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HISTORY OF MEDICINE: Non Invasive Prenatal Testing

Lori Munsie DO PGY II
OB/GYN

During the 1950's and 1960's there were many social, political and medical advancements. During these times we observed the introduction of hormone contraceptives, women working outside of the home, and the rise of feminism. It was during this time there were accelerated births in the United States marking a famous generation called baby boomers. Little was known about prenatal testing during this time though fifty years prior the first invasive amniocentesis was reported and one hundred years earlier publications of chromosomal abnormalities were described.

In 1866, John Langdon Down, an English physician, described a population of patients having similar physical characteristics and decreased intellectual ability. This syndrome was later named Down Syndrome (DS). In 1932 chromosomal non-disjunction was suggested as the cause of DS and in 1959 French physician Jerome Lejeune discovered that DS is a result of a chromosomal abnormality, describing three copies of chromosome 21 or Trisomy 21. This discovery, along with its association of child bearing women over the age of 35 was the initial basis of prenatal screening. Prior to this discovery invasive testing in the form of amniocentesis was used for the antenatal detection of hereditary disorders and prenatal management of patients with Hemophilia A and Duchenne's muscular dystrophy. Then, in 1968, enzyme assays using cultured fetal cells in amniotic fluid resulted in the first prenatal diagnosis of Trisomy 21. Prenatal screening for DS during the 1960's to 1980's was simply "What is your age?" If the patient was 35 or older she was offered counseling and diagnostic testing. During this time the prevalence of DS was 9.5

per 10,000 births. By 1976 amniocentesis became common use in the United States for those women who were at risk and women over the age of 35. Trisomy 21 continues to be the most frequent chromosomal abnormality with an occurrence rate of 1 in 800 births. Women over the age of 35 continue to have a higher risk of DS and other chromosomal abnormalities, however only 20% of infants with DS are born to women older than 35 years.

In the mid 1980's biochemical markers were identified and an association of low alpha-fetoprotein (AFP) levels in the second trimester increased the risk of aneuploidy, including DS. Later in that decade the biochemical marker, human chorionic gonadotropin (HCG), was discovered along with the relationship of decreased levels and the association with DS, and increased levels associated with Trisomy 18. It was during this time that AFP measurements in combination with maternal age were rapidly introduced. By the early 1990's two more markers were discovered during the second trimester, uncongugated estriol and inhibin A. These discoveries lead to combination biochemical marker testing along with adjustments for age, race, diabetic status, maternal weight, and multiple gestations in order to detect a patient's risk for aneuploidy. This also widened the screening population to women of all ages during their pregnancy. Later, Papp A was studied and added as a first trimester biochemical marker.

During this time the use of ultrasonography was emerging as a non-invasive tool for screening and diagnosis throughout all medical specialties. In 1979, Acuson Corporation, a California company marketed their first ultrasound model. Ultrasonography was first used to assess the intrauterine environment and progressed to screening for fetal aneuploidy. Fetal biometry which includes crown rump length, biparietal diameter, head circumference, femur length, and abdominal circumference was used as basic components to determine the well-being of the fetus. Many ultrasound techniques and descriptions of fetal malformations were published throughout this time and ultrasonography (US) was implemented as part of routine prenatal care especially for those pregnancies identified as high risk. As technology advanced, with the advent of high resolution scanners and the transvaginal transducer, early detection of fetal abnormalities was achieved. In 1992 in the British Medical Journal, Kypros Nicolaides and his group published a landmark paper describing the measurement of nuchal translucency between 11 and 14 weeks as a screening for DS. Nuchal translucency is a lucent zone observed in the posterior neck seen by US in the first trimester. This measurement if enlarged may be suggestive of fetal structural defects or aneuploidy.

Non-invasive prenatal testing was further advanced in 2011 with the launch of MaterniT21, a prenatal test from the San Diego biotech company Sequenom. This was then followed by subsequent brands Ariosa's Harmony, Verinata's Verifi and Natera's Panorama. These test for genetic material in maternal circulation or cell free DNA from the developing placenta. Cell free DNA can be isolated in maternal circulation as early as the fifth week of pregnancy and increases modestly with gestational age to 21 weeks then increases rapidly until term. These levels are increased in pregnancies with Trisomy 21 (DS) and Trisomy 13 (Patau Syndrome), but not Trisomy 18. The test detects 99% of fetuses with Trisomy 21, 98% of fetuses with Trisomy 18 and 80% of those with trisomy 13, with false positive rates of <0.1%. XY analysis can also be evaluated and fetal sex determined with >99% accuracy.

Therefore this test has high sensitivity and specificity and reduces the number of women identified as high risk with serum testing.

Using combination screening techniques of serum markers and ultrasound affords the highest detection rates (DR) for DS and other aneuploidy pregnancies. Modern non-invasive testing can identify high risk pregnancies and can greatly decrease further recommendations for more invasive testing. First trimester screening performed between 11 0/7 and 13 6/7 weeks using AFP alones yields a 64 -70% DR. When this includes Papp-A and free BHCG, DR accuracy can reach 82-87% with false positive rate (FPR) of 5%. An independent second trimester screening that includes the serum triple markers MSAFP, HCG, uncongated estriol yields 69%, and Quadruple screen including the above plus inhibin A gives a DR of 81%. Serum integrated testing that includes first trimester papp-A and second trimester Quad screen reaches DR of 85-88%. Integrated screening of AFP, Papp-A, plus second trimester Quad screen reach 94-96% DR and FPR of 1%. Alternatives may include a stepwise sequential testing protocol where first trimester screening is performed and if positive diagnostic testing is offered; however, if negative, then second trimester testing is offered. Final risk assessment incorporating both first and second trimester non-invasive testing and ultrasound yields greater than 95% DR.

Non-invasive prenatal testing for DS and other aneulploidy has very high detection rates when used in combination of serum biochemical markers and ultrasound. Ultrasound alone in the second trimester has low sensitivity and specificity when used as screening only. Screening tests should be offered to all pregnant women and those who have positive tests with high detection rates and low false positive rates. As with all screening tests, patients should be counseled prior to testing and referred for invasive diagnostic services for positive results.

HOW I DO IT: Inspire Residents to Complete Research Projects with Ease?

Dan Miulli, DO, MS, FACOS
Traditional & Neurosurgery Program Director

Physicians in training learn and practice research to formulate, ingrain, and measure, a method of thought, investigation, and evaluation necessary for physicians to have multi-lateral information exchange and communication with experts in areas of scientific and medical discovery, knowledge, and analysis, in order to continuously and efficiently improve human health and patient care.

Physicians are professionals, and like all learned individuals, they must continuously evaluate and correct their procedures, behaviors and methods of practice. Research understanding, a foundation of medicine, teaches physicians to communicate scientifically with many individuals, navigate through increasing amounts of data that may be clouded by the poor application of scientific methodology or analysis, choose key facts within reams of material, formulate opinions, convert those thoughts into reproducible actions, and then measure the quality of those actions. Residents who complete annual research projects can become efficient at those tasks, but how can they do that with ease?

Like most tasks, ease is completed with time tested procedures, organization, and support. At ARMC we have faculty who had research skills and want to do research,

residents who want to do research, residents who had ideas, and residents who had some training in research. Although residents have requirements for scholarly activities, but rarely annual, minimal research projects were produced, minimal publications, and minimal grants; and it was difficult and time consuming. We knew we could not continue the same methods and procedures of delivering research and get different results, namely annual scholarly projects produced in peer reviewed media.

We asked the residents what obstacles they perceived. They reported; time, having interest and dedication in a project not their own, and no reward for completing faculty or someone else's work. We then determined the residents' area of interest, initiated a timeline each year, measured residents' involvement, provided two weeks of devoted research time per academic year, and provided support by a research coordinator.

