term, singleton, vertex deliveries prior to the institution of the labor protocol in the months of November 2014-January 2015. Fifty one of these deliveries were vaginal and 23 deliveries were via cesarean section giving a pre-intervention primary cesarean rate of 31.08%. After the institution of the labor protocol, there were a total of 83 NTSV deliveries during the months of January 2016 - March 2016. Seventy two of these deliveries were vaginal while 11 deliveries were via cesarean section. The post-intervention primary cesarean rate is 13.25% ( $p = 0.074$ ). Data collection is ongoing.

## **DISCUSSION**

An effort to reduce the primary cesarean section rate may have a significant effect on reducing maternal morbidity. With the advent of Value Based reimbursement, the NTSV rate may have far reaching financial implications.

# **Evaluation of The Thermal Map of Human Placenta as the First Step to in VIVO Application of Infrared Thermometry**

**Presented by: Jonathan Lugo, M.D., PGY III, [jonathan.lugo@ttuhsc.edu](mailto:jonathan.lugo@ttuhsc.edu)**

**Co-author(s): Alan John MS3, James Maher, M.D.,**

**Natalia Schlabritz-Loutsevitch, M.D., Ph.D.**

**Faculty Advisor: Natalia Schlabritz-Loutsevitch, M.D., Ph.D.**

**Department of Obstetrics and Gynecology**

## **INTRODUCTION**

The placenta is the primary fetal organ of respiration, metabolism, nutrition, and excretion. The placenta responds to maternal conditions, e.g. stress, undernutrition, obesity, and alcohol consumption through the mechanism of changes in blood flow, metabolism, and morphology. The abnormal placental function is the fundamental cause of potentially life-threatening complications: pre-eclampsia, abruption placenta, and fetal growth restriction. Due to the unique structure of human placenta, a unique set of placental-specific parameters will need to be developed. One such parameter is placental metabolism and capacity to serve as radiator for heat exchange between a mother and her fetus. The novel technology, termed infrared thermometry allows for the detection of electromagnetic waves (heat) produced by metabolically active structures. We hypothesize that infrared thermometry could accurately estimate the placental heat map after placental delivery, which would depend on placental vascular tree morphometry. The aim of this study was to evaluate whether infrared thermometry could be applied to the estimation of the placental heat map.

## **MATERIAL AND METHODS**

Placental temperature was measured within five minutes after delivery of the placenta, using “FLIRone” (FLIR Systems, Inc., Wilsonville, OR, USA) in six placentas. The placenta was spread out with the maternal side visible (Fig.1A). Two measuring tapes were placed along the x and y axis. The thermal image was taken from a height of 45 cm above the surface of the table. Three categories of the color intensities were investigated: bright yellow (BY), yellow (Y), and orange (O). The image was analyzed through the provided software to estimate the temperature associated with the particular color (Fig.1B). The percentage of each area was evaluated using “Image J” program.

## **RESULTS**

For BY, Y and O, the average temperature of the regions were  $36.3 \pm 0.5$  C,  $34.7 \pm 0.3$  C, and  $31 \pm 1.2$  C respectively. The thermal areas were distributed as follows:  $14\% \pm 13\%$  (BY),  $38\% \pm 13.5\%$  (Y), and  $47 \pm 8.6\%$  (O). The absolute surface areas were  $20 \pm 8$  cm<sup>2</sup>,  $89 \pm 39$  cm<sup>2</sup> and  $119 \pm 21$  cm<sup>2</sup>.

## **CONCLUSION**

The heat map of the placenta might prove to be a useful tool for evaluation metabolically active placental tissue in utero.

## **ACKNOWLEDGEMENTS**

The authors wish to acknowledge the contribution of the Texas Tech University Health Sciences Center Clinical Research Institute for their assistance with this research.

**25th Annual**  
*Permian Basin Research Day*

# POSTER PRESENTATIONS





# **Tachysystole Rates Before and After Implementation of an Oxytocin Administration Protocol**

**Presented by: April Aguilar, D.O., PGY II, [april.aguilar@ttuhsc.edu](mailto:april.aguilar@ttuhsc.edu)**

**Faculty Advisor: Martin Caliendo, M.D.**

**Department: Obstetrics and Gynecology**

## **BACKGROUND**

Oxytocin is currently used in a majority of all births in the United States. Oxytocin is used to augment the frequency and intensity of inadequate uterine contractions during slow labor progression. Adverse perinatal outcomes after administration of oxytocin can occur during tachysystole related to fetal hypoxia. Tachysystole is defined as more than five contractions in 10 minutes, averaged over 30 minutes. Minimizing periods of tachysystole and treating it in a timely manner before the fetal response is nonreassuring could potentially avoid these adverse effects. Despite its wide use, no single regimen of oxytocin administration has been shown to improve clinical outcomes. A greater practice variation is associated with poorer outcomes than more uniform practice patterns as a principle of quality improvement.

## **OBJECTIVE**

The purpose of this study is to determine rates of tachysystole after implementation of a conservative oxytocin administration protocol based on maternal and fetal response.

## **METHODS**

This is a quality improvement retrospective chart review and data extraction of 100 patients receiving oxytocin before implementation of the protocol and the 100 patients receiving oxytocin after protocol implementation at Medical Center Hospital and seen by Texas Tech University Health Sciences Center providers. The checklist includes requirements prior to the administration of oxytocin and a checklist completed by nursing staff every thirty minutes during its administration. The protocol is designed for use in singleton, vertex, term labor in women with an unscarred uterus. Rates of tachysystole during the entire time oxytocin was administered during labor were measured before and after implementation of the protocol.

## **RESULTS**

Rates of tachysystole decreased from 18 percent prior to the protocol and 8 percent after its implementation. This decrease was statistically significant with a z-score of 2.6 and p-value of .03.

## **SIGNIFICANCE**

This study provided a standardized protocol for the administration of oxytocin based on maternal and fetal response that will reduce practice variation and has decreased rates of tachysystole which could in theory improve patient outcomes. This study provides areas of future quality improvement research regarding improving compliance among residents and nurses as compliance with oxytocin protocol was only 54%.

# **Do You Like My Shoes? Using Principles of Neuroplasticity to Increase Lower Limb Kinesthesia**

**Presented by Ryan Baxter, MS3**

**Co-author(s): Bobby Jain, M.D. MPH**

**Faculty Advisor: Bobby Jain, M.D., Department of Psychiatry**

## **PURPOSE**

This is an interventional study to determine whether a change of footwear can increase balance and coordination deficits in at risk population groups. As a proof of concept the population studied will be males and females over the age of 70 years old with no known lower limb kinesthesia deficits.

## **METHODS**

Volunteers are split into two groups. A pre-test will be conducted for both groups. Volunteers are asked to go barefoot and place their left foot in front of their right foot touching heel to toe on a level surface for 30 seconds and if upon completion continue with eyes closed for up to 30 seconds. Volunteers are then next asked to raise one foot off level ground for 30 seconds and again if upon completion continue with eyes closed for up to 30 seconds. Both exercises are then repeated with leading feet switched.

