

## OAKLAND UNIVERSITY WILLIAM BEAUMONT SCHOOL OF MEDICINE

### PUBLICATION LIST

April – June 2014

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Abend N, Fernandez IS, **Arndt D**, Carpenter J, Chapman K, Cornett K, Dlugos D, Gallentine W, Giza C, **Goldstein J**, Hahn C, Lerner J, Loddenkemper T, Matsumoto J, McBain K, Nash K, Payne E, Sanchez S and Williams K (2014). "Electrographic seizures following convulsive status epilepticus in children. a retrospective multicenter study of the pediatric critical care electroencephalogram group (PCCEG)." *Epilepsy Currents* 14: 465-466.

[Full-Text](#)

*Department of Pediatrics*

*Department of Internal Medicine*

Rationale: To date, there are no data on the proportion of children in whom electrographic seizures persist after convulsive status epilepticus (CSE) terminates. We aimed to describe the occurrence and characteristics of electrographic seizures following CSE in children. Methods: This was a multi-center (11 centers) retrospective study. We describe the clinical and electroencephalographic features of all consecutive children (1 month to 21 years) who presented with CSE and underwent continuous electroencephalographic monitoring in pediatric intensive care units. Results: Ninety-eight children (53 males) with a median age of 5 years underwent continuous electroencephalographic monitoring after CSE. Electrographic seizures were identified in 32 subjects (33%). Eleven (34.4%) had electroencephalographic-only seizures, 17 (53.1%) had electro-clinical seizures, and four (12.5%) did not have data about clinical correlate. Of the 32 subjects with electrographic seizures, 15 (46.9%) had electrographic status epilepticus, of which six (40%) were classified as continuous status epilepticus (electrographic seizures lasting more than 30 minutes) and nine (60%) as intermittent status epilepticus (recurring electrographic seizures totaling more than 50% of a one hour epoch). Factors associated with the development of electrographic seizures after CSE were a prior diagnosis of epilepsy and the presence of interictal epileptiform discharges (Table 1). When comparing patients who developed electrographic status epilepticus with patients who developed electrographic seizures without status epilepticus or who did not develop electrographic seizures, we found that the presence of an abnormal initial background category on continuous electroencephalogram (Pearson chi-square= 9.7346, p=

0.045) and the presence of sporadic interictal epileptiform discharges (Pearson chi-square= 11.7072, p= 0.001) were associated with electrographic status epilepticus. The median (interquartile range) duration of stay in the pediatric intensive care unit was 3 (2-10) days, being longer for children with electrographic seizures at 9.5 (3-22.5) days than for children without electrographic seizures at 2 (2-5) days (Wilcoxon test, Z=3.916, p=0.0001). Four children (4.1%) died before leaving the hospital. Conclusions: Electrographic seizures occurred in approximately one third of children after control of CSE, and approximately one third of these children (11% of the total) did not have any clinical correlate associated with their electrographic seizures. A prior diagnosis of epilepsy and the presence of interictal epileptiform discharges were associated with the occurrence of electrographic seizures. Electrographic seizures were associated with a longer stay in the intensive care unit. Table 1. Clinical and electroencephalographic features in patients with and without electrographic seizures. Numbers do not sum up to 98 as one patient may have had more than one condition. nullEEG monitoring interruptions <12 hours are considered the same session Table 2. Electrographic seizure characteristics.(Table Presented)(Table Presented).

Akrawinhawong K, Parker G, Stivers D, Cannon L, **Dixon S**, Ricci J, Kupfer K, Alexander P, David S and McCullough PA (2014). "Subclinical and clinical contrast-induced acute kidney injury: Results from the Encino study." [American Journal of Kidney Diseases](#) 63(5): A23.

[Full-Text](#)

*Department of Internal Medicine*

NGAL is an early biomarker for acute kidney injury. Contrast-induced acute kidney injury (CI-AKI) is associated with adverse outcomes in CKD patients. We sought to characterize blood NGAL level and the degree of kidney injury reflected by further increases in NGAL of CKD patients who underwent cardiac catheterization. This study was a prospective, blinded assessment of blood samples from patients with eGFR between 15 and 90 ml/min/1.73 m<sup>2</sup> undergoing elective coronary angiography with iodinated contrast. We excluded renal transplant recipients, dialysis patients and prior exposure of contrast within 30 days. Blood NGAL was measured using the Alere assay and serum creatinine was measured using isotope dilution mass spectrometry traceable methods. Samples were obtained at baseline, 1, 2, 4, 6, 12, 24, and 48 hours after contrast administration. A total of 63 subjects were enrolled with a mean age of 69.43(plus or minus)9.32 years and a mean eGFR of 48.17(plus or minus)16.45 ml/min/1.73 m<sup>2</sup>. There was a graded increase in baseline NGAL levels across worsening stages of CKD. Eight patients were diagnosed with CI-AKI by diagnostic criteria of 2012 Kidney Disease International Global Outcomes (KDIGO) definition of CI-AKI, and 7 developed subclinical CI-AKI defined by a twofold or greater rise in NGAL. Two subjects met both creatinine and NGAL criteria. Binary logistic regression found no relationship between baseline eGFR or diabetes on the composite outcome (clinical and subclinical AKI). Baseline and post-procedure NGAL are progressively elevated according to the baseline stage of CKD. Using a twofold rise in NGAL, 46.7% of composite CI-AKI is detected and complements the 53.3% of cases identified using KDIGO criteria. Traditional risk predictors (eGFR and diabetes) were not independently associated with composite outcome.

Al-faham Z, Boyer A, Crile J and **Balon H** (2014). "Emergency nuclear medicine 101." [The Journal of Nuclear Medicine](#) 55(Supplement 1): 1286.

[Full-Text](#)

*Department of Diagnostic Radiology and Molecular Imaging*

Learning Objectives: 1. To demonstrate the importance of nuclear medicine imaging in the management of acutely ill patients through several case examples and their explanations. 2. To teach the residents and the nuclear medicine technology students the scintigraphic appearance of the critical diagnoses most commonly encountered on-call. Physicians frequently request scintigraphic studies as a part of acute care for patients. In many cases, important functional and physiological information cannot be obtained by other than nuclear medicine imaging techniques, in other cases, more invasive methods or methods that are not available 24/7 would be required. In some situations, the scintigraphic abnormalities precede radiographic abnormalities. Availability, timely performance and correct interpretation of emergency studies are essential, as this allows timely initiation of patient treatment or can shorten hospital stay. In many institutions, the nuclear medicine or radiology residents are responsible for the preliminary interpretation of late night emergency

scintigraphic studies. In order to educate the junior residents about these studies, we will present brief procedure descriptions and normal findings, as well as illustrate typical patterns of the most common disorders diagnosed on-call. Examples will include cases of gastrointestinal hemorrhage, hepatobiliary disorders, pulmonary embolism, coronary artery disease, acute musculoskeletal disorders, and brain death. Multiple correlative images from other modalities and final diagnoses will be provided, along with key interpretation teaching points.

Alhafez B and **Kelekar AK** (2014). "Caseating granulomas, TB or not to TB?" Journal of General Internal Medicine 29: S330.

[Full-Text](#)

*Department of Internal Medicine*

LEARNING OBJECTIVE 1: To expand the possibilities in the differential diagnosis of caseating granulomas  
CASE: A healthy 64 year old male with no significant past medical history presented with one episode of hemoptysis. He also complained of 3 weeks of left sided chest pain. He denied any history of fever, chills, night sweats, weight loss, dyspnea, palpitations, dizziness, or cough. The patient was not a smoker. He was a war veteran. Laboratory studies showed a mild neutrophilia. A chest X-ray revealed a large left upper lobe mass. A computerized tomography of the chest confirmed the presence of a 10 cm mass in the upper lobe of the left lung. Tissue analysis of a specimen obtained through transbronchial biopsy showed caseating granuloma with lamellated fibrous capsules and epithelioid histiocytes with central necrotic debris. No atypical or malignant cells were seen. This histology raised concern for tuberculosis. However, sputum culture for AFB, QuantiFERON testing and AFB staining of the biopsy tissue were all negative. A suspicious looking osseous lesion in the T6 vertebral body was biopsied. It revealed high-grade malignant spindle and epithelioid cell neoplasm. He was started on radiation therapy and received two cycles of chemotherapy with gemcitabine and docetaxel. DISCUSSION: Primary lung sarcomas are rare and compromise less than 1 % of all primary lung tumors. They are associated with worse survival compared to other types of lung cancer. Epithelioid tumors are a rarer subtype of lung sarcomas. They are highly vascular and rapidly growing which predisposes them to tissue necrosis. This case raises the importance of considering lung sarcoma in the differential diagnosis of tuberculosis. It is prudent to suspect this diagnoses especially if the clinical presentation is not typical for tuberculosis.