A research coordinator is paramount and can supervise 25-50 residents carrying out research projects. The coordinator reviews research project data collection, prepares for and follows up reports from Institutional Review Board (IRB) meetings, implements annual research symposium, quarterly research didactics, and monthly question and answer sessions, facilitates research abstract preparation for national and regional meetings and research papers for publication, prepares quarterly residency program research updates and quarterly research newsletter, and organizes back-up coordination for projects. The research coordinator must be experienced in data management and research supervision, have excellent computer skills, IRB administrative experience, grant writing and administration, research design expertise, and knowledge of statistical analysis, with skill in statistical software analysis and of course communication and interpersonal skills. The research coordinator must schedule and meet with the residents, develop checklists and timelines, and constantly remind residents of those same project timelines.

Research is a learned skill which must be taught and reinforced. When beginning with first year residents the process should be easy such as attempting database research and evaluating what the resident, faculty, or department did clinically. Then in subsequent years the information can be developed into a prospective project investigating how to correct or improve what was done, or the information can be formulated into new ideas. A "Concept Sheet" is a simple questionnaire which can be utilized to determine the resident's interest and connect that interest to a worthwhile project. In addition to their interest, the Concept Sheet asks for a title, narrows the hypothesis, determines the mentors and research study group, study inclusion and exclusion criteria, study design, primary and secondary endpoints, scales used for comparison, budget, target publication, dates for project start, IRB submission, data collection, analysis, and first draft, and future implications all in a easy to answer format. It can be completed in as little as fifteen minutes and is a must provide a realistic determination for the resident, coordinator, research mentor, and program director of the project feasibility.
After the Concept Sheet is completed the resident must perform a literature search answering four to five simple questions:

1. Cite major articles that support your idea and why
2. Cite one major article that does not support your idea and why
3. Cite articles that have performed same analysis including meta-analysis, multi-institutional studies, single institutional studies, case reviews, literature reviews and why
4. Cite articles that have performed similar analysis including meta-analysis, multi-institutional studies,

single institutional studies, case reviews, literature reviews and why; and if a new concept
5. Cite an article that support the projects safety and why.

After the literature review is completed the application for IRB must be completed and submitted. Finally a timeline which must have the support of the research mentor, faculty, program director and research coordinator must be implemented. The timeline is concurrent with the research education that takes place:

July- Concept sheet completed, reviewed by mentor, coordinator, and statistician.
August- Literature review, Concept Sheet revised and reviewed by mentor and coordinator. Submit IRB proposal.
September- Formalize study design. IRB approval, create query for database, meet with statistician to determine data analysis needs. Review with mentor and coordinator.
October- Download data. Review with mentor and coordinator.
November- Chart review and analysis completed. Review with mentor and coordinator.
December- Review data with statistician. Run statistics.
January- Create abstract. Review with mentor and coordinator.
February- Review requirements for authors, create draft of paper, and make revisions.
March- Paper reviewed by mentor, re-reviewed, and re-reviewed. Review with mentor and coordinator.
April- Submit paper for publication. Review with mentor and coordinator.
May- Submit poster for conference. Review with mentor and coordinator.

This simple way of engaging residents, providing an outline and timeline for research, with the assistance of a residency coordinator has consistently resulted in the delivery of research projects and presentations 100% of the time over three years for first year residents. More importantly, the research has taught residents to navigate huge amounts of data, formulate opinions, convert thoughts into reproducible actions, measure the quality of one's actions, and strives to understand patients and patients' medical conditions.

Research is to see what everybody else has seen, and to think what nobody else has thought
~Albert Szent-Gyorgyi

SPOTLIGHT ON RESEARCH: General Surgery

How does obesity affect the perioperative outcomes of pancreaticoduodenectomy? Analysis of the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database.

Mohammed Atemimi, MD MPH
Samir Johna, MD

Background

Earlier studies reported controversial results of the association between obesity and the outcomes of pancreaticoduodenectomy (PD). The objective of this study is to identify the effect of obesity on intraoperative events and postoperative outcomes of PD.

Methods: The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database (2005-2009) was surveyed for patients who underwent elective PD. Five BMI categories were created (underweight:<18.5 , Normal: 18.5-<25, Overweight: 25- <30, Obese: 30- <40, and morbidly obese ≥ 40). Analysis of variance (ANOVA) test, chi square test and multivariate logistic regression models were used to test the association of BMI categories with intraoperative events (length of postoperative hospital stay, operative time and intraoperative blood transfusion) and postoperative outcomes (mortality, overall

complication and individual postoperative complications).

Results

We identified 6,502 patients with PD. Of the total cohort, 3.5% were underweight, 37.6% were normal, 35.8% were overweight, 20% were obese and 3.1% were morbidly obese. 30-day mortality was not significantly different among patients with different BMI categories (range 2.17%-4.46%, P=0.38). Overall morbidity (21.6%-32.6%, P<0.001) was higher among overweight (OR=1.24 95% CI 1.08-1.43), obese (OR=1.30 95% CI 1.10-1.53) and morbidly obese (OR=1.66 95% CI 1.20-2.30) patients compared to normal weight patients. In adjusted multivariate analysis, obesity and morbid obesity were associated (P<0.01) with deep organ space infection, pulmonary embolism, failure to wean from the ventilator 48 hours after surgery and sepsis. Intraoperative blood transfusion was not different (p=0.37) between patients with different BMI categories, while operative time (P<0.001) and hospital stay (p<0.001) were longer among obese patients.

Conclusion

Obesity is an independent risk factor of operative complexity and serious postoperative complications following PD. This information is helpful for surgeons when planning elective PD for obese patients.

The measure of greatness in a scientific idea is the extent to which it stimulates thought and opens up new lines of research.
~Paul A.M. Dirac

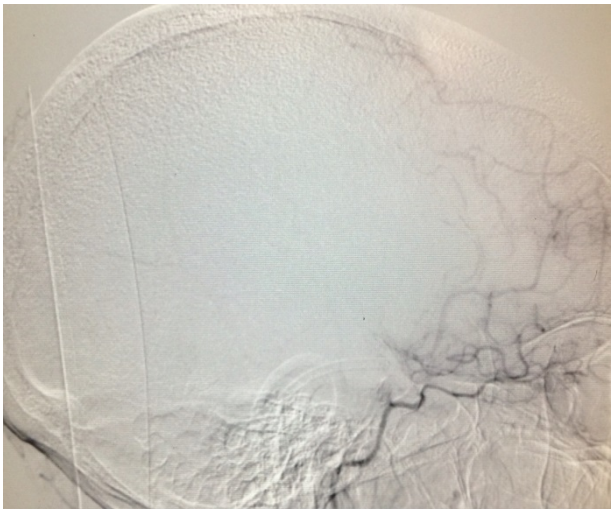
FASCINATING CASE: Moyamoya Disease

Vivek Ramakrishnan DO, Kevin Sidhu OMSIV, Zubin Sedghi OMSIII, Dan Miulli, DO, MS, FACOS
Neurosurgery

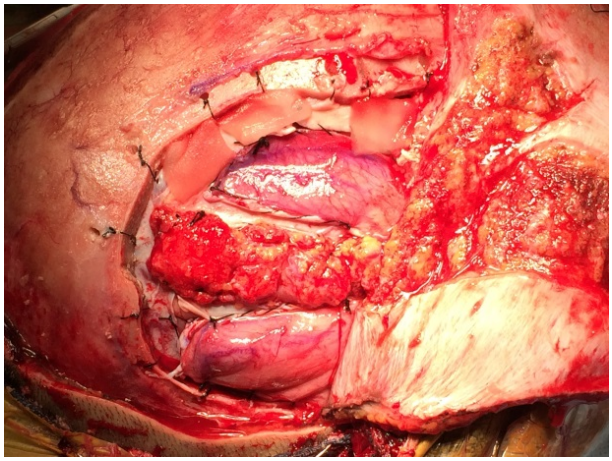
We present the case of a 31-year-old right-handed Hispanic female with a past medical history significant for hypertension and hyperthyroidism uncontrolled for two weeks, who came to the emergency room with elevated blood pressure and a complaint of right-sided weakness, particularly in her right arm. The patient also had one-day change in mental status, palpitations, and an unsteady gait.