One group is required to change their daily footwear to a barefoot type shoe. The other group is not asked to change their footwear. After 10 weeks all participants will return for a post-test that was identical to their pre-test.

## **RESULTS**

I anticipate results to indicate there is a statistically significant increase of lower limb kinesthesia in the group who wore a barefoot type shoe for 10 weeks.

## **CONCLUSION**

The increases seen in balance and coordination from a modification in footwear have many implications. In the elderly, the increased afferent input and resulting neuroplastic adaptation could result in lower rates of falls. In patient's suffering from cerebral vascular accidents, multiple sclerosis, or other central nervous system insults increasing the sensation surface area of the foot and potential digit movements should allow for a plastic change in relative size of their lower limbs within the somatosensory and motor cortex brain map respectively.

**Successful Management of Methicillin Resistant *Staphylococcus Aureus*  
Bacteremia Complicated with Diffuse Myelitis;  
A Case Report and Brief Literature Review**

**Presented by: Joy Eduwu, PGY II, [joy.eduwu@ttuhsc.edu](mailto:joy.eduwu@ttuhsc.edu)**

**Department of Internal Medicine**

**Co-authors: Alexander Bastidas, M.D; Yasir Ahmed, M.D.**

**Faculty Advisor: Yasir Ahmed, M.D.**

*Staphylococcus aureus* is a leading cause of both community and healthcare-associated bacteremia throughout the world. *S. aureus* bacteremia (SAB) can seed to virtually any body site and result in significant morbidity and mortality up to 30%.

SAB commonly causes serious infections like infective endocarditis, necrotizing pneumonia, skin and soft tissue infection, osteomyelitis, and meningitis.

Acute transverse myelitis (ATM) is characterized by acute and sub-acute dysfunction of the spinal cord resulting in paresis and sensory level impairment below the level of the lesion. Etiologies include para-infectious, drug/toxins, paraneoplastic, acquired demyelinating disease. Half of the patients presenting with acute transverse myelitis have an antecedent infection.

The association between SAB and diffuse transverse myelitis has not been well documented in literature.

Here we present the challenging case of a patient who presented with diffuse transverse myelitis associated with SAB and vancomycin treatment failure. The patient was successfully treated with the use of combination therapy with high dose daptomycin.

# **Prenatal Diagnosis of Urinoma and Dilated Azygous Vein**

**PRESENTED BY: Mamie Gao, MS3, m.gao**

**Co-author(s): Maher, James, M.D., Kelly, Randall, M.D., Hutton, Kathryn, D.O.**

**FACULTY ADVISOR: James Maher, M.D.**

**Department of Obstetrics and Gynecology**

## **OBJECTIVE**

Present a case and postnatal follow up

## **METHODS**

A primigravid patient was followed with serial ultrasound from 11 weeks until 33 weeks. The urinoma was followed and the subsequent changes in the venous drainage and cardiac findings were documented.

## **RESULTS**

The patient had a normal 11 week scan. Anatomy scan at 22 weeks demonstrated a R sided cystic mass 3.7 cm in diameter which deflected the R kidney medially. The umbilical vein drained normally into the portal system and flow in the DV was normal. The fetal heart including 3 VV was normal. Over the next month, the cyst grew to over 7 cm and the AC was >97% for GA. The liver was displaced into the left abdomen by the cyst and the azygos system was noted to dilate. The patient had an SVD at 34 weeks and postnatal evaluation at the time of surgery confirmed a urinoma from a ruptured renal pelvis.

## **CONCLUSIONS**

Prenatal diagnosis of a dilated azygos vein is often a marker for disruption of the normal embryological formation of the abdominal visceral venous drainage associated with heterotaxy. Compensatory dilation of the azygos vein will develop when there is an interruption of the inferior vena cava as a result of the right subcardinal vein failing to anastomose with the hepatic sinusoids to form the hepatic segment of the IVC. This is a frequent finding with left atrial isomerism.

In our case the abdominal venous drainage and cardiac findings were normal in the early second trimester. A retroperitoneal cystic mass developed as a result of a urinoma formation and the progressively enlarging mass gradually displaced the right sided abdominal viscera including the liver to the left of the midline. By 26 weeks gestation the mass had compressed the IVC drainage of the lower body resulting in a dilation of the azygos vein behind the 4CH and a dilated azygos arch emptying into the SVC.

Following spontaneous delivery at 34 weeks, the infant had a laproscopic nephrectomy and removal of the retroperitoneal cyst. With decompression of the abdominal cyst, the normal drainage on the IVC and normal echocardiographic findings were documented.

We present an interesting case which highlights how compression of the IVC by a retroperitoneal mass led to a compensatory dilation of the azygos system.

## **Unexplained Pancytopenia in a Dialysis Patient Due to Copper Deficiency with Previous Gastric Bypass**

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Copper deficiency is believed to be relatively rare in United States but with increasing obesity and consequent increase in gastric bypass surgeries, many cases have been reported recently. Copper deficiency can present with variety of hematological manifestations mimicking myelodysplastic syndrome. Hematologic parameters can be promptly and completely corrected through copper supplementation. With the increase incidence of hemodialysis dependent and stage renal disease patients undergoing gastric bypass surgery, this condition manifests as erythropoietin resistant anemia. We present a case of 58 year old male with end stage renal disease on hemodialysis and malnutrition after gastric bypass surgery had refractory pancytopenia corrected with copper supplementation through Intra dialytic parenteral nutrition.



# **Case Report and Review: Hypercalciuria in a Child with Hematuria Triggered by Sports**

**Presented by: Sonia Joseph, MS3**  
**Faculty Advisor: Bhargavi Kola, M.D.**  
**Department of Pediatrics**

## **BACKGROUND**

Childhood hematuria is a common finding on urinalysis that may or may not occur with symptoms. However, persistent hematuria, whether gross or microscopic, requires evaluation and follow-up. It is important to distinguish the possible differentials for childhood onset hematuria in a case such as the one presented here, especially in the absence of physical findings.

## **CASE**

An 8-year-old boy presented with a chief complaint of sudden onset gross hematuria that began after he started playing football, though he denied any history of trauma. The patient denied associated pain or burning on urination, increased frequency or voiding urgency. The child's mother stated that he had not been sick recently. Multiple urinalyses done in clinic were positive for either 2+ or 3+ blood with no trace of proteinuria. Physical exam was benign and vitals were within normal limits. His CBC and CMP failed to yield any abnormalities. A renal ultrasound was performed, showing only mild distention of both collecting systems, an extra renal pelvis (considered a normal variant), and a horseshoe kidney. Regarding birth history, our patient was full term and delivered by C-section for increased decelerations in fetal heart rate. The patient passed his newborn hearing screen. His mother was on anti-seizure medication, valproic acid, during the pregnancy and tested positive for Chlamydia and GBS. The child's family history was negative for renal failure or deafness. However, the patient's mother had a positive history of recurrent urinary tract infections for which she was advised to have a nephrectomy that was never done.