Allred EN, **Capone Jr A**, Fraioli A, Dammann O, Droste P, Duker J, Gise R, Kuban K, Leviton A, O'Shea TM, Paneth N, Petersen R, **Trese M**, Stoessel K, Vanderveen D, Wallace DK and Weaver G (2014). "Retinopathy of prematurity and brain damage in the very preterm newborn." Journal of AAPOS 18(3): 241-247.

[Full-Text](#)

*Department of Ophthalmology*

Purpose To explain why very preterm newborns who develop retinopathy of prematurity (ROP) appear to be at increased risk of abnormalities of both brain structure and function. Methods A total of 1,085 children born at <28 weeks' gestation had clinically indicated retinal examinations and had a developmental assessment at 2 years corrected age. Relationships between ROP categories and brain abnormalities were explored using logistic regression models with adjustment for potential confounders. Results The 173 children who had severe ROP, defined as prethreshold ROP (n = 146) or worse (n = 27) were somewhat more likely than their peers without ROP to have brain ultrasound lesions or cerebral palsy. They were approximately twice as likely to have very low Bayley Scales scores. After adjusting for risk factors common to both ROP and brain disorders, infants who developed severe ROP were at increased risk of low Bayley Scales only. Among children with prethreshold ROP, exposure to anesthesia was not associated with low Bayley Scales. Conclusions Some but not all of the association of ROP with brain disorders can be explained by common risk factors. Most of the increased risks of very low Bayley Scales associated with ROP are probably not a consequence of exposure to anesthetic agents. Copyright © 2014 by the American Association for Pediatric Ophthalmology and Strabismus.

Amponsah D, Bouffard A, Hafez MN, **Brackney A**, Suzanski J, Hays G, Baliga S and Dulchavsky SA (2014). "Use of musculoskeletal ultrasound to improve specificity of fracture diagnosis in Ottawa Ankle Rule positive patients presenting to the emergency department with blunt ankle and mid-foot injuries." Academic Emergency Medicine 21(5): S40-S41.

[Full-Text](#)

*Department of Emergency Medicine*

Background: Ankle injuries are a common presenting complaint to the ED, which result in routine x-ray evaluation to rule out fractures. Only 15% of ankle injuries, however, result in fractures. The Ottawa Ankle Rules (OARs) were designed to decrease the need for x-rays by about 30%. The OARs have a high sensitivity (~97%) but a very low specificity (31% - 63%), resulting in a large number of normal x-rays in spite of positive OAR findings. Point-of-care (POC) ultrasound can have a positive effect in ruling out fractures in patients with positive OAR findings. Objectives: (1) To combine POC musculoskeletal ultrasound evaluation of the ankle and mid-foot in OAR positive patients. (2) To decrease the need for x-rays by an additional 50% in patients with no cortical irregularities on ultrasound. (3) To decrease false positives and improve specificity of fracture diagnosis of ankle injuries. Methods: This was a non-randomized prospective observational study using musculoskeletal ultrasound to evaluate ED patients with ankle and mid-foot injuries. Adults >18 years of age with positive OAR criteria for x-ray evaluation were included. Ultrasound exams were performed prior to x-ray evaluation, using a linear probe with frequencies of 10-13 MHz, by ED physicians and residents trained by a radiologist with expertise in musculoskeletal ultrasound. Results: Forty patients were enrolled, 27 female, 13 male. The type of injuries were ankle (n=26), ankle and foot (n=11), and foot (n=3). X-rays demonstrated the following: normal 25, avulsion fractures 4, fractures 11 patients. Ultrasound exams compared to x-ray results revealed 23/25 (92%) normal, and 10/11 (90.9%) fractures. Ultrasound identified 7 avulsion fractures: 3 with <3mm of cortical irregularity had normal x-ray findings, and 4 with >3mm of cortical irregularity had avulsion fractures on x-ray. Overall, ultrasound in combination with the OAR criteria resulted in a sensitivity of 93% (95% CI 68-98%), and specificity of 88% (95% CI 69-97%). The agreement between ultrasound and x-ray using weighted kappa was 0.86 (p-value < 0.001). See Table 91. Conclusion: This study illustrates the feasibility of musculoskeletal ultrasound combined with the OARs to significantly decrease the need for x-rays in patients with positive OAR criteria in distal ankle fractures. Further studies are needed to validate this innovative approach and assess its feasibility in the general population. (Table Presented).

**Anderson W**, Morse J, Loch D, Shakeel F, Pople B, Marsack P and **Bastani A** (2014). "Durable medical equipment prosthetic orthopedic supplies represent a significant and overlooked source of revenue capture for emergency departments." Academic Emergency Medicine 21(5): S16.

[Full-Text](#)

*Department of Emergency Medicine*

Background: Emergency department (ED) facility reimbursement is based on a tiered fee schedule that corresponds to the complexity of a given patient encounter and the procedures performed during that encounter. Across our three-hospital health system, most ED supplies including durable medical equipment prosthetic orthopedic supplies (walker boots, crutches, knee immobilizers, etc.) were being reimbursed together under this single payment. However, when billing requirements are met, these items cross-walk to HCPCS codes and are paid independently under the DME reimbursement methodology. To capture this opportunity for revenue enhancement, the ED collaborated with the home health services (HHS) division of the health system to bill separately for these items. Objectives: Our objective was to describe the financial effect of charge capture and reimbursement for ED-based durable medical equipment prosthetic orthopedic supplies across an entire health system. Methods: We conducted a retrospective review of financial data from June 18th, 2011 to September 30th, 2013 across our health system to evaluate the impact of billing for durable medical equipment prosthetic orthopedic supplies. Beginning May 1st 2011, the inventory across all three hospital EDs was streamlined and the management and cost of those supplies was transferred out of the ED and into the HHS division of the health system. The initiative was successfully implemented in all divisions within six weeks of its proposal. A project scorecard was developed to tightly monitor initiative metrics and was shared with the corporate team monthly to ensure maintenance of the process flow and

outcomes. Specifically, charge-backs to the individual EDs were monitored to evaluate instances where billing requirements were not met. The data were analyzed using descriptive statistics. Results: The cost of ED-based durable medical equipment prosthetic orthopedic supplies to the health system was \$178,000 annually. This would have resulted in an uncompensated cost of \$400,000 over the 27-month study period for the health system. The gross revenue of the project during that time was \$1,579,458, with a resulting net revenue of \$1,179,458 for the health system. Furthermore, during the 27-month period, \$62,609 in charge-backs to the individual EDs were noted which represent potential further improvement in revenue capture. Conclusion: By collaborating within the health system we were able to convert the expense of ED-based durable medical equipment prosthetic orthopedic supplies into a significant source of revenue.

**Angus AA, Sahi SL and McIntosh BB** (2014). "Learning curve and early clinical outcomes for a robotic surgery novice performing robotic single site cholecystectomy." International Journal of Medical Robotics and Computer Assisted Surgery 10(2): 203-207.

[Full-Text](#)

*OUWB Medical Student Author*

*Department of Surgery*

Background: A rapid training protocol has been developed for robotic surgery novices to learn robotic single-incision techniques. This study assesses the learning curve and early clinical results for a robotic surgery novice starting single-site cholecystectomy. Methods: A chart review was performed on the surgeon's first 55 patients to undergo this procedure. Results: Average patient age was  $46.01 \pm 4.25$  (range 21-86) years and BMI was  $26.57 \pm 4.25$  (range 19.4-36.6) kg/m<sup>2</sup>. The mean port placement with docking time was  $11.34 \pm 3.74$  (range 7-23) min. Mean console time was  $28.74 \pm 11.04$  (range 15-66) min. Average total OR time was  $61.84 \pm 14.66$  (range 40-105) min. All procedures were successfully completed without conversion or added ports. Complications included several minor procedural gall bladder perforations and miscellaneous postoperative symptomatic complaints. Conclusion: Robotic single site cholecystectomy can be safely performed by a robotic novice within a minimal learning curve and have early clinical results that are comparable to the published data of robotic experts. © 2013 John Wiley & Sons, Ltd.