On examination, patient was tachycardic, hypertensive, with an enlarged thyroid gland, right side weakness and slurred speech. Labs showed low thyroid stimulating hormone (less than 0.005) and greatly elevated T3/T4 levels (651/23.07 respectively). Also, troponin was elevated x 3. ECG showed ST junctional depression. Initial head CT was negative.

She was admitted to the stroke unit and treated for ischemic stroke, thyrotoxicosis, and hypertension. Carotid doppler showed bilateral carotid plaques with less than 50% stenosis. MRI/MRA of the brain showed left cortical diffusion restriction consistent with ischemia and severe occlusion of the bilateral intracranial Internal Carotid Artery (ICA) and collateral flow. Further workup showed significant stenosis in extracranial vessels, so a cerebral angiogram was performed. Cerebral angiogram revealed significant decreased blood supply to the skull, dura, and brain surface bilaterally, but more so on the left, overall resembling Moyamoya disease.



As such, an encephalomyosynangiosis was performed in order to anastomose the superficial temporal arteries with the internal cortical vessels. On postoperative day one patient was extubated and had a GCS of 15.



The patient's diagnosis was (1) thyroid storm due to Grave's disease which precipitated a (2) left sided ischemia revealing an underlying (3) moyamoya disease.

Discussion

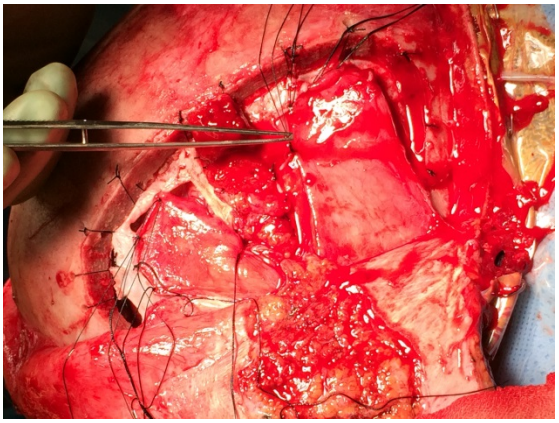
Characterized by symptoms of catecholamine excess, thyrotoxic crisis or thyroid storm is defined as an acute hypermetabolic state that is brought on by an excess of thyroid hormones. Dysfunction of homeostatic mechanisms that govern the endocrine and peripheral physiology can precipitate a massive release of thyroid hormones in patients with hyperthyroidism. While it is important to recognize and treat a patient with thyroid storm, further investigation into all of the potential sequelae is warranted. That is, the suspicion of a possible association between thyroid storm and ischemia.

Although the CT Scan was negative, further ischemic work-up with MRI and MRA revealed ischemia and blood vessel abnormalities. These findings led to a cerebral angiogram, which was consistent with Moya Moya disease. This is unusual in Hispanic adult women.

Moyamoya, translated as a puff of smoke from the Japanese, is a neurovascular disease characterized by progressive arterial narrowing which results in the formation of vascular collaterals and ultimately places patients at risk for cerebral ischemia and infarction. Typically, the distal ICAs are affected first, followed by the proximal MCAs and ACAs. While moyamoya disease classically affects cerebral perfusion bilaterally, cases of cerebral ischemia after an episode of thyroid storm revealed a unilateral predominance of moyamoya vessels on cerebral angiogram—consistent with moyamoya syndrome. This has been described by Suzuki as moyamoya vessels with more unilateral involvement and an association with certain preexisting conditions.

In a case report by Chaloupka, the majority of patients incurred manifestations of moyamoya after receiving treatment for thyroid storm. While there is no clear pathoetiological mechanism, cross-reactivity

of autoantibodies coupled with a transient surge of thyroid hormone post-treatment are believed to influence the sudden onset of diffuse cerebral ischemia in areas supplied by moyamoya vessels.



Treatment of moyamoya is surgical and circumvents the afflicted arteries through anastomosis or synangiosis. While the direct approach relies on anastomosis via a superficial temporal artery-MCA bypass, indirect techniques employ synangiosis to increase cerebral blood flow. Encephalo-duro-arterio-synagniosis (EDAS) utilizes a graft from the superficial temporal artery that is laid on top of the ischemic surface whereas the Encephalo-myo-synangiosis (EMS) utilizes the temporalis muscle to allow revascularization in the area of ischemia over a period of 6-8 wks.

Although more frequent in the Asian population, the association of Moyamoya disease with thyroid disease is less common and even less frequent in the Hispanic population with only 12 cases having been reported in the literature. Although an extremely rare cases of infarction was discovered in this case review, following standard stroke protocols to investigate an acute and persistent neurological deficit, despite a negative CT Scan, with MRI and other vascular studies can lead to the appropriate diagnosis which can be treated.

Please congratulate
Vivek Ramakrishnan, Robert Dahlin, Omid Hariri, Syed A. Quadri, Saman Farr, Dan Miulli, and Javed Siddiqi
for their original publication in
Surgical Neurology International
Anti-epileptic prophylaxis in traumatic brain injury: A retrospective analysis of patients undergoing craniotomy versus decompressive craniectomy
January 2015

RESEARCH PROJECTS AT ARMC

Are you interested in research? Are you a student, resident, staff, or faculty member at ARMC? Please contact the offices listed below to participate in any of the following ongoing studies. We thank all the faculty primary investigators of the following projects.

Emergency Medicine 909-580-6370	
Alconcel, Franklin D.O PGY III MacNeil, Colin D.O PGY III Yuen, Ho-Wang M.D Kwong, Eugene M.D	Estimated Time of Arrival of EMS for Trauma Alerts and Activations
Alconcel, Franklin D.O PGY III Minahan, Thomas D.O	Jet Ski Douche Injury
Avera, Leigh D.O PGY II Neeki, Michael D.O	The Expanding Role of Paramedics in the Optimal Utilization of Emergency Department Services
Ayvazian, Arbi D.O PGY II Neeki, Michael D.O	1. Manifestation of Necrotizing Fasciitis: A Retrospective Review of Patients Presenting to a San Bernardino County Emergency Department 2. Hemophilia
Batt, Joshua D.O PGY II Neeki, Michael D.O	1.Osteophatic manipulative Treatment in Tarsal Somatic dysfunction: A Case Study 2. Photo of the Month-Eye Emergencies: Retinal Detachment 3. Hypotension After Large Volume Therapeutic Paracentesis in the Emergency Department Myth or Reality?
Begnoche, Amy D.O PGY IV Widenski, Amber D.O PGY III Minahan, Thomas D.O	Tpa in Ischemic Stroke: The Difference Between 3 and 4.5 hours
Begnoche, Amy D.O PGY IV Widenski, Amber D.O PGY III Jones, Kevin, D.O Pennington, Troy D.O Lee, Carol M.D	A Comparison of Outcomes After Intravenous Thrombolysis With Recombinant Tissue Plasminogen Activator
Boulos, Sarah D.O PGY II Yuen, Ho-Wang M.D	1.A Retrospective Review of Anaphylaxis and Allergy Emergencies in the Emergency Department of a Large Urban County Hospital in Southern California 2. Hemophilia 3. Vertebral Artery Dissection
Bronson, James D.O PGY I	1. Cross-Sectional Study of Prevalence of Violence in the ED 2. Comparison of the Efficacy of ER Physician vs Sonographic Directed RUQ U/S for the Diagnosis of Acute Chole
Clark, Carrie PGY Neeki, Michael D.O	1. Methamphetamine and Congestive Heart Failure in Young Adults 2. The Use of TPA in Psychogenic Pseudo Stroke
Clark, Carrie PGY Yuen, Ho-Wang M.D	Methamphetamine and Congestive Heart Failure in Young Adults
Crouch, Andrew D.O PGY II Miulli, Dan D.O Lawrence, Teckah M.Ed Neeki, Michael D.O	Comparative Cerebrovascular Disease and Methamphetamine Abuse: A Population Based Study
Crouch, Andrew D.O PGY II Neeki, Michael D.O Piibe, Remy M.D	1. Do Resident Physicians Know About Cost of Medical Care in Their Hospital? 2. The Effect of Methamphetamine on Size and Distribution of Stroke
Fenati, Greg D.O PGY II Mamic, Marko D.O PGY II Piibe, Remy M.D	Link Between Allergies and Psychological Disorders
Fenati, Greg D.O PGY II Piibe, Remy M.D	Mental Illness and Allergies: Is There a Correlation? A Retrospective Study in an Urban County Hospital Emergency Department.
Lee, David D.O PGY II Nguyen, Anh M.D	Hypotension After Therapeutic Paracentesis in the Emergency Department: Myth or Reality?
Hendy, Dylan D.O PGY I Neeki, Michael D.O	A prospective Randomized Comparative Outcome Study of Emergency Medicine Physician Treatment of Minor Burn After a Short Training Workshop By a Burn Specialist Compared to Burn Specialist Care of Similar Patients.
Hintzsche, Gabriel D.O PGY II Yuen, Ho-Wang M.D	1. A Retrospective Review of Anaphylaxis and Allergy Emergencies in the Emergency Department of a Large Urban County Hospital in Southern California 2. Vertebral Artery Dissection.
Horan, Jennifer H D.O PGY II Lux, Pamela D.O	The Prevalence of Minor Burn Care in the Emergency Department