## **RESULTS**

As the etiology of the persistent hematuria was still unknown after initial imaging, the patient was referred to a pediatric nephrologist. Further lab work revealed normal levels of C3, C4, ANA, ANCA, and high normal initial urinary calcium:creatinine ratio. His renal biopsy demonstrated no abnormalities. He was also seen by a urologist who performed a cystoscopy and meatoplasty to evaluate and treat the patient's stenotic urethral meatus, which failed to yield any other abnormal findings regarding the bladder and urethra or resolve the hematuria. Due to the unclear picture about his calcium levels, we decided to do a 24 hour urine calcium and creatinine rather than spot levels which revealed a 24 hour urine calcium of 5.2mg/kg (>4mg/kg favors hypercalciuria) and a urine calcium:creatinine ratio of 1.5mg/mg (> 0.2 being abnormal for his age). This allowed for the diagnosis of hypercalciuria as the cause of his hematuria.

## **CONCLUSION/SIGNIFICANCE**


Based on the diagnosis of hypercalciuria, our patient started treatment with a low sodium diet and hydrochlorothiazide (HCTZ) 12.5 mg twice a day. Urinary calcium levels will be monitored closely for effectiveness of treatment. Further investigation may be warranted to determine the etiology behind the child's hypercalciuria despite the lack of stones. Although hypercalciuria is a common pediatric condition, our case presents in an unusual fashion of symptoms being triggered after physical activity. This diagnosis is significant due to the increased chance of nephrolithiasis and bone demineralization in children, which was not present at this stage of assessment in our patient.



## **Case Report: Fulminant Myocarditis Secondary to Methamphetamine Abuse**

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Department of Internal Medicine**

Methamphetamine abuse has become a serious problem in the U.S. and the number of hospital admissions due to methamphetamine has been increasing in the country. We present a case of Fulminant myocarditis possibly due to methamphetamine which showed clinical improvement after cessation of drug use and with appropriate medical management for the heart failure.



# **Combat Gauze in Obstetrics and Gynecology Trauma Control**

**Presented by: Hanna Kodeih, D.O., PGY I, [hanna.kodeih@ttuhsc.edu](mailto:hanna.kodeih@ttuhsc.edu)**

**Author: Jonathan Lugo, M.D., PGY III**

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**Department of Obstetrics and Gynecology**

## **BACKGROUND**

Traumatic events vary greatly on what the specific outcome are desired and those which are feasible. Situations where our hands are tied by social constraints greatly limit our ability to obtain what patients want. At the same time, the concept of “damage control” in situations of inescapable poor outcomes can be difficult to accomplish.

## **CASE**

Patient 1 is a 35 yo G2P1102 Jehovah’s Witness who had a repeat cesarean delivery complicated by intraoperative hemorrhage from adhesions. Given her failure to respond to medical and surgical intervention at that time, she was packed with combat gauze which was removed POD 1. She remained stable and made a full recovery.

Patient 2 is a 48 yo G5P5 with a history significant for advanced 2B adenocarcinoma of the cervix who presented to the emergency department with precipitous vaginal bleeding. She was status post radiation therapy. Interventional radiology was not available at that time. Monsels were not readily available, so combat gauze was used and packed into the cervix and vagina. She remained stable and allowed Intervention Radiology to be consulted and emboli uterine arteries bilaterally.

## **CONCLUSION**

Emergent clinical scenarios such as these are not to uncommon. These two cases present different by vital uses for combat gauze that both accomplish the same goal of life saving hemostasis.

# **Coccidioidomycosis In Pregnancy: Case Report and Literature Review of Associated Placental Lesions**

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Javier Flores-Guardado, M.D., and Natalia Schlabritz-Lutsevich, M.D., Ph.D.**

## **BACKGROUND**

Coccidioidomycosis is an endemic fungal infection in the Southwestern United States, Northwestern Mexico, and parts of Central and South America. Although infection is relatively uncommon during pregnancy, it is imperative to have an index of suspicion in order to diagnosis and begin timely treatment to prevent dissemination and dire consequences.

## **CASE REPORT**

A 33-year-old Hispanic female was evaluated after she was involved in an automobile accident. Radiographic evaluation showed 3.2x3.2 cm cavitary thick walled lesion. A biopsy was negative for malignancy. Evaluation was positive for coccidiomycosis by complement fixation reaction. Four months later, the patient presented 7 weeks into pregnancy with massive hemoptysis. Bronchoscopy revealed bleeding from the right upper lobe and emergency embolization was performed. The patient had a spontaneous abortion 9 days after admission. The right upper and middle lung lobes were resected due to continuous bleeding. A subsequent pregnancy was un-eventful. Coccidioidomycosis titers remained negative throughout pregnancy.

## **DISCUSSION**

This case demonstrates the potential for severe pulmonary coccidioidomycosis and vascular strain of pregnancy-associated vascular expansion in the first trimester of pregnancy and the possibility of favorable pregnancy outcome in subsequent pregnancies after appropriate treatment. The route of fetomaternal transmission and placental lesions in coccidioidomycosis are discussed.

# **Bilateral Acute Adrenal Hemorrhages in a Patient with Antiphospholipid Syndrome**

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## **BACKGROUND**

Antiphospholipid syndrome (APS) is an autoimmune disorder characterized by arterial or venous thromboembolic events and/or pregnancy loss associated with the presence of Anti-Phospho-Lipid Antibodies (APLA). Venous thromboses are more common than arterial, with deep venous thrombosis leading the list of clinical venous thrombotic manifestations in APS. End organ damage may also be seen in APS as a result of small vessel thrombosis. Here we present an unusual case of asymptomatic acute bilateral adrenal hemorrhage in the setting of APS.

## **CASE PRESENTATION**

A 33-year-old male presented with a dull left flank pain associated with nausea and vomiting. He denied fever, chills, hematuria or dysuria. He had a laproscopic cholecystectomy ten days prior without any post-operative complications. He had a history of deep venous thrombosis in left iliac vein resulting in stent placement 3 years ago without further workup and was non adherent to anticoagulation medications. His vital signs on presentation were; Temp. 99.7°F, HR 83 bpm, RR 18 bpm, BP 114/75 mmHg. On physical examination his abdomen was soft with mild tenderness globally. Appendicitis or pyelonephritis were ruled out. Laboratory work on showed WBC 6.05 x 10<sup>3</sup>/uL, Hb 13.9 g/dL, Hct 40.6 %, platelets 87.6 x10<sup>3</sup>uL with normal differential count. Complete metabolic panel showed sodium 122 mmol/L, potassium 2.9 mmol/L, chloride 83 mmol/L, bicarbonate 31 mmol/L, creatinine 1.0 mg/dL, Total bilirubin 2.5 mg/dL, AST 54 IU/L, ALT 68, Alkaline phosphatase 186 IU/L, amylase and lipase were negative. Protime 13.8 sec (ref 9-12 sec), APTT 61.2 (ref 24-35 sec), Thrombin time 16.1 sec (ref range <20 sec). An acute hepatitis panel, urine toxicology screen and serum alcohol level did not show any abnormality.