Banes-Berceli A, Singhal S, Fulton M, Geddes T, Thibodeau B, **Wilson G** and **Hafron J** (2014). "Alterations in Janus (JAK2)/signal transducer of activated transcription signaling pathway in human renal cell carcinoma." FASEB Journal 28(1): 1179.1172.

[Full-Text](#)

*Department of Radiation Oncology*

*Department of Urology*

RCC accounts for 9 out of 10 cases of kidney cancer. Approximately 65,150 new cases and 13,680 deaths are expected from this disease in 2013. There is urgent clinical need for better treatment options as RCC responds poorly to current chemotherapy. A major limitation to developing new treatments is that the molecular mechanisms responsible for inappropriate cell survival and chemoresistance are unknown. One pathway suggested to be involved in vitro is the JAK/STAT. We hypothesized that there would be altered expression of the members and regulators of the JAK/STAT pathways in RCC. We utilized samples from normal (n=14), benign (n=6), and histological Fuhrman grades: Grade 1 (n=3), Grade 2 (n=10), Grade 3 (n=14), and Grade 4 (n=3). We analyzed 31 human RCC samples as well as the normal and benign samples with Affymetrix human gene microarrays and Western Blot technology. The samples were all clear cell renal carcinomas verified by a Beaumont Hospital pathologist. We analyzed 22,148 genes and altered gene expression was then detected by ANOVA taking into account histological stage. We found 170 genes that were differentially expressed in all grades compared to both normal and benign kidney samples. We found both JAK1 and JAK2 mRNA to be highly expressed in the RCC samples compared to the controls. We did not observe any decrease in the mRNA levels or protein expression of the regulatory proteins SOCS1, SOCS3 or SHP-1. We did find an increase in SHP-1 serine phosphorylation which is inhibitory in the RCC samples. These data suggest that altered function of the regulators not expression may be involved in RCC.

Barnes GD, Gu X, Haymart B, Kline-Rogers E, **Almany S**, Kozlowski J, Besley D, Krol GD, Froehlich JB and Kaatz S (2014). "The predictive ability of the CHADS2 and CHA2DS2-VASc scores for bleeding risk in atrial fibrillation: The MAQI2 experience." Thrombosis Research. ePub Ahead of Print.

[Full-Text](#)

*Department of Internal Medicine*

Introduction: Guidelines recommend the assessment of stroke and bleeding risk before initiating warfarin anticoagulation in patients with atrial fibrillation. Many of the elements used to predict stroke also overlap with bleeding risk in atrial fibrillation patients and it is tempting to use stroke risk scores to efficiently estimate bleeding risk. Comparison of stroke risk scores to bleeding risk scores to predict bleeding has not been thoroughly assessed. Methods: 2600 patients followed at seven anticoagulation clinics were followed from October 2009-May 2013. Five risk models (CHADS2, CHA2DS2-VASc, HEMORR2HAGES, HAS-BLED and ATRIA) were retrospectively applied to each patient. The primary outcome was the first major bleeding event. Area under the ROC curves were compared with C statistic and net reclassification improvement (NRI) analysis was performed. Results: 110 patients experienced a major bleeding event in 2581.6 patient-years (4.5%/year). Mean follow up was  $1.0 \pm 0.8$  years. All of the formal bleeding risk scores had a modest predictive value for first major bleeding events (C statistic 0.66-0.69), performing better than CHADS2 and CHA2DS2-VASc scores (C statistic difference 0.10 - 0.16). NRI analysis demonstrated a 52-69% and 47-64% improvement of the formal bleeding risk scores over the CHADS2 score and CHA2DS2-VASc score, respectively. Conclusions: The CHADS2 and CHA2DS2-VASc scores did not perform as well as formal bleeding risk scores for prediction of major bleeding in non-valvular atrial fibrillation patients treated with warfarin. All three bleeding risk scores (HAS-BLED, ATRIA and HEMORR2HAGES) performed moderately well. © 2014 Elsevier Ltd. All rights reserved.

Basoor A, Patel KC, **Halabi AR**, Todorov M, Senthilvadivel P, **Choksi N**, Phan T, Lalonde T, Yamasaki H and Degregorio M (2014). "Periprocedural and long-term outcomes of endovascular abdominal aortic aneurysm repair in cardiology practice." Catheterization and Cardiovascular Interventions. ePub Ahead of Print.

[Full-Text](#)

*Department of Internal Medicine*

Background: Endovascular repair of abdominal aortic aneurysm (AAA) has recently been made a class I indication in the treatment of AAA. In comparison to the conventional open surgical treatment, endovascular AAA repair (EVAR) is associated with equivalent long-term morbidity and mortality rates. Vascular surgeons perform majority of EVAR. There are no reports for the long-term results of this intervention performed by interventional cardiologists. We present one of the first reports of periprocedural and long-term outcomes of EVAR performed by interventional cardiologists. Methods: Retrospective chart review on patients with attempted EVAR between September 2005 and January 2011 was performed. Included cases were all consecutive patients who had attempted EVAR by interventional cardiologists. Results: During the study period EVAR was attempted in 170 patients, with 27% being women. The mean age was 74 years (range 52-93). The endovascular graft placement was successful in 96% (163/170) of patients. Procedure failures were more common in women (6 of 46 vs 1 of 124,  $P=0.003$ ). The 30-day mortality was 1.8 % (3 of 170). In patients with successful EVAR the mean follow-up was 30 months and mean length of hospital stay was 3.5(plus or minus)3.2 days. Major periprocedural complications were noted in 9% patients (15 of 167). During follow-up, six patients (3.5%) required re-intervention and additional 16 patients died with no aneurysm related deaths. Conclusion: EVAR primarily performed by interventional cardiologists demonstrates high periprocedural and long-term success rates. A higher EVAR failure rate has been observed in women. (copyright) 2014 Wiley Periodicals, Inc.

Baxi RP, Williford B and **Fisher JE** (2014). "Single-incision robotic supracervical hysterectomy with a single multichannel port as a lower cost alternative to laparoscopic supracervical hysterectomy." Obstetrics and Gynecology 123: 121S.

[Full-Text](#)

*Department of Obstetrics and Gynecology*

INTRODUCTION: Single-incision robotic supracervical hysterectomy is a novel and promising technique but

can be technically challenging and expensive. In this report, we compare the cost feasibility of single-incision robotic supracervical hysterectomy using the GelPOINT platform compared with the traditional multiincision laparoscopic supracervical hysterectomy. **METHODS:** We provide a description of our Single-incision robotic supracervical hysterectomy technique using the Applied Medical GelPOINT Advanced Access Platform and the DaVinci 2.0 Si Robotic Surgical System. The total operating room cost for the four single-incision robotic supracervical hysterectomy procedures was obtained from our hospital's billing department and compared against the total operating room cost for a cohort of 26 selected laparoscopic supracervical hysterectomy performed at our institution. This study was conducted at a suburban, midwestern teaching hospital on women undergoing hysterectomy for benign indications Interventions were single-incision robotic supracervical hysterectomy or laparoscopic supracervical hysterectomy with or without salpingo-oophorectomy. **MEASUREMENTS AND MAIN RESULTS:** Data from the two groups are provided. The average total operating room cost for single-incision robotic supracervical hysterectomy was \$8,045 compared with \$8,389 for laparoscopic supracervical hysterectomy, giving a cost differential of \$344. Single-incision robotic supracervical hysterectomy also had shorter length of stay of 0.75 days compared with 1.46 days for laparoscopic supracervical hysterectomy. **CONCLUSIONS:** Our preliminary experience suggests that single-incision robotic supracervical hysterectomy using the Applied Medical GelPOINT Port, although technically challenging, has comparable or lower total operating room costs. We attribute the lower cost to eliminating the expense of morcellators and advanced energy devices as well as shorter length of hospital stay in these procedures. This may result in further cost savings as operative times decrease.

**Berman BW** (2014). "The generalist-specialist interface: Not a zero-sum game." *Clinical Pediatrics* 53(8): 719-720.

[Full-Text](#)

*Department of Pediatrics*

Boden WE, **Franklin B**, Berra K, Haskell WL, Calfas KJ, Zimmerman FH and Wenger NK (2014). "Exercise as a therapeutic intervention in patients with stable ischemic heart disease: An underfilled prescription (narrative review)." *American Journal of Medicine*. ePub Ahead of Print.