Neeki, Michael D.O	
Inglis, Travis D.O PGY I **Seng, Sakona D.O**	A Retrospective Analysis of the Outcome of Patients Diagnosed with Apparent Life Event (ALTE), in the Emergency Department to Determine if the Current Protocol for Work-Up and/or Admission is Warranted
Johansson, Jens D.O PGY II **Neeki, Michael D.O** **Seng, Sakona D.O**	1. Early Administration of Long-Acting Insulin in the ER In the Setting of DKA; and Its Impact On Mortality/Morbidity/Length in the ICU/Costs 2. A Case of Suspected Wound Botulism
Johnson, Joshua D.O PGY III **Minahan, Thomas D.O**	1. Why Would We Interview This Applicant? Items in the Application for Emergency Medicine Residency that really Matter 2. Bath Salts and Increased ICH
Johnson, Joshua D.O PGY III **Mittal, Geetanjli D.O PGY III**	Appropriate Itilization of EMS Transport to the Emergency Department
Johnson, Joshua D.O PGYIII **Sin, Arnold M.D**	1.What Items on the ERAS Application Correlate Most Closely with Matching to an AOA-Approved Emergency Medicine Residency 2. Survey: Patient Preference Regarding Electronic Communication
Kulczycki, Michael D.O PGY III **Neeki, Michael D.O**	1. Prevalence of Methamphetamine use Among Young Adults with Congestive Heart Failure 2. Fecaloma with Urinary Retention
Kulczycki, Michael D.O PGY III **Nguyen, Ang M.D**	Gender Differences in the Association of Methamphetamine Abuse and Congestive Heart Failure
Kuzmack, Edward D.O PGY I **Yuen, Ho-Wang M.D** **Seng, Sakona D.O**	A Retrospective Analysis of the Outcome of Patients Diagnosed with Apparent Life Event (ALTE), in the Emergency Department to Determine if the Current Protocol for Work-Up and/or Admission is Warranted
Lee, David D.O PGY II **Nguyen, Ang M.D**	Hypotension After Large Volume Therapeutic Paracentesis in the Emergency Department
Mamic, Marko D.O PGY III **Neeki, Michael D.O** **Minahan, Thomas D.O**	1. EMS Trauma Alerts and Activations Estimated Time of Arrival vs. Actual Time of Arrival 2. Ovarian Torsion Missed on Ultrasound and CT
Mamic, Marko D.O PGY III	Testicular Torsion Study
Mamic, Marko D.O PGY III **Neeki, Michael D.O** **Minahan, Thomas D.O**	1. The Rate of Testicular Detorsion in Emergency Medicine: A Survey Study 2. Closed Reduction Technique for a Posterior Sternoclavicular Dislocation: A Case Study 3. Mental Illness and Allergies: Is There a Correlation? A Retrospective Study in Urban County Hospital Emergency Department
Minera, Gabriella D.O PGY IV **Neeki, Michael D.O**	1. EM Resident Lifestyle Survey (Project) 2. Alcohol Intoxication in a Two-Month-Old (Case Report)
Minera, Gabriella D.O PGY IV **Welch, Mary D.O PGY IV**	Progressive Lifestyle Changes of Emergency Medicine Residents
Mittal, Geetanjli D.O PGY III **Neeki, Michael D.O**	1. Ambulance Utilization to Arrowhead Regional Medical Center 2. Splenic Infarct Associated with Pseudomonal Bactermia and Endocarditis
Mistry, Jamshid D.O PGY I **Neeki, Michael D.O**	Spinal Epidural Abscess, Identifying Challenges in Diagnosis at a Level 2 Trauma Center
Mistry, Jamshid D.O PGY I **Piibe, Remy M.D**	Case Report: Tension Hydrothorax, an Unusual Case
Mistry, Jamshid D.O PGY I **Lux, Pamela D.O**	A Novel Approach to Diagnosis. The SEA Score.
Mistry, Jamshid D.O PGY I **Neeki, Michael D.O**	A Double Blinded Prospective Study: TXA
Nguyen, Edward D.O PGY II **Seng, Sakona D.O**	1. Early Administration of Levemir in the ER in the Setting of DKA and its Effect on Length of Stay in the ICU, Mortality and Morbidity, and Costs 2. Guillan Barre with Succinylcholine
O'Kelley, Timothy D.O PGY III **Toomari, Nojan D.O** **Kwong, Eugene M.D** **Davis III, Vivian D.O** **Neeki, Michael D.O**	A Ten-Year Retrospective Review of Survival Outcomes in Patients Undergoing Emergency Thoracotomy at a Level II Trauma Center
Orchard, Derek D.O PGY IV **Kwong, Eugene M.D**	Survey International Medicine and the Obstacles Involved
Orchard, Derek D.O PGY IV **Rundio, Jeffrey D.O. PGY IV** **Neeki, Michael D.O**	What are the CT Ordering Habits of ER Residents, How are They Being Educated, and How are Their Decisions Influenced?
Richard, Aurore D.O PGY I **Neeki, Michael D.O**	A Prospective Randomized Comparative Outcome Study of Emergency Medicine Physician Treatment of Minor Burn After a Short Training Workshop by a Burn Specialist Compared to Burn Specialist Care of Similar Patients
Rundio, Jeffrey D.O PGY IV **Lee, Carol M.D**	Survey of Training Practices Regarding the Use of CT Scans in the ED