CT scan of the abdomen showed acute bilateral adrenal enlargement. Left adrenal gland measured 3.7 x 3 cm and the right adrenal gland 4.2 x 2.5 cm. Compared to CT scan of abdomen 10 days prior for acute cholecystitis these findings of acute adrenal enlargement were highly suggestive of acute bilateral adrenal hemorrhage. Serum random cortisol level was <0.16ug/dL. The patient remained hemodynamically stable. Further tests for antiphospholipid antibody syndrome were sent. These tests revealed a negative serum ANA, Dilute Russel Viper Venom Time (DRVVT) 137.5 sec (ref range <55.1 sec), DRRVT/DRVVT Confirmation ratio 2.6 (reference <1.3), hexagonal phospholipid(LA) 55 sec (ref range <8), Anti cardiolipin antibodies IgG 22GLP (ref range <15 GLP), B2 glycoprotein 1 antibody IgA 30 SAU (ref range <26 SAU). Tests for factor V leiden mutation and protein C and S deficiency returned normal. Anticoagulation with Warfarin was initiated with target INR of 3.0-3.5 and steroid replacement therapy with hydrocortisone and fludrocortisone was started.

## **CONCLUSION**

Adrenal failure secondary to antiphospholipid syndrome is a rare complication. The physician should have a high index of suspicion in a patient with previous thrombosis presenting with flank pain, low cortisol and adrenal enlargement.

## **Disseminated Nocardiosis with pacemaker infection in immune-competent host: a rare case**

**Presented by: Osama Mukarram, M.D., PGY II, [osama.mukarram@ttuhsc.edu](mailto:osama.mukarram@ttuhsc.edu)**

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**Faculty Advisor: Yasir Ahmed M.D.**

**Department of Internal Medicine**

### **INTRODUCTION**

Nocardia species are found worldwide and the most common mode of entry in humans is inhalation. Disseminated Nocardia infections are seen in immune-compromised hosts and may infect multiple organ systems. Endocarditis due to infection by Nocardia species is rare and has a poor prognosis. To our knowledge, few cases of Nocardial endocarditis complicating implantable defibrillation leads have been reported.

### **CASE**

Our patient is an 82-year-old male with history of noninsulin dependent diabetes mellitus and third degree heart block dependent on permanent pace maker implanted 3 years ago. He presented with low grade fever, chills and multiple abscesses on his extremities for two weeks. He had been treated with 10 days course of clindamycin prior to presentation at our facility. CT scan of the chest showed bilateral small pulmonary nodules suspicious of infective-embolic phenomenon. A trans-esophageal echocardiogram was done that showed a hypermobile mass in the right ventricle, close to the right ventricular outflow tract attached to the right ventricle pace maker lead suggesting endocarditis. No valvular lesions were identified on the echocardiogram. Blood cultures remained negative for aerobic, anaerobic, fungal and acid fast bacilli. However culture from abscess after incision and drainage grew Nocardia Brasiliensis. It was decided to replace the permanent pacemaker with a temporary one and start the patient on intravenous Ceftriaxone and trimethoprim/sulfamethoxazole (TMP/SMX) according to the culture and sensitivity reports. After 6 weeks of dual intravenous antibiotics his regimen was switched to oral TMP/SMX that the patient will take for 6 months. 3 months after discharge from the hospital the patient remains afebrile and all his abscesses have resolved.

### **DISCUSSION**

Nocardia infections typically involve pulmonary and/or cerebral tissue. Typically an infection seen with Nocardia is seen in the immune-compromised patients. Nocardia endocarditis without involvement of the heart valves is a rare occurrence. Our case emphasizes the importance of early diagnosis and adequate treatment of Nocardia infection for to avoid potentially fatal outcomes.



## **Loperamide-induced Torsades de Pointes: case report and review of literature**

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Abuse of over the counter drugs often gets overlooked by health care providers. Loperamide is one such over the counter drug that is often abused by drug addicts. We present here a case of a young male attaining euphoria from taking massive doses of Loperamide. He developed Torsades de Pointes and subsequent cardiac arrest. We found similarities in the progression of myocardial electrical conduction abnormalities among Loperamide and other previously known arrhythmogenic drugs. We intend to raise concern over the ease of availability of such drugs over the counter and increase the index of suspicion for over the counter drug abuse from our experience.

# **Pemphigoid Gestationis in a Multifetal Gestation Pregnancy**

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**Faculty Advisor: David Banh, M.D.**

**Department: Obstetrics and Gynecology**

## **INTRODUCTION**

A postpartum patient developed pruritus, a diffuse rash and blisters on her body. A cesarean delivery for a multifetal gestation occurred five days prior to her presentation. The patient's complaints and physical exam findings were consistent with pemphigoid gestationis after more common causes such as drug eruption and contact dermatitis were ruled out.

## **CASE DESCRIPTION**

A 24-year-old multigravida woman presented to the clinic with complaints of pruritus, a diffuse rash, and blisters five days after a cesarean delivery for a dichorionic-diamniotic pregnancy. On exam, urticarial papules were appreciated on her breasts bilaterally as well as around the umbilicus. She pointed out two large, fluid-filled blisters that were located in the lateral aspects of her pelvis bilaterally. Upon questioning, she denied any change in detergent or soaps. Although she did describe an allergy to tramadol, she did not experience a drug reaction while in the hospital. She had presented to clinic for an incision check with the rash and blisters, was sent home with high potency topical steroids for the pruritus as well as oral prednisone for 2 weeks to be tapered. She returned to the clinic 1 week later for skin punch biopsies; at this point her rash had dramatically improved. Skin biopsies were taken from the left upper thigh and abdomen and sent to pathology. The pathology result read as chronic spongiotic dermatitis with no fungal organisms on PAS stain for fungi. On a 2-week incision check, the diffuse rash had much improved. She had completed a 14-day course of oral steroids. Five days later she was called to schedule an IUD insertion and disclosed that both twins were hospitalized for respiratory syncytial virus with one infant on a ventilator.

## **DISCUSSION**

Pemphigoid gestationis is a rare autoimmune bullous disease that has maternal and fetal effects. Initially urticarial plaques and pruritic papules develop followed by bullae or vesicles one to two weeks later. Lesions tend to be located around the umbilicus and other skin surfaces while sparing mucosal membranes, scalp and face.

Pemphigoid gestationis typically develops during the first pregnancy, and it can also be associated with gestational trophoblastic disease albeit rarely.

IgG antibodies can transfer passively from the mother to ten percent of neonates resulting in similar skin lesions in newborns. If this occurs, wound care aids in spontaneous clearance within weeks as IgG levels decrease. After delivery, lesions tend to resolve without scarring. Most women are free of disease after 6 months. Some may have protracted resolution and exacerbations can occur during the menstrual cycle or with use of oral contraceptive pills.

There is potential for severe pruritis. Early on, topical high-potency corticosteroids along with oral antihistamines can help. Oral prednisone daily with a gradual taper to a maintenance dose can bring relief and prevent the formation of new lesions. In cases where patients are refractory to the above management, plasmapheresis or high dose intravenous immunoglobulin therapy can be utilized.