[Full-Text](#)

*Department of Internal Medicine*

Treatment for stable ischemic heart disease may include guideline-directed pharmacologic therapy, coronary revascularization, and lifestyle and behavioral changes, including structured exercise. Of these, regular exercise is arguably one of the most cost-effective yet underutilized interventions. Most patients with stable ischemic heart disease are eligible for secondary prevention programs, which should include exercise training regimens, but participation in such programs remains suboptimal. This review emphasizes the importance of education for both patients and providers to enhance participation in lifestyle physical activity, structured exercise, or both.

Bortsov AV, Platts-Mills TF, Peak DA, Jones JS, **Swor RA**, Domeier RM, Lee DC, Rathlev NK, Hendry PL, Fillingim RB and McLean SA (2014). "Pain location and duration impact life function interference during the year following motor vehicle collision." *Pain*. ePub Ahead of Print.

[Full-Text](#)

*Department of Emergency Medicine*

Persistent musculoskeletal pain is common after motor vehicle collision (MVC) and often results in substantial disability. The objective of this study was to identify distributions of post-MVC pain which most interfere with specific life functions and which have the greatest interference with aggregate life function. Study data were obtained from a prospective longitudinal multicenter emergency department-based cohort of 948 European Americans experiencing MVC. Overall pain (0-10 numeric rating scale (NRS)), pain in each of 20 body regions (0-10 NRS), and pain interference (Brief Pain Inventory, 0-10 NRS) were assessed 6 weeks, 6 months, and 1 year after MVC. After adjustment for overall pain intensity, an axial distribution of pain caused the greatest interference with most specific life functions ( $R^2 = 0.15-0.28$ , association p-values  $<.001$ ) and with overall function. Axial pain explained more than twice as much variance in pain interference as other pain distributions. However, not all patients with axial pain had neck pain. Moderate or severe low back pain

was as common as neck pain at week 6 (prevalence 37% for each) and overlapped with neck pain in only 23% of patients. Further, pain across all body regions accounted for nearly twice as much of the variance in pain interference as neck pain alone (60% vs. 34%). These findings suggest that studies of post-MVC pain should not focus on neck pain alone.

Boyer A, Cameron L, Munoz-Maldonado Y, **Bronsteen R**, Comstock CH and **Goncalves LF** (2014). "Clinical significance of amniotic fluid sludge in twin pregnancies with a short cervical length." [American Journal of Obstetrics and Gynecology](#). ePub Ahead of Print.

[Full-Text](#)

*Department of Obstetrics and Gynecology*

**OBJECTIVE:** The objective of the study was to determine the clinical significance of amniotic fluid (AF) sludge in twin pregnancies with a short cervix. **STUDY DESIGN:** We evaluated twin pregnancies with a short cervical length that had an ultrasound between 16 and 26 weeks (n = 78). Pregnancy outcomes in those with sludge (n = 27) and those without (n = 51) were compared. Outcome variables included gestational age at delivery, premature rupture of the membranes, chorioamnionitis, funisitis, composite neonatal morbidity, and perinatal death. For statistical analysis, the first-born (A) and second-born (B) twins were studied separately. **RESULTS:** The prevalence of AF sludge was 34.6% (27 of 78). Pregnancies with sludge delivered earlier (27.2 +/- 5.6 weeks vs 31.0 +/- 4.05 weeks, P < .01) and had a higher rate of extreme prematurity (<26 weeks: 52.2% [12 of 23] vs 15.6% [5 of 32]; P < .01). Both twins had higher rates of histological chorioamnionitis (twin A, 50.0% [13 of 26] vs 12.8% [6 of 47]; P < .01; twin B, 42.3% [11 of 26] vs 13.3% [6 of 45]; P < .01) and neonatal death (twin A, 33.3% [9 of 27] vs 3.9% [2 of 51]; P < .01; twin B, 33.3% [9 of 27] vs 6.0% [3 of 50]; P = .01). Higher rates of funisitis (23.1% [6 of 26] vs 4.3% [2 of 47]; P = .02) and composite neonatal morbidity were observed for twin A only (66.7% [14 of 21] vs 37.5% [18 of 48]; P = .04). **CONCLUSION:** The presence of AF sludge in twin pregnancies with a short cervix is a risk factor for extreme prematurity, histological chorioamnionitis, and perinatal death. Twin A had higher rates of funisitis and neonatal morbidity in the presence of AF sludge.

**Cappell MS**, Dass K and Manickam P (2014). "Characterization of the syndrome of UGI bleeding from a Mallory-Weiss tear associated with transesophageal echocardiography." [Digestive Diseases and Sciences](#). ePub Ahead of Print.

[Full-Text](#)

*Department of Internal Medicine*

**Aim** To quantitatively describe the syndrome of Mallory-Weiss tears associated (MWA) with antecedent transesophageal echocardiography (TEE) as a distinct syndrome. **Methods** Cases of MWA were identified by comprehensive, computerized literature search via PubMed and review of textbooks and monographs on TEE and gastroenterology. Statistical comparison of 17 identified MWA cases versus previously published series of 73 cases of Mallory-Weiss tears unassociated with TEE (MWu) was performed. A new illustrative case is also currently reported. **Results** Comparison between these two groups revealed the following: MWA patients were significantly older (67.1 vs. 52.6 years, p = .0002, assuming equal variance), likely due to MWA patients having preexisting cardiovascular disease for which the TEE was indicated. The two groups had similar sex distributions (60 vs. 76 % male, p = .32). MWA patients were significantly, more frequently anticoagulated at the time of bleeding (90.9 vs. 9.6 %, p < .00001, OR = 94.3, 95 %-OR CI: 9.56-2293), likely because of anticoagulation for underlying cardiac disease for which TEE was indicated. MWA patients tended to more frequently rebleed and more frequently require endoscopic therapy (both parameters: 4/17 vs. 8/73, p = .23) and tended to more frequently require surgery or angiography to control bleeding (3/17 vs. 3/73, p = .08). MWA patients had significantly higher mortality (23.5 vs. 2.7 %, p = .01, OR = 10.9, 95 %-OR CI 1.48-97.8), likely because of their older age, concomitant heart disease, and administered anticoagulation. A new case of MWA is reported with notable features that extend the clinical spectrum of this syndrome: (1) tear associated with hiatal hernia, (2) presentation with severe, fatal UGI bleeding, and (3) no anticoagulation during bleeding episode. **Conclusions** Patients with MWA represent a distinct clinical subset from patients with MWu, with significantly older mean age, more frequent concomitant anticoagulation, and higher mortality. They also tend to have more severe bleeding. These characteristics are important in clinically managing this syndrome. © 2014 Springer Science+Business Media New York.

**Cappell MS**, Saadi A, Bortman JS and **Amin M** (2014). "Ileocolonic tuberculosis clinically, endoscopically, and radiologically mimicking Crohn's disease: Disseminated infection after treatment with infliximab." Journal of Crohns & Colitis 8(6): 560-562.

[Full-Text](#)

*Department of Internal Medicine*

*Department of Pathology*

Carty JN, Tomakowsky J, Lumley MA, Carrico DJ and **Peters K** (2014). "Social constraints and emotional processing as unique correlates of health status in women with chronic pelvic pain." Psychosomatic Medicine 76(3): 1-111.

[Full-Text](#)

*Department of Urology*

Providers working with women with chronic pelvic pain (CPP) routinely assess depression, anxiety, and pain catastrophizing, which correlate with health status (pain, other symptoms, disability). However, novel psychosocial constructs, such as social constraints (perceived inability to discuss problems with others) and poor emotional processing ability (e.g., suppressing, avoiding), may also be important in explaining health status, particularly if they predict beyond the routine measures. We studied 134 women (age M=46.82) at an initial visit to a multidisciplinary center for the management of CPP. Patients completed measures of depression (PHQ-8), anxiety (GAD -7), catastrophizing (Pain Catastrophizing Scale), and two novel psychosocial constructs: social constraints (General Social Constraints Scale) and poor emotional processing (Emotional Processing Scale). Three health variables were pain severity and physical disability (Brief Pain Inventory) and pelvic floor symptom distress (Pelvic Floor Distress Inventory-20). As expected, depression, anxiety and catastrophizing were significantly related to poorer health on all three measures (r's from .20 to .67,  $p < .05$ ). Zero-order correlations revealed that social constraints were significantly ( $p < .001$ ) and positively related to poorer health on all three variables (r's from .31 to .39), and a lack of emotional processing was also significantly ( $p < .01$ ) related to poorer health status (r's from .20 to .32). Multiple regressions, simultaneously covarying depression, anxiety, and catastrophizing indicated that social constraints remained significantly correlated with pain severity ((beta) = .21) and marginally related to pelvic floor symptom distress ((beta) = .17), although not disability ((beta) = .09). Poor emotional processing, however, was no longer a significant correlate of health. We conclude that social constraints are uniquely important in understanding the health status of women with CPP, perhaps because of the private nature of this condition. However, it may be the case that self-report measures, as used in the current study, cannot fully capture emotional processing styles, and objective measures may have revealed different results.