Than, Tan D.O PGY I **Neeki, Michael D.O**	Pneumecephalous Post Epidural
Than, Tan D.O PGY I **Neeki, Michael D.O**	The Expanding Role of Paramedics in the Optimal Utilization of Emergency Department Services
Welch, Mary D.O PGY IV **Neeki, Michael D.O**	Lifestyles of Emergency Medicine Residents
Widenski, Amber D.O PGY III **Lee, Carol M.D**	1. A Comparison of Outcomes After Intravenous Thrombolysis With Recombinant Tissue Plasminogen Activator 2. Intracranial Hemorrhage Following Bath Salt Use: A Case Report
Family Medicine 909-580-6236	
Anand, Sumeet D.O PGY III **Whitson, Denise FNP**	Smoking Cessation: Questionnaire Regarding the Self-Efficacy of Smokers
Diep, David D.O **Sim, Genny M.D** **Mowjood, Siraj D.O**	Breast Cancer Screening and Detection at the Mobile Clinic as Compared with the Detection Rates in the County of San Bernardino.
Elkarra, Manal M.D PGY III **Lanum, David M.D**	The Effect of Three Years of Arrowhead Regional Medical Center Health Fair Screening on Breast Cancer Incidence
Ghanevati, Mahin D.O **Brown, Joachim D.O**	Idiopathic Acute Transverse Myelitis
Hammes, Jillian, D.O PGY III **Brown, Joachim, D.O**	Locked-In Syndrome Secondary to Cerebral Infarction Involving the Cervical Spine, Pons and Medulla
Khajehgian, Sara, D.O PGY III **Brown, Joachim D.O**	Hemihypertrophy with a Ret Oncogene Negative Bilarteral Pheochromocytoma, Thyroid Papillary Carcinoma, C-Cell Hyperplasia, Intratechal Nucleus Pulposus, and Breast Fibroadenoma: A Case Report
King, Nathan D.O **Balinos, Febbis M.D**	Significance of Colon Cancer Screening at ARMC Health Fair
Knotts, Nicole, M.D **Balinos, Febbis M.D**	A Retrospective Analysis of Prostate Cancer Screening Conducted at Arrowhead Regional Medical Center Cancers Fairs
Nyirenda, Ndeka, M.D PGY III **Ebert, Emily M.D**	Formalizing a Pathway for Non-Urgent Psychiatric Referrals Between Mckee Family Medicine Clinic and Phoenix Behavioral Health Clinic
Nyirenda, Ndeka, M.D PGY III **Ebert, Emily M.D**	Performance Improvement Project at McKee Family Health Clinic
Prasad Chandarana, Aarthi, D.O PGY III **Brown, Joachim D.O**	Implementation of a Patient Centered Medical Home at Fontana Health Center: Identifying Obstacles and Exploring Solutions
Ramirez, Milton M.D, PGY III **Balinos, Febbis, M.D**	Incidence of Cervical Cancer at Arrowhead Regional Medical Center Cancer Screening Events
Robinson, Emily D.O **B. Ito, LCSW**	PM Group Visit Pilot
Thomas, Scott, D.O PGY III	Hypertrophic Cardiomyopathy
Tompkins, Michael, D.O PGY III **Raval, Niren D.O**	Group-Based Lectures for the Patient: An Assessment of Utility and Efficacy
Truong, My-Linh, D.O PGY III **Brown, Joachim D.O**	Sarcoidosis: A Diagnostic and Therapeutic Challenge
Welch, Patrick D.O PGY III **Diep, David D.O PGY II** **Mowjood, Siraj D.O** **Gemmell, Eda RN**	Evaluating ARMC Mobile Clinic's Effectiveness in Helping to Lower the Rate of Medically Uninusred in the San Bernardino County Through Arrowcare
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Edmunds, Jeff D.O PGY II **Shargh, Sean D.O PGY II** **Arabian, Sarkis D.O**	Effect of Enterally Fed Omega-3 Fatty Acids on Fi02 Requirements of Patients with Acute Respiratory Distress Syndrome
Khackekian, Arsineh D.O PGYIII **Shargh, Sean D.O PGY II** **Arabian, Sarkis D.O**	1.Pulmonary Lymphangitic Carcinomatosis from Metastatic Gastric Adenocarcinoma: A Case Report
Khackekian, Arsineh D.O PGYIII **Zall, Mona D.O PGY III** **Chequer, Rosemary M.D**	A Likely Case of Anti-NMDA-Receptor Encephalitis in a Young Female with Psychiatric Symptoms: A Case Report
Khackekian, Arsineh D.O PGYIII **Nowroozi, Michelle D.O PGY III** **Horns, Richard M.D**	The Timely Usage of Neulasta/Neupogen in Prevention of Febrile Neutropenia, in Decreasing Rate of Hospital Admissions, and in Decreasing Length of Hospital Stays for Patients Receiving Chemotherapy
Mehta, Sapna D.O PGY I **Shargh, Sean D.O PGY II** **Arabian, Sarkis D.O**	Impact of Prolonged Emergency Room Stay and Delayed Transfer in Critically III Patients

Mulroy, Patrick D.O PGY II **Tran, Viet D.O PGY II** **Lowe, Andrew PharmD**	Percentage of Patients with Gram Positive Bacteremia, Meningitis, Hospital Acquired Pneumonia, Severe Sepsis, and Septic Shock Who Achieve a Therapeutic Fist Vancomycin Trough
Nanpatee, Natasha D.O PGY II **Vahratyan, Rafayel D.O PGY II** **Platt, Katrina D.O** **Landis**	A Multicenter Study Evaluating the Risk Factors for Development of Acute Renal Failure in Patients with H1N1 Influenza.
Hariri, Omid D.O **Khackekian, Arsineh D.O** **Amin, Jenny D.O** **Minasian, Tanya D.O** **Berman, Blake D.O** **Ritter, Yoav D.O** **Miulli, Dan D.O** **Siddiqi, Javed M.D**	Acute-Onset Cerebellar Symptoms in Lhermitte-Duclose Disease: Case Report
Richardson, Laura D.O PGY III **Sanchez, Gabriel D.O PGY III** **Sorto, Fernardo D.O**	A Retrospective Study Evaluating Improved Sensitivity and Specificity in Detecting C. Difficile Infection with Multiple Stool Assays, and a Cost Comparison with PCR for Stool C. Difficile in Adults Admitted to ARMC.
Spence, Courtney D.O PGY III **Caberto, Jason D.O PGY III** **Arabian, Sarkis D.O**	Methamphetamine as an Independent Risk Factor for Hemorrhagic Stroke
Wallace, Lorien D.O PGY II **Boulos, Sarah D.O PGY II** **Craig, Debra M.D**	ARMC Health Literacy and End of Life Discussions
MFM Fellowship Program	
Carter, Michael D.O PGY IV **Roloff, Kristy D.O** **Valenzuela, G. M.D**	Transfusion Practices Based on Number of Prior Cesarean Deliveries at a Teaching Hospital
Roloff, Kristy D.O **Brunnabend, Michelle D.O PGY IV** **Valenzuela, G. M.D**	VBAC vs. Repeat Cesarean Delivery: Did the NIH Consensus Statement Impact TOLAC and VBAC Rates at an Institution Already Offering TOLAC?
Roloff, Kristy D.O **Valenzuela, G. M.D**	Methamphetamine Abuse and Hypertensive Disorders of Pregnancy
Neurosurgery 909-580-1366	
Bieber, Andrew D.O **Minasian, Tanya D.O** **Won, Daniel M.D** **Miulli, Dan D.O** **Siddiqi, Javed M.D**	Glioblastoma Multiforme and Concomitant Superimposed MRSA Abscess: Case Discussion and Literature Review of a Rare Entity.
Cortez, Vladimir D.O	1.Complexity of Treatment for PICA Aneurysms: A Case Series of Three Patients 2.Increase Incidence of Aneurysmal Rapture of Less than 5mm: Case Series of 24 Patients 3.Venous Anatomic Characterization in Perimesencephalic Spontaneous Subarachnoid Hemorrhage 4.Inadvertent Catheterization of Subclavian Artery Treated with NBCA Glue Embolozation: Case Report and Review of Literature
Hariri, Omid D.O **Minasian, Tanya D.O** **Siddiqi, Javed M.D., Ph.D** **Muilli, Dan D.O**	3/2013-Present Traumatic Subarachnoid Hemorrhage and Vasospasms-Possible Treatment Options.
Hariri, Omid D.O **Lawandry, Shokry D.O** **Siddiqi, Javed M.D, Ph.D** **Muilli, Dan D.O**	7/2012-12/2012 Clinical-Indicated for Cerebral Spinal Fluid Surveillance Reliably Predict External Ventricular Drain Associated Ventriculitis, or is Frequent Routine Cerebral Spinal Fluid Surveillance Necessary
Hariri, Omid D.O **Farr, Saman MS III** **Corsino, C.** **Gupta, R.K.** **Bieber, Andrew D.O** **Miulli, Dan D.O** **Siddiqi, Javed M.D**	Third Ventricular Glioblastoma Multiforme: Case Report & Literature Review
Hariri, Omid D.O **Khackekian, Arsineh D.O** **Amin, Jenny D.O** **Minasian, Tanya D.O** **Berman, Blake D.O** **Ritter, Yoav D.O**	Acute-Onset of Cerebellar Symptoms in Lhermitte-Duclos Disease: Case Report