## **Unexplained Dyspnea in a Patient with Recurrent Urinary Infections- A Case of Iatrogenic Methemoglobinemia**

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**Faculty Advisor: Kalpana Bhairavarasu, M.D.**

**Department of Internal Medicine**

A 39-year-old female with significant past medical history of nephrolithiasis, recent and recurrent urinary tract infections presented with worsening shortness of breath. Patient was breathing normally before she was treated with sulfamethoxazole-trimethoprim (SMX-TMP) and Phenazopyridine four days prior to symptom onset. She also noticed yellow discoloration of her eyes and urine. She denied any sick contacts, illicit drug use, recent prolonged immobilization, chills, fevers, cough, chest pain, leg swelling or similar episodes in the past. On physical examination the patient was found to be cyanotic and tachypneic. The pulse oximetry (SpO<sub>2</sub>) was 86% on 100% oxygen by a non-rebreather mask. No cardiac murmur, dysrhythmia, bronchial breath sounds were elicited and confirmed by absence of abnormalities on chest radiograph and a normal 12-lead electrocardiography. Despite supplemental oxygen the patient remained symptomatic. Her SpO<sub>2</sub> did not improve either. Arterial blood gas testing with co-oximetry revealed a pH 7.40, PaO<sub>2</sub> 89 mmHg, PaCO<sub>2</sub> 33 mmHg, SaO<sub>2</sub> 87%. The methemoglobin level was elevated at 10.1% (normal: 0.4-1.5).

The patient's age, absence of similar personal episodes, negative family history, clinical presentation, and temporal relationship with recent use of prescription medications -- SMX-TMP and Phenazopyridine prompted us to a diagnosis of acquired (iatrogenic) Methemoglobinemia. Clinical manifestations of Methemoglobinemia can range from asymptomatic to development of cyanosis, dizziness, shortness of breath, headache, seizures, dysrhythmias, coma, or death depending on the severity.

Definitive treatment with intravenous methylene blue (1mg/kg) was initiated. The patient recovered rapidly. Repeat arterial blood gas analysis 30 minutes post-methylene blue treatment showed a pH 7.38, PaO<sub>2</sub> 445 mmHg, PaCO<sub>2</sub> 34mmHg, SaO<sub>2</sub> 99.5%. The methemoglobin level was 0% on oxygen 100% by non-rebreather mask as earlier.

SMX-TMP is a commonly prescribed antibiotic and Phenazopyridine is a commonly used urinary analgesic (over the counter). These medications are also used in combination in certain patients like ours. Methemoglobinemia is an unusual and rarely seen complication related to these medications. Prompt recognition and initiation of antidote therapy with methylene blue infusion along with discontinuation of the oxidizing agent can be life-saving.

# **Keeping it Simple: A Process Improvement Intervention to Optimize Hospitalist Workflow at an Academic Regional Medical Center**

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**Faculty Advisor: Domingo Caparas, M.D.  
Department of Family and Community Medicine**

## **BACKGROUND**

A workflow improvement intervention that automates the process of creating a rounding list and reduces the need for stickers in completing the sign-out list has the potential to improve hospitalist workflow while saving time and improving rounding efficiency. This must outweigh any logistical downside, time investment in training, and cost implications of transitioning to a new system.

## **PURPOSE**

To develop an automated sign-out list that would be incorporated into a redesigned hospitalist workflow, while reducing the need for stickers, saving time and improving rounding efficiency.

## **DESCRIPTION**

An opportunity to improve the process of generating sign-out lists was identified during a monthly hospitalist meeting. Serial evaluation of 2 HIPAA-compliant web-based sign-out software vendors and the current hospital EMR vendor – McKesson™ was completed. After an iterative process involving key stakeholders, it was decided to pursue the hospital EMR option in order to capitalize on existing familiarity while avoiding additional costs/training. Over the course of 3 PDSA cycles, a curated list was developed using an existing patient list platform on the hospital EMR and integrated into a redesigned hospitalist workflow.

The hospitalist group has fully implemented this system after a 3-month period of rapid process improvements. A pre- and post-implementation survey with 100% response rate showed that 100% of the hospitalists and the billing/coding personnel considered the new system to be “better” overall. The survey also showed that automating the sign-out list creation process saves time and improves rounding efficiency.

## **CONCLUSION**

Eliminating a key disruptive step reduces frustrations, saves time and improves workflow and rounding efficiency with anticipated gains in hospitalist performance vis-à-vis improved quality metrics and possibly enhanced patient outcomes.

# **New Diagnosis of Postural Orthostatic Tachycardia Syndrome (POTS) in Pregnancy – A Case Report and Review**

**Presented by: Leela S. Pillarisetty, M.D., PGY IV, [leela.pillarisetty@ttuhsc.edu](mailto:leela.pillarisetty@ttuhsc.edu)**

**Department of Obstetrics and Gynecology**

**Co-author(s): Varunsiri Atti, Osama Mukarram M.D., PGY II, Anand Reddy**

## **CASE DESCRIPTION**

### **Antepartum:**

A 22-year-old Caucasian woman, G1 P0 at 10 weeks of gestation was seen by her obstetrician for initial prenatal care, at that time she had complaints of dizziness, palpitations, easy fatigability, and frequent syncopal episodes. Her dizziness and palpitations worsened when she went from supine to standing posture, she had these symptoms for a period of seven years without definitive diagnosis nor improvement in her symptoms despite visiting many physicians with extensive work up and with multiple hospital admissions including ICU observation. Her vital signs at the time of her initial prenatal visit were abnormal with tachycardia and high blood pressure, in the past she was told that she had intermittent idiopathic tachycardia and intermittent high blood pressure. She was referred to a Nephrologist for further work up and management of her intermittent tachycardia and high blood pressure. A decision was made by the nephrologist to admit the patient to hospital and to do a thorough workup for orthostatic intolerance. Her heart rate increased on EKG more than 30bpm within 10 minutes of standing from supine position without any significant changes in blood pressure. After the classic EKG changes of postural tachycardia and ruling out other causes of postural tachycardia, she was given with the diagnosis of POTS, she was started on Metoprolol Q daily with significant improvement of symptoms the next day. The patient was followed in the outpatient clinic with significant improvement in her symptoms with daily Metoprolol. Patient was also referred to Maternal Fetal Medicine for closer monitoring of the fetus. Her prenatal care was uneventful since then.

### **Intrapartum:**

At 37 weeks and 4 days of gestational age, the patient was admitted for induction of labor as per MFM recommendation. She was induced with misoprostol, the fetus was monitored by continuous electronic fetal monitoring which was CAT 1. She received epidural anesthesia without any difficulty. When her cervix was completely dilated, fetal heart tracings showed occasional late decelerations which were not improving with resuscitative measures, also upon maternal pushing fetus had a prolonged deceleration, and the fetal station was found to be in -1 station with persistent occiput posterior position. At that time, the decision was made to perform Caesarean section due to fetal intolerance and fetal malposition. She delivered a healthy female infant weighing 7 pounds 3 ounces with Apgar 9 and 10 at 1 and 5 minutes respectively.