Casalino DD, Remer EM, Bishoff JT, Coursey CA, Dighe M, Harvin HJ, Heilbrun ME, Majd M, Nikolaidis P, Preminger GM, Raman SS, Sheth S, Vikram R and **Weinfeld RM** (2014). "ACR appropriateness criteria post-treatment follow-up of renal cell carcinoma." Journal of the American College of Radiology 11(5): 443-449.

[Full-Text](#)

*Department of Diagnostic Radiology and Molecular Imaging*

Although localized renal cell carcinoma can be effectively treated by surgery or ablative therapies, local or distant metastatic recurrence after treatment is not uncommon. Because recurrent disease can be effectively treated, patient surveillance after treatment of renal cell carcinoma is very important. Surveillance protocols are generally based on the primary tumor's size, stage, and nuclear grade at the time of resection, as well as patterns of tumor recurrence, including where and when metastases occur. Various imaging modalities may be used in the evaluation of these patients. Literature on the indications and usefulness of these radiologic studies is reviewed. The ACR Appropriateness Criteria are evidence-based guidelines for specific clinical conditions that are reviewed every 2 years by a multidisciplinary expert panel. The guideline development and review include an extensive analysis of current medical literature from peer-reviewed journals and the application of a well-established consensus methodology (modified Delphi) to rate the appropriateness of imaging and treatment procedures by the panel. In those instances in which evidence is lacking or not definitive, expert opinion may be used to recommend imaging or treatment. © 2014 American College of Radiology.

Chapman K, Abend N, **Arndt D**, Carpenter J, Cornett K, Dlugos D, Gallentine W, Giza C, Hahn C, Lerner J, Loddenkemper T, Matsumoto J, McBain K, Nash K, Payne E, Fernandez IS, Sanchez S, Williams K and **Goldstein J** (2014). "Periodic and rhythmic patterns during EEG monitoring of critically ill children." *Epilepsy Currents* 14: 156.

[Full-Text](#)

*Department of Pediatrics*

*Department of Internal Medicine*

Rationale: Periodic discharges (PD) and rhythmic activity (RA) are commonly encountered in critically ill adults undergoing continuous EEG monitoring (cEEG), while their prevalence is unclear in children. Our aim was to determine the prevalence of these patterns during cEEG monitoring of critically ill children. Methods: The Pediatric Critical Care EEG Group (PCCEG) consists of eleven hospitals that routinely perform cEEG on critically ill children. Each site retrospectively enrolled 50 consecutive critically ill children (1 month to 21 years) who underwent clinically indicated cEEG. We collected information regarding subject demographics, clinical characteristics, outcome, and the occurrence of specific EEG patterns. Subjects with and without PD and RA were compared using chi-square test for categorical variables and the Mann-Whitney test for continuous variables. Results: 550 patients were included in this study. PD occurred in 76 (13%) and were lateralized in 34 (6%), generalized in 22 (4%), bilaterally independent in 7 (1%), and multifocal in 15 (3%). RA occurred in 54 (10%), including lateralized in 22 (4%), generalized in 20 (4%), bilaterally independent in 67 (1%), and multifocal in 2 (0.5%). PD and RA were seen in children as young as 12 and 15 months respectively. Subjects with PD or RA had more abnormal EEG backgrounds and were more likely to experience seizures or status epilepticus. There was no difference in PICU length of stay with PD or RA. RA was related to mortality. Conclusions: These data provide epidemiologic characterization of PD and RA in critically ill children and establish that these patterns are common, including in young children. cEEG monitoring provides helpful information on clinical features and outcome. PD and RA were associated with a higher risk of seizures or status epilepticus in our series. Further study on how management can be adjusted to impact outcome is warranted.

Cheng CY, Lee KW, Lee CH, Tyan YS, Cheng CY, Wang JJ, Yang CW, Huang WS and **Oliver Wong CY** (2014). "Time sensitivity factor of single pulmonary nodule: A new cancer characteristic metabolic parameter by F 18 -FDG PET." *BioMed Research International* 2014: Article Number 830135.

[Request Form](#)

*Department of Diagnostic Radiology and Molecular Imaging*

Objective. To calculate the time sensitivity factor (S) for discriminating the solitary pulmonary nodule (SPN) by FDG PET at different time points. Methods. The multiple time-point FDG PET images from 41 patients for evaluating SPN seen on chest X-ray or CT were prospectively analyzed to calculate and evaluate S against the gold standard of tissue histology (n = 38) or long term clinicoradiographic follow-up (n = 3). The maximal standardized uptake values (SUV) at the 3 hourly time points were measured. The S was calculated using  $S = d \{ \ln (SUV) \} / d \{ \ln (t) \}$  at 3 different time intervals. ROC analysis of the S parameters was performed to evaluate the optimal cut-off value and their accuracy in classifying the SPN. Results. The SUV in malignant SPN was higher than the corresponding value in benign lesions at all 3 hourly time points (P < 0.003). The S parameters using 3 different time intervals all significantly separated the two groups (P < 0.0005) with an optimal cut-off point near the theoretical value of zero with a high sensitivity of 100% and specificity of 86%. Conclusion. The S can be calculated for SPNs using multiple time-point FDG PET, providing a tumor characteristic metabolic parameter with high discrimination power using a simple positive value representing malignancy. © 2014 Ching-Yuan Cheng et al.

**Chinnaiyan KM, Bilolikar AN, Walsh E, Wood D, DePetris A, Gentry R, Boura J, Abbara S, Al-Mallah M, Bis K, Boswell G, Gallagher M, Arunakul IO, Halliburton S, Jacobs J, Lesser J, Schoepf UJ, Valeti US and Raff GL** (2014). "CT dose reduction using prospectively triggered or fast-pitch spiral technique employed in cardiothoracic imaging (the CT Dose Study)." *Journal of Cardiovascular Computed Tomography* 8(3): 205-214.

[Full-Text](#)

*Department of Internal Medicine*

*Department of Diagnostic Radiology and Molecular Imaging*

*Department of Biomedical Sciences (BHS)*

Objectives: To establish current radiation dose levels with contemporary scanners capable of prospectively triggered or high-pitch spiral scan modes to previous generation scanners among patients evaluated for coronary artery disease, pulmonary embolism, aortic disease, and "triple rule out" in a large population of patients at multiple centers. Background: Previous small-scale studies with carefully controlled scan protocols report that CT scanners that facilitate prospectively triggered scanning and provide high-pitch spiral CT scan modes drastically lower radiation doses. However, diagnostic reference levels should be selected by medical bodies on the basis of large surveys of representative sites and reviewed at appropriate time intervals. Methods: Scan data including dose and image quality parameters were collected retrospectively from 64 slice scanners (control) and prospectively after sites installed 128-slice dual-source scanners with high-pitch capability (study). Protocol selection was purposely not specified to survey "real world" results. Blinded quantitative image analysis was performed on every fifth scan. Results: From April 2011 to March 2012, 2085 patients at 9 sites completed the study: 1051 coronary artery disease (509 control, 542 study), 528 pulmonary embolism (267 control, 261 study), 419 aortic disease (268 control, 151 study), and 87 triple rule out (53 control, 34 study). There was a significant reduction in median dose-length product (DLP) from 669mGy{bullet operator}cm (interquartile range [IQR]: 419-1026mGy{bullet operator}cm) in the control group to 260mGy{bullet operator}cm (IQR: 159-441mGy{bullet operator}cm) in the study group, a reduction by 61% ( $P < .0001$ ) and was lower in all categories. No significant differences were noted in image quality. Conclusion: Use of advanced scanners facilitating prospectively triggered or high-pitch spiral scan modes results in marked dose reduction across a variety of cardiovascular studies, with no compromise in image quality. These findings may contribute to new target dose recommendations in societal guidelines. © 2014 Society of Cardiovascular Computed Tomography.

**Clark CL, Hartshorn JA, Le J, McElreath K, Sawyer KN and Swor RA** (2014). "Anticoagulant use in recent-onset atrial fibrillation patients in a large suburban ED before novel anticoagulants became easily available." *Academic Emergency Medicine* 21(5): S187.