Huynh, Katie D.O PGY IV **Miulli, Dan D.O**	Does Dihydropyrideine Calcium Channel Blockers Lower Serum Sodium: Amlodipine vs Nifedipine on Sodium Levels
Huynh, Katie D.O, PGY IV **Duong, Jason D.O. PGY I** **Miulli, Dan D.O.**	Validation of the Spinal Instability Neoplastic Score (SINS) Grading Criteria: A Retrospective Chart Review.
Lawandy, Shokry D.O **Hariri, Omid D.O** **Amin, J.** **Minasian, Tanya D.O** **Gupta, R.** **Siddiqi, Javed M.D**	Supratentorial Primitive Neuroectodermal Tumor in an Adult: A Case Report and Review of the Literature
Minasian Tanya D.O **Hariri, Omid D.O** **Corsino, C.** **Farr, Saman MS III**	Isolated Lumbar-4 Vertebral Cryptococcosis in an Immune-Competent Patient: A Case Report and Literature Review
Minasian, Tanya D.O **Stiner Eric** **Won, Daniel M.D** **Siddiqi, Javed M.D**	Single Specialty Laparoscopic Approach in Pediatric Ventriculoperitoneal Shunt Placement: Operative Technique
Minasian, Tanya D.O **Hariri, Omid D.O** **Siu, Jonathan MS IV** **Miulli, Dan D.O** **Siddiqi, Javed M.D**	Disseminated Histoplasmosis with CNS Involvement: Case Presentation, Literature Review and Discussion with an Emphasis on Symptomatic and Radiographic Improvement with Treatment
Minasian, Tanya D.O **Hariri, Omid D.O** **Zhao, Kevin MS II** **Miulli, Dan D.O** **Siddiqi, Javed M.D**	Cerebral Vasospasm Following Traumatic Subarachnoid Hemorrhage
Miulli Dan D.O **Lawrence, Teckah M. Ed** **Hariri, Omid D.O PGY II** **Farr, Saman MS-III** **Dennis, Arielle** **Gelfenbeyn, Kirill MS-III**	Optimal Range for Total Cholesterol in Patients with a Risk of Intracerebral Hemorrhage
Miulli, Dan D.O **Dahlin, Robert D.O PGY I** **Lawrence, Teckah M.Ed.**	Developing a Comprehensive Stroke System of Care
Noel, Jerry DO PGY IV **Siddiqi, Javed M.D.** **Miulli, Dan D.O.** **Andros, Fadi M.D**	Investigating Treatments for the Prevention of Secondary Injury and Disability Following Traumatic Brain Injury (TBI), INTREPID
Panchal, Ripul D.O **Minasian, Tanya D.O** **Hariri, Omid D.O** **Duffner, David M.D** **Miulli, Dan D.O** **Siddiqi, Javed M.D**	One Year Follow-Up of a Patient After Two Level Extreme Lateral Interbody Fusion (XLIF) with Interlaminar Lumbar Instrumented Fusion (ILIF)
Parsa, Kamran D.O **Hariri, Omid D.O** **Jamshidian, F.** **Miulli, Dan D.O** **Siddiqi, Javed M.D**	Incidence of Vertebral Artery Injury with Traumatic Cervical Spine Subluxations.
Remakrishnan, Vivek D.O	New Advances in Mechanical/Aspiration Thrombectomy
Lawandy, Shokry D.O **Bieber, Andrew D.O** **Capua, John D.O** **Parsa, Kamran D.O** **Taqi, Mohammaed M.D** **Siddiqi, Javed M.D, Ph.D**	False Localization in Delayed Presentation of Ruptured Aneurysms: Series of Cases
Siddiqi, Javed M.D **Ramakrishnan, Vivek D.O PGY IV**	Anti-Epileptic Prophylaxis in Traumatic Brain Injury (TBI) Patients Undergoing Craniotomy vs Decompressive Craniectomy Operations
Siddiqi, Javed M.D **Minasian, Tanya D.O PGY III** **Hariri, Omid D.O**	An Analysis of Neuron Specific Enolase (NSE) in Traumatic Brain Injury (TBI) Patients
Ophthalmology 909-583-3419	
Johl, Jaskarn D.O PGY III	Macular Atrophy Associated with Neonatal Alloimmune Thrombocytopenia

Storkensen Kris M.D **Suthar, Mukesh M.D** **Tokuhara, Keith M.D**	
Johl, Jaskarn D.O PGY III **Storkensen Kris M.D** **Suthar, Mukesh M.D** **Tokuhara, Keith M.D**	Macular Ischemia Associated with Beurgers Syndrome
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Pharmacy 909-580-0016	
Lowe, Andrew PharmD	Effect of Ketorolac Tromethamine (Toradol) on Pain Perception and Narcotic Use
Lowe, Andrew PharmD **Maciol, Angelika PharmD**	Evaluation of Insulin Infusion Protocol in the Intensive Care Units
Lowe, Andrew PharmD **Wong, Alison PharmD**	Evaluation of High Risk Medication Use in the Elderly
Lowe, Andrew PharmD **Nguyen, Frederick PharmD**	Effect of Pharmacist Intervention on Post-Discharge Medication Compliance and Incidence of Re-Admission
Psychiatry 909-580-3830	
Nelson, Jared D.O	The Effectiveness of Clozapine in Treating Treatment-Refractory Delusions in Schizophrenia in a Forensic Setting: A Case Series
Tang, Chin D.O	Catatonia Due to Psychosis
Surgery 909-580-3362	
Al-Temimi Mohammed M.D PGY I **Johna, Samir M.D**	Obesity and its Effects on the Perioperative Outcomes of Pancreaticoduodenectomy: Analysis of the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) Database
Choi, Mark M.D PGY III **Narayanan, Rag M.D PGY IV** **Tang, Taylor M.D PGY V**	Use of Seamguard to Prevent Anastomotic Leak in Colorectal Surgery
Choi, Mark M.D PGY III **Culhane, Dr. M.D**	ERCP at Kaiser vs. ARMC
Choi, Mark M.D PGY III **Vo, TD M.D** **Aka, P M.D** **Hsu, J M.D** **Behseresht, J M.D** **Tayyarah, M M.D**	Staged Endovascular Repair of Bilateral Internal Iliac Artery Aneurysms
Dehal Ahmed M.D PGY III	Preoperative Biliary Drainage In Patients with Obstructive Jaundice Due to Pancreatic Head Cancer
Dehal Ahmed M.D PGY III **Bae Esther D.O PGY II**	Antibiotic Use and Incidence of Pelvic Abscess after Laparoscopical Appendectomy
Dehal, Ahmed M.D PGY III **Abbas, Ali M.D** **Johna, Samir M.D**	Co-Morbidity and Outcomes After Surgery Among Women with Breast Cancer: Analysis of National Inpatient Sample Database
Dehal Ahmed M.D PGY III **Bae Esther D.O PGY II**	Prophylactic Cholecystectomy in Patients with Isolated Choledocholethiasis
Dehal, Ahmed M.D **Abbas, Ali M.D** **Johna, Samir M.D**	Racial Disparities in Clinical Presentation, Treatment, and Outcome of Women with Breast Cancer: Analysis of National Inpatient Sample Database
Dehal, Ahmed M.D PGY III **Tessier, Deron M.D**	Combined Intraperitoneal and Extraperitoneal Colonic Perforation After Diagnostic Colonoscopy: A Case Report and Literature Review
Dehal, Ahmed M.D PGY III **Yamanishi, Frank M.D**	Bilateral Laparoscopic Totally Extraperitoneal Repair Without Mesh Fixation of Inguinal Hernia: Results for 686 Inguinal Hernia
Dehal, Ahmed M.D PGY III **Zaheer, S. M.D**	A Rare Case of Ewing's Sarcoma of the Sternum
Dehal, Ahmed M.D PGY III **Hussain, F. M.D**	Risk Factors, Clinical, and Economic Consequences of Neck Hematoma After Thyroid and Parathyroid Surgery: Ten Years Analysis of National In-Patient Sample Database
Johan, Samir M.D **Tang, Taylor M.D PGY V** **Saidy, Maryam M.D PGY IV**	Enhancing Patient Safety Skills in Surgical Residency: Root Cause Analysis in Morbidity and Mortality Conference-Case Series from Clinical Practice
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Lee Bae-Young M.D **Ok Jin-Ju M.D** **Elsayed A.A.A M.D**	Preparative Fasting for Contrast-Enhanced CT: Reconsideration