### **Postpartum:**

Her immediate postpartum course in the hospital was uneventful, she was continued on metoprolol without any symptoms. She followed up with her obstetrician in four weeks postpartum without any complaints, she received intrauterine contraceptive device for contraception. She also followed with nephrologist without any complaints.

## **Using Evidence-Based Methods to Evaluate Neonatal Resuscitation Program Competence and Assess Two-Year Renewal Recommendations**

**Presented by: Lisa Platner, Ph.D.(c), [lisa.platner@ttuhsc.edu](mailto:lisa.platner@ttuhsc.edu)  
Department of Obstetrics and Gynecology**

The American Heart Association and the American Academy of Pediatrics came together to save the lives of infants during the perinatal and neonatal periods by creating and improving Neonatal Resuscitation programs (NRP) using best sciences. Yet these key medical groups have failed to consider the arbitrary renewal period of two years when riding the road to EBPs. The purpose of this quantitative quasi-experimental study to examine the current standards for re-evaluation and training for NRP and determine if competency is relative to time passed since last course. Specifically, competence of Neonatal Resuscitation Program (NRP) providers will be assessed at six, 12, 18, and 24-months post training. This information will help to develop evidence-based guidelines for use in drafting recommendations for administration of training renewal intervals. By determining the retention rates of healthcare professionals, the researcher seeks to support or refute the two-year time period. Physicians, nurses and respiratory therapists will be tested for performance of NRP skills and application of guidelines utilizing a simulated emergency. This quantitative research will utilize the integrated skills performance checklist to score each participant objectively. A quazi-experimental model will be used as the megacodes will be conducted at times unknown to the maternal/child staff in departments of varying acuity and practice with assessment and NRP skills. The staff of three hospitals with perinatal departments will have the opportunity to participate. The nursing units included will be ante-natal, labor and delivery, post-partum, nursery and nursery intensive care. All of the hospitals require the staff of these units to obtain and maintain current NRP status within 6 months of hire. The design used in the study will be post-treatment non-equivalent groups at different time spans from the date of the last NRP course (treatment). Observation will be the primary method of data collection.



# **Training Pre-Hospital First Responders on Point of Care Ultrasound to Improve Trauma Outcomes in Rural Settings: A Pilot Study**

**Presented by: Adrian Mulig**

**Department of Surgery**

**Co-author(s): Mat Mclure EMT, Philip Mammen M.D. M.B.A., Allen Zhong B.S., Kelly Zhang B.S., Elesea Villegas M.P.A.S., Dinesh Vyas M.D., Saju Joseph M.D.**

## **INTRODUCTION**

Traditionally, trauma in rural settings has worse outcomes for patients and a much higher cost of care. While there are many factors that have been identified for this, access to care and speed of medical decision making has been the hardest to correct. Delays in triage and lack of resources to manage many types of injuries have led to transfers of patients over long distances and multiple changes in management. We sought to train first responders in point of care ultrasound to see if they would find it helpful in evaluating a trauma patient in the field and could be instituted as a technique to reduce triage time.

## **METHODS**

First responders servicing a rural area took a course describing the pathophysiology and associated ultrasound findings of tension pneumothorax, cardiac tamponade, and hypovolemia. Following the didactic session, the participants were given hands on training on models with normal anatomy. Examples of abnormal finding were also provided to educate the students. A post-course survey was then done to assess interest, comfort, and knowledge of ultrasound in the trauma setting.

20 first responders participated in the curriculum. 8 participants were EMTs and all 20 were firefighters. The curriculum was run by medical students and overseen by a surgeon versed in ultrasound. Total time of training was 2 hours with ½ hour of didactic and the remaining used for hands on training.

## **RESULTS**

All 20 participants had minimal experience with ultrasound. None had used point of care ultrasound previously. Post training 90% became comfortable with ultrasound and felt it would be a useful tool in the evaluation of a rural trauma patient. The majority of participants felt it would be useful in saving lives at the scene. 2 participants had difficulty with the ultrasound machine itself including the size of the screen and the image quality. A majority of students wanted more time with the machine to practice further. All participants were interested in further training in ultrasound including FAST exams, fracture evaluation, and line placement.

## **CONCLUSIONS**

In our pilot study, 90% of first responders improved their understanding of point of care ultrasound. The majority of participants agree that application in a rural trauma setting will improve outcomes and reduce triage time for trauma victims.

We believe that in large rural areas, first responders should be trained in point of care ultrasound and ultrasound should be employed in the evaluation of the trauma victim.

## **ACKNOWLEDGEMENTS**

The authors would like to acknowledge the contribution of the Texas Tech University Health Science Center Clinical Research Institute for their assistance with this research.

# Renal Artery Thromboembolism Treated with Catheter Directed Thrombolysis, A Case Series

Presented by: Kelly Zhang MS3

Co-Author(s): Allen Zhong B.S., Elesea Villegas M.P.A.S.,  
Philip Mammen M.D. M.B.A., Saju Joseph M.D.  
Department of Surgery

## PURPOSE

In patients with renal thromboembolism, kidney salvage remains challenging. Open thrombectomy carries significant post-operative morbidity and does not guarantee renal preservation. Patients frequently present after a 6-hour “window” has elapsed, making the justification for such an invasive procedure dubious. We present our series of three patients who underwent renal artery thrombolysis outside of the 6-hour window.

## METHODS

We retrospectively reviewed our prospectively managed vascular surgery database. Three patients were identified to have undergone thrombolysis 6 hours after onset of symptoms. Total ischemic time, success of lysis, pre-operative and post-operative creatinine and GFR's were recorded. Follow-up 3-month renal duplex, and perfusion scans were obtained. The clot location was identified on pre-operative imaging.

Results:

Pt	Age	Gender	Ischemic Time (Hrs)	Pre-op Cr	Post-Op CR	Pre-Op GFR	Post-Op GFR	Clot Location (Vessel)	Renal Perfusion Scan (R/L)
A	73	F	12	0.9	0.9	>60	>60	Branch	68%/32%
B	66	M	8	0.8	1.5	>60	47	Main	100%/0%
C	77	M	16	1.1	1.3	>60	>60	Main	NA

# **Effectiveness of Respiratory Therapist Driven Arterial Catheter Placement Teams – Experience at a Community Hospital**

**Presented by: Umer Malik, M.D., PGY III**

**Co-Author(s): Osama Mukarram, M.D., PGY II, Kally Edison RRT,  
Gerardo Catalasan, M.D.  
Department of Internal Medicine**

## **BACKGROUND**

Arterial catheters have become the cornerstone of vigilant hemodynamic monitoring of the critically ill patients in the intensive care units worldwide. Small community based hospitals rely on physicians to carry out most of the procedural tasks such as central venous line and arterial catheter placements. Though, specialized task forces have been developed in past to aid physicians in such matters, their experience in small community based hospitals are limited. We share our experience with one such task force comprised of respiratory therapists and placement of arterial catheters.