[Full-Text](#)

*Department of Emergency Medicine*

*OUIB Medical Student Author*

Background: The Emergency department (ED) treatment of recent-onset atrial fibrillation (AF), duration < 48 hours, is evolving in the United States. CHA<sub>2</sub>DS<sub>2</sub>-VASc (CHADV) and HAS-BLED scores have been used to evaluate the risk for stroke and anti-coagulation related hemorrhage, respectively. Increasingly aggressive ED care of recent-onset AF, including increased use of novel oral anti-coagulants and ED discharge, will make appropriate risk-stratification of ED patients for anticoagulation even more important. Objectives: The objective of our study was to examine the use of anti-coagulation in ED patients with recent-onset AF. Methods: We performed a retrospective review of patients presenting to a large, academic community ED in 2011 diagnosed with AF. A structured chart review was performed to abstract the ED physicians' determination of recent-onset AF. Data elements including demographics, CHADV and HAS-BLED scores, and ED anticoagulation were extracted. We defined anti-coagulation as treatment with heparin, enoxaparin, or dabigatran, but not anti-platelet drugs. We assessed emergency physicians' unstructured use of anti-coagulants compared to AHA guidelines, defining deviations from guidelines as no anti-coagulation, if CHADV(greater-than or equal to)2, or anti-coagulation if CHADV=0. Descriptive statistics are reported. Results: Of 916 patients with ED discharge diagnoses of AF, we identified 200 patients with recent-onset AF (46% female, average age 65.3 +/-15.8). Of the 200 recent-onset AF patients, 127(63.5%) were found to have CHADV (greater-than or equal to)2 and 42 (21.0%) had HAS-BLED scores (greater-than or equal to)3. For

recent-onset AF CHADV(greater-than or equal to)2 patients, 59(46.4%) were not anticoagulated in the ED. For patients with recent-onset AF CHADV <2, 38 (52.0%), including 16 (45.7%) of patients with CHADV=0, were anti-coagulated. We identified a deviation from guidelines in 75 (37.5%) patients. Of 42 patients with HAS-BLED scores (greater-than or equal to)3, 19 (45.2%) were anti-coagulated in the ED. Conclusion: In our population of recent-onset AF patients treated in the ED, ED anti-coagulation was often not consistent with suggested guidelines. With the shift toward more aggressive treatment of ED recent-onset AF patients including treatment, anticoagulation,and discharge from the ED, ED physicians will need to have an in-depth understanding of risk stratification and treatment guidelines.

**Clark CL, Hartsthorn JA, Le J, McElreath K, Sawyer KN and Swor RA** (2014). "Recent-onset atrial fibrillation and 6-month cardiovascular-related ED visits and readmission." *Academic Emergency Medicine* 21(5): S186-S187.

[Full-Text](#)

*Department of Emergency Medicine*

*OUWB Medical Student Author*

Background: A body of knowledge has evolved for aggressive emergency treatment of recent-onset atrial fibrillation (AF) with discharge for subsequent outpatient management. Cardioversion in the ED has been suggested as a reasonable therapy for recent onset AF. Objectives: Our objective in this study was to evaluate recent-onset AF patients presenting to our emergency department and examine the association of ED cardioversion and 6-month cardiovascular-related ED visits and readmissions. Methods: We performed a retrospective review of patients presenting to a large, academic community ED, in 2011, diagnosed with AF. A structured chart review was performed to abstract the treating clinician's determination of onset of AF<48 hours. Data elements including demographics, ED treatment, rate of successful ED cardioversion (spontaneous, pharmacological, or electrical), and disposition were collected. Cases were reviewed to evaluate if patients had cardiovascular-related return ED visits or admissions within 6 months, with our primary outcome being 6-month admission. We stratified physician management of patients at risk for stroke and anticoagulation related hemorrhage by calculating CHA2DS2-VASc (CHADV) and HAS-BLED scores. Chi-square tests and odds ratios were calculated. Results: Of 916 patients with ED discharge diagnoses of AF, we identified 200 patients with recent-onset AF (46% female, average age 65.3 +/-15.8). Most (159, 79.5%) patients were admitted or observed and a minority (41, 20.5%) were discharged after ED treatment. Successful ED cardioversion occurred in 97 patients (49%). Overall 101 (50.5%) had one or more ED revisits (range 1-10) and 75(37.5%) had one or more readmissions (range 1-8). ED cardioversion did not significantly decrease rates of cardiovascular-related ED visits (45.5% vs. 54.5%, OR = 0.70, 95%CI 0.40, 1.22). The effect of ED cardioversion on 6-month admission is shown in Table 442. Conclusion: In this population, AF patients at higher risk for stroke (CHADV (greater-than or equal to) 2) had higher rates of 6-month admission. Successful ED cardioversion did not decrease rate of ED return or 6-month admission in our population, although patients with CHADV < 2 had a twofold (but not significant) lower rate of 6-month admission. Further work is needed to assess the effect of ED cardioversion on return visits and readmissions. (Table presented).

Copelan A, Remer EM, Sands M, **Nghiem H** and Kapoor B (2014). "Diagnosis and management of Budd Chiari Syndrome: An update." *Cardiovascular and Interventional Radiology*. ePub Ahead of Print.

[Full-Text](#)

*Department of Diagnostic Radiology and Molecular Imaging*

Imaging plays a crucial role in the early detection and assessment of the extent of disease in Budd Chiari syndrome (BCS). Early diagnosis and intervention to mitigate hepatic congestion is vital to restoring hepatic function and alleviating portal hypertension. Interventional radiology serves a key role in the management of these patients. The interventionist should be knowledgeable of the clinical presentation as well as key imaging findings, which often dictate the approach to treatment. This article concisely reviews the etiology, pathophysiology, and clinical presentation of BCS and provides a detailed description of imaging and treatment options, particularly interventional management. © 2014 Springer Science+Business Media New York and the Cardiovascular and Interventional Radiological Society of Europe (CIRSE).

Dezia AL, Ali M, Hoffman JL and **Smythe MA** (2014). "Rivaroxaban use evaluation in an academic tertiary hospital." *American Journal of Hematology* 89(6): E61.

[Full-Text](#)

*Department of Biomedical Sciences (BHS)*

Dukkupati S, Woollett I, McElderry HT, **Doshi SK**, Gerstenfeld EP, Horton RP, D'Avila A, **Haines DE**, Valderrabano M, Mangrum JM, Ruskin JN, Natale A and Reddy VY (2014). "Pulmonary vein isolation using a visually guided laser balloon catheter: Results of the US feasibility study." *Heart Rhythm* 11(5): S133.

[Full-Text](#)

*Department of Diagnostic Radiology and Molecular Imaging*

*Department of Internal Medicine*

Introduction: The visually-guided laser balloon ablation catheter (BAC) is unique in its ability to deliver laser energy around PV ostia at operator determined sites using endoscopic guidance. Recently, PVI using the BAC has been shown to be possible. In this multicenter study, we sought to determine the feasibility, efficacy, and safety of performing PVI using this BAC. Methods: This study was conducted at 9 US sites. Pts with symptomatic, drug-refractory PAF were enrolled and ablation was performed with the BAC. Following transeptal puncture, the BAC was positioned at the target PV ostium. Using endoscopic guidance, point-to-point laser energy was delivered in a circumferential and overlapping manner to achieve PVI. A circular mapping catheter was used to assess PVI immediately and 30 min post-ablation. After a 90 day blanking period, pts were followed for 12 months and monitored for AF recurrence. Results: A total of 86 pts with a mean age of 56(plus or minus)10 years (67% M, 33% F) were enrolled. Using the BAC, acute PVI was achieved in 314/323 (97%) PVs. Mean fluoroscopy, ablation, and procedure times were 39.8(plus or minus)24.3 min, 205.2(plus or minus)61.7 min, and 253.5(plus or minus)71.3 min, respectively. Procedure related complications included cardiac tamponade in 3 pts (3.5%) and phrenic nerve injury in 5 (5.8%). There was no PV stenosis (>50% diameter decrease), TIA/Stroke, or atrioesophageal fistulas. At 12 months, 50/86 (58%) pts were free of AF. Conclusions: Using the BAC, PVI can be achieved in virtually all patients with a reasonable safety profile and an efficacy similar to RFA. This favorable experience sets the stage for comparative studies vs. RFA.

Fana MD, Jawad MS, Pietron AV, Wallace M, Ye H, **Dekhne NN**, **Grills I** and **Chen P** (2014). "Outcomes following breast conservation therapy in women 80 years of age or older." *Annals of Surgical Oncology* 21(1): S68-S69.