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McCague, Andrew D.O **Aguiluz, Cesar D.O PGY III** **Davis, Vivian D.O**	Osteopathic Manipulation on Trauma Patients
McCague, Andrew D.O **Wong, David M.D**	Percutaneous Dilational Tracheostomies in the Emergent Setting
Misra S. M.D **Choi, Mark M.D PGY III** **Livingston, A. M.D** **Franceschi, D. M.D**	The Role of Endoscopic Ultrasound in Assessing Tumor Response and Staging After Neuadjuvant Chemotherapy for Esophageal Cancer
Narayanan, Rag M.D PGY IV **Tessier, Deron M.D**	Outpatient Lap Chole
Narayanan, Rag M.D PGY IV **Johna, Samir M.D**	Use of Narratives in Resident Education
Narayanan, Rag M.D PGY IV **Tessier, Deron. M.D**	Case Report: Permachol Mesh Use in Recurrent Ventral Hernia
Patel, Sunal M.D PGY II **Saidy, Maryam M.D PGY IV**	A Retrospective Study Comparing Single Incision Lap Choles to Standard Four Port Lap Choles
Patel, Sunal M.D PGY II **Saidy, Maryam M.D PGY IV**	A Retrospective Clinical Study Comparing EUS, CT Scan and Transabdominal u/s and the Common Bile Duct Diameter Findings
Patel, Sunal M.D PGY II **Tumbaga, Gloria M.D PGY III** **Woodward, Brandon M.D PGY II**	A Retrospective Chart Review Looking at Elective Lap Choles and What Factors Led to a Failure in Same Day Discharge After the Procedure
Saidy, Maryam M.D PGY IV **Aka, P. M.D** **Trung, V. M.D** **Hsu, J. M.D** **Tayyarah, M. M.D**	"Amplatzer Stacking" for the Treatment of Ruptured Aneurysms and Pseudoaneurysms with Short Proximal Necks
Saidy, Maryam M.D PGY IV **Tessier, Deron M.D**	Single Incision Laparoscopic Surgery: Hype or Reality
Schulz, Katharine D.O PGY I **Khan, Sadia D.O PGY IV** **Quigley, Jeff D.O PGY II**	Birads Three Gail Model for Early Breast Cancer Detection
Schulz, Katherine D.O PGY I	1.Ongoing 2014 Prospective Cohort Study on Pre-Hospital Administration of Tranexamic Acid to Trauma Patients to Identify Effects on Mortality and Total Blood Product Usage 2. Ongoing 2014 Investigation of Patients With Hispanic Ethnicity and the GAIL Prediction Model Scoring 3.2013 Case Report: A Rare Case of Acute Pancreatitis with Normal Pancreatic Enzyme 4. Kaiser Permanente, Fontana 2011-2012 Investigation and Report of New Frontiers in Minimally Invasive Management of Gastroduodenal Artery Pseudoaneurysms Through Two Interesting Case Reports 5.2013 Recurrent and Bilateral Carotid Body: Case Report and Literature Review
Tang, Taylor M.D PGY V **Aguiluz, Dr. D.O**	Case Report on Lap Choledochoscopy, Common Bile Duct Exploration and Retrieval of Stones in Pregnant Patient.
Tang, Taylor M.D **Johna, Samir M.D**	Laparoscopic Excision of a Pre-Peritoneal Incidentaloma
Tumbaga,Gloria M.D PGY III **Vo. Dr. M.D**	AVF and Aneurysm
Traditional Year 909-580-1369	
Collins, Joe D.O. PGY I **Miulli, Dan D.O** **Lawrence, Teckah M.Ed.**	What are the Greatest Predicive Factors for Dispostiion after a Hospitalization at a Large County Hospital In-Patient, that should require acute rehabiliation?
Grosskreutz, Tamsin DO PGY I **Miulli, Dan D.O** **Lawrence, Teckah M.Ed.**	Acuity of Emergency Medical Service calls transported to ARMC before and after the implemenations of ObamaCare
Ho, Alison D.O PGY I **Miulli, Dan D.O** **Lawrence, Teckah M.Ed.**	Incidence of Stroke in patients given Valproic Acid
Lim, Mary D.O PGY I **Storkerson, Kris, MD** **Lawrence, Teckah M.Ed**	Survey of Uveitis cases at ARMC.
Paczkowski, Sigmund D.O PGY I **Miulli, Dan D.O** **Lawrence, Teckah M.Ed**	Paramedic Prediction of Hospital admission to ARMC: A county hospital in the Inland Empire

Women's Health 909-580-3470	
Brown, Elizabeth D.O PGY III	The Incidence, Indications and Timing of Repeat Cesarean Delivery Prior to 39 Weeks
Brunnabend, Michelle D.O PGY IV **Valenzuela, G M.D**	1.ACOG VBAC Recommendations: Have They Influenced Physician Practices? 2. VBAC vs. Repeat Cesarean Delivery: Did the NIH Consensus Statement Impact TOLAC and VBAC Rates at an Institution Already Offering TOLAC
Carter, Michael D.O PGY IV	1.Transfusion Practices Based on Number of Prior Cesarean Deliveries at a Teaching Hospital 2.To Evaluate the Incidence and Timing of Transfusion Based on the Presence or Absence of Prior Cesarean Delivery
Kim, Jun D.O PGY IV **Valenzeula, G. M.D**	1.Methamphetamine Abuse and Hypertensive Disorders in Pregnancy 2. Methamphetamine Abuse and Incidents of Pre-Clampsia
Roloff, Kristy D.O	Methamphetamine Abuse and Hypertensive Disorders of Pregnancy
Stepanyan, Gohar D.O **Roloff, Kristy D.O** **Valenzuela, G. M.D**	Umbilical Cord C-Peptide in the Euglycemic Patient Points to Alternative Etiology of Macrosomia in the Non-Diabetic Patient
Valenzuela, G M.D **Carter, Michael D.O PGY IV**	Incidence of Blood Transfusion During or Immediately After Cesarean Section
Valenzuela, G M.D **Roloff, Kristy D.O**	1.Pitocin Augmentation 2. IADPSG GDM Guidelines: Does Changing the Diagnostic Criteria for Gestational Diabetes Affect Incidence of GDM or Birth Weight in a County Institution 3. To Decrease the Cesarean Section Rate, We Need to Focus on Avoiding the First One- A Review of Oxytocin Use at a County Hospital

The
10th Annual
ARMC Research Day
will be held on
Friday **May 29, 2015**
in the
Oak Room.