## **METHODS**

After local IRB approval, this retrospective observational study was performed at Midland Memorial Hospital between March 2012 to February 2015. The department of cardiorespiratory diseases maintained the patient and procedural data. ICD 9 codes for arterial catheter placement was used to identify all attempted catheter placements. Data on the success of catheter placement, number of attempts and location in hospital where these procedures were performed was obtained. Following the completion of data, analysis was performed on the pre-established parameters. Texas Tech University Health Sciences Center's biostatistics department independently performed analysis on the available data as well to improve the transparency for the results.

## **RESULTS**

Between March 2012 and February 2015 our team of respiratory therapists attempted a total of 145 arterial catheter placements. 103 catheters were placed in the critical care unit and 42 catheters were placed in the emergency department by the same team. Of these, 115 arterial catheters were successfully placed achieving a success rate of 79.3%. Further stratification showed a higher success rate of arterial catheter placement in emergency room setting compared to critical care setting with a p value for a two-tailed Fisher test of 0.042. Of all indications, success rate was best achieved in patients undergoing therapeutic hypothermia protocol and least in patients in septic shock.

## **CONCLUSION**

Identifying the need for the placement of arterial line catheters for improved patient care, our team of respiratory therapists has proved to be a vital resource by achieving a remarkable success in placement of arterial line catheters in our hospital. This has fulfilled the goal of improved patient care by ensuring close hemodynamic monitoring in critically ill patient.

**25th Annual**  
*Permian Basin Research Day*

PRE-RECORDED PRESENTATIONS



# **Hepatic and Placental Endocannabinoid System (ECBS) in Maternal Obesity**

**Presented by: Marcel Chuecos, Cassidy Taylor**

**University of Texas of the Permian Basin and  
TTUHSC Department of Obstetrics and Gynecology**

**Co-Author(s): Marcel Chuecos, Stacy Martinez, Maira Carrillo, Ph.D.,  
James Maher, M.D., Gene Hubbard D.V.M., Edward Dick D.V.M.,  
Gary Ventolini, M.D., Moss Hampton, M.D., and  
Natalia Schlabritz-Lutsevich, M.D., Ph.D.**

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

## **INTRODUCTION**

The ECB's are the product of dietary fatty acids, and are comprised of the G-protein coupled cannabinoid receptors 1 and 2 (CB1 and CB2), the endogenous ligands, i.e. AEA and 2-AG, and the respective enzymes/uptake systems for biosynthesis and degradation. The CB1 receptors are expressed in brain and peripheral tissues, while the CB2 receptor is expressed in microglia, immune and hematopoietic tissues. The recent data showed direct role of endocannabinoids in alcoholic and non-alcoholic (obesity-related) fatty liver diseases (NAFLD). Fatty liver has been documented already in fetuses of obese women and in healthy pregnant women as early as the first trimester of pregnancy. However, the markers to diagnose these conditions do not exist. Our goal was to use the baboon model of maternal obesity to evaluate the expression of CB1 and CB2 receptors in maternal and fetal liver and compare the expression to the placenta. To do this we used a variety of techniques which included: Aperio imaging software, RT-PCR and western blotting.

## **METHODS**

Archived baboon liver and placental tissues were used for quantification of CB1 expression using evaluated using real-time polymerase chain reactions (RT-PCR) and immunohistochemistry (IHC). The cDNA was synthesized according manufacturer's instructions (Rohe, USA). The CB1 monoclonal antibody (ImmunoGenes, Budakeszi) was used for IHC.

## **RESULTS**

We found using RT-PCR that the CB1 and CB2 receptors are present in the maternal and fetal liver as well as in the placenta. There is also a positive correlation with the concentrations of ECBs in maternal serum and the weight of maternal liver. IHC results showed that CB1 is present in the liver.

## **CONCLUSIONS**

This is the first report regarding presence of both ECBs receptors in fetal and maternal hepatic tissue ECBs could be markers for NAFLD.

# **The Comparison of Presence of Vaginal Cytokines in Pregnancy Between First Trimester and Term Gestation**

**Presented by: Kathryn Hutton, D.O., PGY IV, [kathryn.hutton@ttuhsc.edu](mailto:kathryn.hutton@ttuhsc.edu)**

**Department: Obstetrics and Gynecology**

**Faculty Advisor: Gary Ventolini, M.D.**

## **BACKGROUND**

Markers for onset of labor have long been of great interest to clinicians and researchers. Previous studies have implicated changes in vaginal flora in various pregnancy complications such as preterm labor and premature rupture of membranes. There are limited studies examining the role of vaginal cytokines in the normal pregnancy and prediction of normal labor. In our search we found no studies that compare the relatively large number of cytokines used in the Rad BioPlex 200 analysis system. To determine if these cytokines could be used as markers for preventing pregnancy related complications in the future, it is important to first understand the relationship that vaginal cytokines have with uncomplicated pregnancy.

## **OBJECTIVE**

To compare 27 vaginal cytokines in the first trimester, second trimester and at term pregnancy in a low risk obstetrical population.

## **METHODS**

We will analyze cytokine results from vaginal samples that have been collected over the past 2 years from an IRB approved databank at TTUHSC Permian Basin (IRB#L13-054). Results collected during routine prenatal care visits from a low risk population of singleton pregnancies with maternal age 21-34 will be included. First trimester (6wks 1/7days – 14wks 6/7days gestation), second trimester (15wks 0/7days – 28wks 6/7days gestation), and term (37wks 0/7days -41wks 6/7days gestation) pregnancy samples will be used for comparison against a non-pregnant age matched control group. The samples collected have been analyzed using the Rad BioPlex 200 system and evaluated for 27 different cytokines. Statistical analysis will be used to compare the cytokines in the three groups.

## **EXPECTED RESULTS**

We expect to find a difference in the expression of various cytokines at each of the gestational ages studied.

## **SIGNIFICANCE**

The results of this study will help us determine the individual cytokines, among the 27 studied, that become more highly expressed closer to term gestation, therefore closer to labor. This could provide important information for further studies that may determine a significant specific marker for labor and possibly preterm labor.

## **ACKNOWLEDGEMENTS**

The authors would like to acknowledge the contribution of the Texas Tech University Health Sciences Center Clinical Research Institute for their assistance with this research.