[Full-Text](#)

*Department of Surgery*

*Department of Radiation Oncology*

Departments of Surgery, Division of Breast Surgery<sup>1</sup>, and Radiation Oncology<sup>2</sup>, Beaumont Cancer Institute, Oakland University William Beaumont School of Medicine, Royal Oak, Michigan Purpose: To evaluate clinical outcomes following breast conservation therapy (BCT) with whole breast irradiation (WBI) or partial breast irradiation (PBI) in women (greater-than or equal to) 80 yrs old. Materials and Methods: 157 women (greater-than or equal to) age 80 were treated with BCT from 9/91-5/12 at a single institution. BCT included surgery and adjuvant radiation therapy. WBI (n=81) was delivered via standard fractionation (50-61Gy, 25-33 fx) or hypofractionation (42.56Gy, 16 fx). 39 patients had a lumpectomy cavity boost with median dose 16 Gy (8-16). APBI (n=76) was delivered via low dose rate (n=23) or high dose rate (n=25) brachytherapy or 3D-conformal RT (n=28). Clinical outcomes were retrospectively analyzed, including ipsilateral breast tumor recurrence (IBTR), regional recurrence (RR), contralateral breast tumor recurrence (CBTR), distant metastases (DM), cause-specific survival (CSS), and overall survival (OS). Results: Median follow-up was 4.4yrs (0.1-16.7), with slightly longer in the APBI group (5.6 v 3.7yrs, p<0.001). Patient characteristics are in Table 1. WBI patients were more likely to have larger tumors (median 13 v 10mm, p=0.042), T2 disease (29 v 8%, p=0.007), LN+ disease (N1/2 15 v 1%, p=0.004), positive final margins (13 v 0%, p=0.012), and receive chemo (9 v 0%, p=0.02). There were no differences in histology, tumor grade, lymph nodes removed, or ER/PR/Her2 status. 59% of ER+ patients received hormone therapy. Clinical outcomes were similar between the two groups. Few events were noted at 5 years, with no RR or other failures. 5% of patients in the WBI group had CBTR at 5 years, compared to 0% in the APBI group (p=0.07). OS and CSS at 5 years were 81% and 95%

overall, and not significantly different between APBI and WBI (OS 78 v 86%,  $p=0.52$ ; CSS 95 v 97%,  $p=0.64$ ). Conclusion: Breast cancer outcomes for women (greater-than or equal to)80 yrs. were excellent, with a 5-year CSS of 95%. Both APBI and WBI appear to be reasonable treatment options. Further analysis with comparison to a matched cohort treated with surgery alone is under way. (table presented).

Farlow JL, London DA, Golden A, Patel A, **Doo F**, Pacl K and Wadhvani A (2014). "Curricular fundamentals: A primer for medical students involved in curricular planning (iCollaborative)." MedEdPortal Resource ID 2315

[Full-Text](#)

*OUWB Medical Student Author*

At virtually all medical schools, students are involved in curricular design, implementation, and/or evaluation to some degree. The effective participation of students in these activities can provide invaluable perspective, refreshing energy, and innovative ideas. Very little exists, however, to provide students with the relevant medical education theory, basic vocabulary, and resources for individual learning so that they may become more effective partners in curricular planning. To meet this need, the authors have prepared a one-page primer designed by students for students. The primer is intended to be a basic introduction to curricular fundamentals, a quick reference, and a starting point for more advanced concepts and topics.

**Fischer AC** (2014). "Stem cells: Are they pertinent to my research?," In Kibbe MR and LeMaire SA (ed). Success in Academic Surgery: Basic Science. pp: 157-170.

[Full-Text](#)

*Department of Surgery*

Stem cells are a long-lived population of small round cells possessing two remarkable and distinct characteristics, immortality and pluripotency. These two characteristic properties are inherent in "stemness": (1) immortality is the capacity for indefinite self-renewal, which is duplication or regeneration without the loss of developmental potential, and (2) pluripotency is the ability to differentiate into all the tissues of the adult body. So stem cells can replicate via mitotic division while retaining their undifferentiated state or differentiate into lineage-specific cells. The promise of stem cells now spans a multitude of fields with therapeutic applications for numerous diseases. Major areas of applications include reversal of target organ injury, reversal of senescence for end organ disease, targeting the cancer stem cell to reverse chemoresistance, and corrections for genetic and birth defects.

Forman MJ, Conger EA, Priziola JL, Hoffman JL, Koerber JM, Saboo SA, Dezia AL, Pillen HA and **Smythe MA** (2014). "Characteristics of patients who experience major bleeding while taking warfarin or dabigatran in clinical practice." American Journal of Hematology 89(6): E62.

[Full-Text](#)

*Department of Biomedical Sciences (BHS)*

**Franklin BA**, Durstine JL, Roberts CK and Barnard RJ (2014). "Impact of diet and exercise on lipid management in the modern era." Best Practice and Research: Clinical Endocrinology and Metabolism 28(3): 405-421.

[Request Form](#)

*Department of Internal Medicine*

Unfortunately, many patients as well as the medical community, continue to rely on coronary revascularization procedures and cardioprotective medications as a first-line strategy to stabilize or favorably modify established risk factors and the course of coronary artery disease. However, these therapies do not address the root of the problem, that is, the most proximal risk factors for heart disease, including unhealthy dietary practices, physical inactivity, and cigarette smoking. We argue that more emphasis must be placed on novel approaches to embrace current primary and secondary prevention guidelines, which requires attacking conventional risk factors and their underlying environmental causes. The impact of lifestyle on the risk of cardiovascular disease has been well established in clinical trials, but these results are often overlooked and underemphasized. Considerable data also strongly support the role of lifestyle intervention to improve glucose and insulin homeostasis, as well as physical inactivity and/or low aerobic fitness. Accordingly, intensive diet and exercise interventions can be highly effective in facilitating coronary risk reduction,

complementing and enhancing medications, and in some instances, even outperforming drug therapy. © 2013 Elsevier Ltd. All rights reserved.

**Grunberger G** (2014). "Insulin analogs-are they worth it? Yes!" Diabetes Care 37(6): 1767-1770.

[Full-Text](#)

*Department of Internal Medicine*

Gupta S and **Barnes M** (2014). "Severe postpartum symptomatic hyponatremia due to DDAVP." American Journal of Kidney Diseases 63(5): A52.

[Full-Text](#)

*Department of Internal Medicine*

DDAVP or desmopressin is an antidiuretic hormone analogue that is widely used to treat central diabetes insipidus, hemophilia, von Willebrand's disease and nocturnal enuresis. DDAVP induced hyponatremia has been well described. We present a case of severe symptomatic hyponatremia secondary to incorrect dosing of DDAVP following pregnancy. A twenty two year old female presented to the emergency room with complaints of nausea, vomiting and lightheadedness. The patient denied any history of trauma, headache, vision changes, abdominal pain or diarrhea. Her past medical history was significant for histiocytosis X involving the pituitary gland causing central diabetes insipidus, diagnosed at age three. She had a spontaneous vaginal delivery of a normal healthy child ten days prior to admission following an uneventful pregnancy. In the triage bay, she had a seizure and was noted to have severe hyponatremia with sodium of 109. CT scan of the head, thyroid stimulating hormone, serum cortisol, magnesium, B12 and ionized calcium were normal. Further questioning revealed that when she became pregnant her DDAVP dose was doubled which she apparently continued to take postpartum. In addition she had increased her fluid intake due to feeling dehydrated. DDAVP doses often need to be increased during pregnancy secondary to increased production of vasopressinase by the placenta. This case emphasizes the importance of close monitoring and correct dosing of desmopressin. It also highlights the importance of educating the patient and physicians about the need for free water restriction to avoid such life threatening adverse events.

**Haines DE**, Harks E, Belt H, Deladi S, Shan C, Stoffregen W, Rankin D, Cockayne D, Cefalu J and Wright M (2014). "Rate of lesion growth determined by real time intra-tissue visualization in vivo." Heart Rhythm 11(5): S464.