NEW INNOVATIONS IN MEDICINE: Emergency Ultrasound

Dalia Nassman, DO PGY II
Emergency Medicine

Known to the public mainly as a radiologic modality reserved for pregnant women, ultrasound has been routinely used for this purpose for decades. However, it has extended its reach far beyond the world of obstetrics and has increasingly made its presence known in the emergency department. Coveted for its diversity in utility along with its efficiency and ease of use, without the risks of exposure to radiation posed by other imaging modalities, ultrasound has been integrated by emergency department providers into daily practice in more ways than ever before.

Ultrasound's claim to fame within the ED mainly began with the FAST (Focused Assessment with Sonography in Trauma) exam in trauma patients, which initially was used to assess for free fluid (presumably blood) within the intraperitoneal and pericardial spaces, and was then extended to include evaluation for pneumothorax. Studies even suggest superiority of ultrasound in comparison to chest X-ray in detecting pneumothorax in trauma patients. Ultrasound is also well-known for its routine use as a diagnostic adjunct for cholelithiasis and cholecystitis in the assessment of biliary colic, as well as for the identification of other intrabdominal pathologies in populations that are less favorable for exposure to the radiation of CT, such as appendicitis and even intussusception in pediatric populations. Ultrasound has become the imaging modality of choice for assessing testicular and ovarian pathologies such as torsion and abscess. In addition, as mentioned earlier, ultrasound is utilized in obstetric emergencies such as ectopic pregnancy and placental abruption.

However, ultrasound has an extended spectrum of use that may not be as well-known to those outside of the ED, including ocular examination for retinal detachment, differentiation between cellulitis and abscess (not only in the skin; it can be used to assess the peritonsillar and retropharyngeal spaces as well), and even the identification of certain fractures and tendon ruptures. The RUSH (Rapid Ultrasound for Shock and Hypotension) exam is a valuable tool in assessing the volume status of the crashing patient and involves a sequence of visualizing various organs to aid in identifying the etiology of hemodynamic instability. As a part of the exam, cardiac wall motion is assessed (as is the pericardial space), the IVC is evaluated for compressibility, the intraperitoneal cavity is assessed for free fluid (in the same manner as in the FAST exam), the aorta is visualized for potential aneurysm, and the lungs are imaged for possible pneumothorax.

Thanks to ultrasound, a wealth of information can be yielded almost instantly from a patient that is too unstable to go to the radiology department for imaging. Ultrasound can also be instantly converted from a diagnostic to procedural tool; it can be used to identify pericardial tamponade, and then be used to guide the needle in the pericardiocentesis. On the same note, it can be utilized in both the identification and drainage of an abscess. It is also used to guide needle insertion for joint aspirations, paracentesis, nerve blocks, and even lumbar punctures. The utilization of ultrasound in improving accuracy of certain procedures has not only being increasingly encouraged, but is even becoming the standard of care in many institutions. In addition to guiding needle insertion, ultrasound can be applied

to go one step further and visualize guidewire positioning within the internal jugular or femoral vein in order to prevent accidental arterial dilation.

A meta-analysis done by Gillman, investigated the incidence of accidental arterial dilation when ultrasound was used to confirm venous guidewire placement, and found that there were no incidents of accidental arterial dilation during 53 central line placements.

While there are entire fellowship programs dedicated to emergency medicine ultrasound, it is a tool that is available for use among many different providers in the emergency department. Ultrasound is being encouraged for use by nurses as an aid in peripheral line placement, and new products are continually being introduced into the market intended for this particular use.

Ultrasound devices as small as a remote control, have recently been unveiled, with their portability adding to ultrasound's ease of use and efficiency. An added advantage of ultrasound over infrared devices in peripheral vein placement is that it provides information not only about vessel anatomy and location, but also about depth as well, which is a useful feature that infrared devices do not usually offer. Ultrasound tablets also follow the trend of portability, as well as add-on devices that can be placed on probes of nearly any ultrasound device that are specifically designed to aid in needle guidance, making it easier to track and predict the needle's trajectory within soft tissue. The greatest advantage of this type of device is that it does not require any specialized ultrasound machine or customized needles, and can simply be used in conjunction with what is already available in the department.

As these developments continue to assist in increasing the availability and convenience of ultrasound within the emergency department, it can potentially be extended to all areas of the hospital and become a modality that is more universally used to enhance bedside care.

Raja, Ali S.Jacobus, Christian H. et al. How Accurate Is Ultrasonography for Excluding Pneumothorax? *Annals of Emergency Medicine*. 2012; 61(2):207-208.

Gillman LM, Blavas M, Lord J, et al. Ultrasound confirmation of guidewire position may eliminate accidental arterial dilatation during central venous cannulation. *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*. 2010; 18:39.

Congratulations to
Viet Tran and Patrick Mulroy who were awarded 3rd place at the ACOI Convention and Scientific Sessions for their research
Percentage of Patients with Gram + Bacteremia, Meningitis, Hospital Acquired Pneumonia, Severe Sepsis and Septic Shock Who Achieve a Therapeutic First Vanco.
Baltimore, Maryland October 2014

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With increased attention to research at ARMC, "Peer-Review" & "Open-Access" has been coming up quite a bit. So ARMC Library has purchased one of the definitive online tools to finding Peer-Review and Open-Access Journals –-

1. **Ulrich's Periodicals Directory** (Also known as Ulrich's Web)
   http://ulrichsweb.serialssolutions.com/

"Ulrich's™ is the authoritative source of bibliographic and publisher information on more than 300,00 periodicals of all types of academic and scholarly journals, Open Access publications, peer-reviewed titles, popular magazines, newspapers, newsletters and more from around the world. It covers all subjects, and includes publications that are published regularly or irregularly and are circulated free of charge or by paid subscription."

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Please note that there is a ***free*** Directory of Open Access Journals --

2. **DOAJ – the Directory of Open AccesJournals.**
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"DOAJ is an online directory that indexes and provides access to quality open access, peer-reviewed journals."

- The link is included above. You can also have access by going to:
  ARMC Intranet
  Library
  DOAJ – the Directory of Open Access Journals

And, for the purist, there is another ***free*** Directory -- Beall's Scholarly Open Access --

3. **ScholarlyOpenAccess**
   http://scholarlyoa.com/

"Scholarly Open Access is a critical analysis of scholarly open access publishing." Also known as "Beall's" after the author's last name.

Important Numbers

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The schedules for the following issues are:

2nd Issue 2015

History of Medicine	Psychiatry
How I do it	Family Medicine
Spotlight on Research	Ophthalmology
Fascinating Case	Internal Medicine
Innovations in Medicine	OB/GYN

3rd Issue 2015

History of Medicine	Traditional
How I do it	Surgery
Spotlight on Research	Neurosurgery
Fascinating Case	ER
Innovations in Medicine	Psychiatry

Dates to remember…

- **MLE-Professionalism: Ethics, Attitudes, Beliefs and Skills Wednesday March 25th, 12:30-2:30pm *Interns only (Lunch provided)***
- **Deadline for submissions to the next issue of JARMC: April 20th, 2015**
- **Abstract submissions for the ARMC Research Conference must be submitted by April 29, 2015.**