# **The Use of High Dose Insulin Euglycemia Therapy in a Polypharmacy Suicide Attempt with Combination of Calcium Channel Blockers and Beta Blockers: A Case Report**

**Presented by: Mohammed Qureshi, M.D., PGY II, [mohammed.qureshi@ttuhsc.edu](mailto:mohammed.qureshi@ttuhsc.edu)**  
**Co-author(s): Catasalan, G., Midland Memorial Hospital – Director of Medicine,**  
**Critical Care, Internal Medicine, Pulmonary Diseases**  
**Department of Internal Medicine**

Calcium channel blockers (CCB) and beta-blockers (BB) are two of the most prescribed cardiovascular medications and are staples in the treatment of hypertension, cardiac arrhythmias, and acute coronary syndromes. Intentional or accidental overdose of these medications can be fatal if not recognized quickly and managed appropriately. Conventional treatment for such ingestions typically involves intravenous hydration with crystalloids, gastrointestinal decontamination with activated charcoal, atropine, sodium bicarbonate, glucagon, calcium gluconate, and adrenergic agents. In high doses, BB and CCB aside from their cardiovascular effects, block the secretion of insulin from beta cells of the pancreas causing a hypoinsulinemic state. During circulatory collapse, the myocardium metabolizes glucose preferentially over free fatty acid as the primary energy source. Acute CCB/BB intoxication causes myocardial glucose dependence and hypoinsulinemia, causing ATP depletion and cardiogenic shock. Insulin is now known to be a potent inotrope by reversing these changes and optimizing cardiac function. A novel treatment called High Dose Insulin-Euglycemia therapy (HIET) was first tested on dogs poisoned with verapamil in the 1990s. Success in animal models led to the pioneer case study conducted by Yuan, in 1999, with the initial recommendation of “0.5 U/kg regular insulin bolus, followed by a 0.5–1 U/kg/h continuous infusion” with concern that higher doses may lead to hypoglycemia and electrolyte imbalances. Cases implementing higher than original protocols are exceedingly rare and the optimal dose of insulin in HIET remains unclear. We present the case of a 48-year-old male who intentionally overdosed on an undisclosed amount of Amlodipine and Carvedilol tablets among other medications and presented to the ED in profound shock refractory to traditional interventions. HIET was initiated at doses uncommonly reported in previous literature and higher than advocated by current guidelines, leading to meaningful cardiovascular stabilization shortly thereafter.

# **Postpartum Herpes Simplex Virus Meningitis After Cesarean Section with Spinal Anesthesia**

**Presented by: Gabrielle Harrington Rich, D.O. PGY I, [gabrielle.rich@ttuhsc.edu](mailto:gabrielle.rich@ttuhsc.edu)**

**Faculty Advisor: Martin Caliendo, M.D.**

**Department of Obstetrics and Gynecology**

## **INTRODUCTION**

Meningitis following dural puncture is rare. Spinal headaches are a common complication of spinal anesthesia. However, these patients typically present with headaches that are related to position of the patient. Other causes of headache should be considered when the presentation does not coincide with that of a spinal headache. We report a case of herpes simplex virus meningitis following cesarean section with spinal anesthesia found in a patient with a persistent headache which was unrelated to position and with a history of possible meningitis.

## **CASE REPORT**

A 31-year-old female presented to the emergency room on post-operative day five after a cesarean section complaining of a severe headache, subjective fever, nausea, weakness, and neck pain. She reported a possible history of meningitis in 2005. She had several comorbidities including morbid obesity, chronic hypertension, anemia, and limited prenatal care. She had undergone cesarean section at 37 weeks after an acute exacerbation of asthma. She underwent spinal anesthesia prior to her cesarean section which was difficult to place due to her body habitus. Her cesarean section was complicated by inadequate pain control with spinal anesthesia and severe anxiety requiring general anesthesia with a difficult intubation and poor oxygenation status for several minutes. Upon presentation at readmission, she was started on empiric antibiotic therapy including vancomycin and ceftriaxone. Interventional radiology was consulted to perform a lumbar puncture secondary to patient's morbid obesity to rule out meningitis. Infectious disease was also consulted and started the patient on dexamethasone. At admission, her white blood cell count was 12700 mm<sup>3</sup>. She had a temperature of 100.4 degrees Fahrenheit. The patient's cerebrospinal fluid contained an elevated amount of leukocytes at 160/cu mm with 89% lymphocytes, an elevated amount of protein at 74.5 mg/dl and a normal amount of glucose at 42 mg/dl. The CSF bactigen panel was negative. Viral meningitis was suspected at this time. The patient was started on intravenous acyclovir and her CSF was tested for several types of viral meningitis. Her headaches continued to improve and she was discharged on post-operative day 11 on oral Valtrex.

## **DISCUSSION**

Spinal headaches are a common postpartum complication and the often one of the first diagnosis considered when a patient presents with a postpartum headache. However, several other etiologies must be considered when the clinical presentation does not match that of a spinal headache.

Iatrogenic meningitis following dural puncture occurs in approximately 1 in every 5000 patients who undergo dural puncture. There is a significant amount of cases of bacterial meningitis after spinal anesthesia, but cases of viral meningitis are rare. The route of bacterial meningitis infection during dural puncture is believed to be inadvertent introduction of bacterial during the procedure, however the method of infection of viral meningitis, particularly HSV meningitis is much more controversial. It is possible that in our patient the combination of the stress of an acute asthma attack, an emergent cesarean delivery complicated by inadequate spinal anesthesia and subsequent panic attack intraoperatively, and spinal anesthesia itself could have functioned to reactivate the patient's dormant herpes simplex infection resulting in recurrent meningitis.



## **Breastfeeding Rates Prior to Initiation of Centering in Pregnancy Group**

**Presented by: Lyndsay Rodriguez, M.D., PGY I, [lyndsay.Rodriguez@ttuhsc.edu](mailto:lyndsay.Rodriguez@ttuhsc.edu)**

**Faculty Advisor: Elisa Brown, M.D.**

**Department of Obstetrics and Gynecology**

### **OBJECTIVE**


The purpose of this study is to identify risk factors that impede breastfeeding in our patient population. This project will allow us to tailor centering to the specific needs of our population and identify target areas for counseling and intervention.

### **STUDY DESIGN**

Retrospective chart review of patients who delivered at Medical Center Hospital in Odessa, TX and Midland Memorial Hospital in Midland, TX between January 2014-January 2016.

### **RESULTS**

Outcomes to be measured include percentage of patients actually breastfeeding compared to those who intended to breastfeed, breastfeeding at discharge, breastfeeding at 6 weeks postpartum, and percentage breastfeeding exclusively compared to supplementing with bottle. I hypothesize that there will be modifiable variables identified that may be improved with counseling and education interventions.






# **An Organic Surface Functionalization Technique for Colloidal Silver Nanoparticles Designed To Maintain Bacterial Inhibition While Inhibiting Precipitation Caused by Hydrogen Sulfide Gas**

**Presented by: Jason M. Snitker**  
**University of Texas of the Permian Basin student**  
**Faculty Advisor: Milka O. Montes, Ph.D.**

Studies of metal toxicity to sulfate reducing bacteria (SRB) have proven challenging due to rapid formation of metallic sulfide precipitates fueled by the bacterial production of hydrogen sulfide gas. This effect limits the bioavailability of the metal to the SRB and severely hampers the accuracy of toxicity assays. A new method of preventing metal sulfide formation was developed that utilizes standard growth media for SRB. Silver (Ag) nanoparticles were surface modified using organic functionalization by sodium acrylate molecules. The functionalized particles have been qualitatively shown to inhibit precipitation with >99% efficacy when introduced to standard ATCC 2755 and 1249 Baar's growth media for SRB; NMR precipitation studies will be used to provide quantitative data. In addition, the toxicity of the functionalized Ag particles is comparable to values obtained using specially modified mediums, with 50% inhibition in maximum specific growth rate seen at metal concentrations of less than 6  $\mu\text{M}$ .







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