[Full-Text](#)

*Department of Internal Medicine*

Introduction: In vitro, RF lesions appear to grow monoexponentially with reproducible kinetics, but the time course of lesion growth in vivo is unknown. Methods: Eight canines underwent catheter ablation of all 4 chambers using a novel irrigated tip radiofrequency catheter with embedded ultrasound transducers. Ablation was performed at 25 - 50 Watt and irrigation rate of 2 - 8 mL per minute. Lesion growth was monitored in real time and recorded. Lesions were examined histologically. The lesion edge was plotted graphically, and best curve fits using monoexponential and polynomial functions were performed. Results: A total of 74 atrial and 56 ventricular ablations were analyzed. The halftime of lesion growth ( $T_{1/2}$ ) ranged from 0.5 to 16.5 sec, indicating that time to steady state would range from 2.5 to >80 sec. The mean  $T_{1/2}$  was 2.9 (plus or minus) 1.7 sec for atrial and 6.8 (plus or minus) 3.9 sec for ventricular lesions ( $p < 0.0001$ ). Positive correlation between  $T_{1/2}$  and ablation power ( $p < 0.0001$ ,  $r = 0.55$ ), and maximum lesion depth ( $p < 0.0001$ ,  $r = 0.43$ ) were observed. Greater infusion rate resulted in longer  $T_{1/2}$  ( $p = 0.018$ ,  $r = 0.23$ ). Conclusions: The halftime of lesion growth for RF catheter ablation in vivo increases with increasing power, irrigation rate and lesion size, due to a greater depth of volume heating. Steady-state lesion formation was reached in a majority of lesions within 60 seconds, and averaged 15 sec for atrial ablations, but variability was great. Without lesion visualization, it is difficult to predict when maximum lesion size has been achieved based on conventional parameters.

**Haines DE, Strunk A and Novichenok A** (2014). "Effect of material conductivity on passive convective cooling during duty cycled phased radio frequency (RF) catheter ablation." Heart Rhythm 11(5): S134-S135.

[Full-Text](#)

*Department of Internal Medicine*

Introduction: During RF catheter ablation, tissue heating is opposed by convective cooling from the circulating blood flow. This allows for higher power to be delivered, without excessive surface heating, resulting in deeper penetration of volume heating. Metals with differing thermal conductivities may have impact on the magnitude of passive convective cooling. Methods: RF ablations using a linear array of four 3-mm platinum (Pt) electrodes (n=228) were compared to a similar array with gold electrodes (n=244). RF was delivered using temperature (temp) feedback power control (target 60 C), in a blended bipolar:unipolar mode (2:1 and 4:1), with constant electrode-tissue contact force to exposed porcine thigh muscle superfused with heparinized blood at varying flow rates. Electrode temperature differential between the electrode blood interface and the tissue interface were recorded in a subset of 256 lesions. Results: Mean lesion depth was 3.9 mm in the 2:1 and 3.5 mm in the 4:1 modes (p=0.000). The temp differences between tissue and blood thermocouples was 2.4(plus or minus)1.3 C with Au versus 11.8(plus or minus)6.5 with Pt (p=0.000). More efficient passive cooling at all flow rates with Au vs. Pt resulted in a lower mean electrode temp (55.9(plus or minus)5.2 C vs. 58.2(plus or minus)2.8 C, p=0.000) and a higher percentage of ablations reaching max power before target temp was reached (39.8% vs. 22.8%, p=0.000). As a consequence, mean power was higher with gold (6.5+2.1 vs. 5.5+2.3 W, p=0.000), and lesion depth was greater (3.9(plus or minus)0.8 mm vs. 3.5(plus or minus)1.0 mm, p=0.000). Power limited lesions showed no difference in lesion depth with Au vs. Pt. Conclusions: Extensive in vitro testing confirms that passive convective cooling during duty cycled phased RF ablation is more efficient with Au vs. Pt electrodes, particularly when ablations are temperature limited. Temperatures around gold electrodes are more uniform than around Pt. Using temperature feedback power control, deeper lesions can be achieved using gold electrodes.

**Hanson I, Dixon S and Goldstein J** (2014). "Assessing coronary target lesion length: The Goldilocks approach." Future Cardiology 10(2): 179-182.

[Request Form](#)

*Department of Internal Medicine*

**Hartshorn JA, Le J, McElreath K, Sawyer KN, Swor RA and Clark CA** (2014). "Disposition and treatment of recent-onset atrial fibrillation in a US emergency department." Academic Emergency Medicine 21(5): S266.

[Full-Text](#)

*OUWB Medical Student Author*

*Department of Emergency Medicine*

Background: A body of knowledge has evolved for aggressive emergency treatment of recent-onset atrial fibrillation (AF) with discharge for subsequent outpatient management. Most of this literature is outside of the US, with scant literature describing US ED physician practices. Objectives: Our objective in this study was to describe emergency management and disposition of recent-onset AF in a large US academic ED. Methods: We performed a retrospective review of patients presenting to a large, academic community ED in 2011 diagnosed AF. A structured chart review was performed to abstract the treating clinician's determination of whether onset of AF was <48 hours (recentonset). Data elements including demographics, ED treatment, rate of successful cardioversion (spontaneous, pharmacological, or electrical), and disposition were collected. We stratified physician management of patients at risk for stroke and anticoagulation-related hemorrhage by calculating CHA2DS2-VASc (CHADV) and HAS-BLED scores. Chisquare tests and odds ratios were calculated. Results: Of 916 patients with ED discharge diagnoses of AF, we identified 200 patients with recent-onset AF (46% female, average age 65.3 +/-15.8). Most (162, 81.0%) patients were admitted or observed and a minority (41, 20.5%) were discharged after ED treatment. Successful cardioversion occurred in 97 patients (49%). A majority (127, 63.5%) had significant risk factors for stroke (CHADV >2), and a minority (42, 21%) had HAS-BLED scores > 3. Patients who were successfully cardioverted in the ED were far more likely to be discharged (34.3% vs. 6.9%, OR =7.0, 95%CI 2.9, 16.8), although the majority of those patients were still admitted (63, 65.0%). A majority of patients at low risk for stroke (CHADV scores < 2) (47,

64.3%) were admitted. Conclusion: Compared to non-US studies, this institution admitted a large percentage of recent-onset AF patients, with a majority of lowrisk patients being admitted. Further work is needed to understand the variation of recent-onset AF management between US and non-US physicians and to develop cost-effective best practices. (Table Presented).

Honda M, Yoshimura N, Kawamoto B, Kobayashi N, Hikita K, Muraoka K, Saito M, Sejima T, **Chancellor MB** and Takenaka A (2014). "Effects of sensory neuron-specific receptor agonist on bladder function in a rat model of cystitis induced by cyclophosphamide." International Urology and Nephrology. ePub Ahead of Print.

[Full-Text](#)

*Department of Urology*

Purpose To investigate the effects of activation of sensory neuron-specific receptors (SNSRs) on cyclophosphamide (CYP) bladder overactivity in rats. Methods Female Sprague-Dawley rats (235-258 g) were used. Rats were injected with either CYP (200 mg/kg, intraperitoneally) or saline (control). Continuous cystometrograms (0.04 ml/min) were recorded 48 h after CYP or saline injection under urethane anesthesia. After stable micturition cycles were established, a selective rat SNSR1 agonist, bovine adrenal medulla 8-22 (BAM8-22), was administered intravenously or intrathecally. Results Cyclophosphamide treatment-induced higher baseline pressure and shorter intercontraction intervals compared with the control group. Intravenous administration of BAM8-22 at 10, 30 and 100 µg/kg significantly increased intercontraction intervals in the CYP-treated group. Intrathecal administration of BAM8-22 at 0.03, 0.1 and 0.3 µg also significantly increased intercontraction intervals in the CYP-treated group. Intravenous or intrathecal administration of BAM8-22 did not change baseline pressure or maximum voiding pressure in the CYP-treated group. Conclusions These findings indicate that activation of SNSRs can suppress CYP-induced bladder overactivity, probably due to suppression of bladder afferent activity. © 2014 Springer Science+Business Media Dordrecht.

Hsu ICJ, Yamada Y, Assimos DG, D'Amico AV, Davis BJ, Frank SJ, Gottschalk AR, **Gustafson GS**, McLaughlin PW, Nguyen PL, Rosenthal SA, Taira AV, Vapiwala N and Merrick G (2014). "Response to Drs. Rogers, Hayes, and Demanes." Brachytherapy. ePub Ahead of Print.

[Full-Text](#)

*Department of Radiation Oncology*

**Huang J**, Baschnagel AM, **Chen P**, **Gustafson G**, **Jaiyesmi I**, Folbe M, Ye H, **Akervall J** and **Krauss D** (2014). "A matched-pair comparison of intensity-modulated radiation therapy with cetuximab versus intensity-modulated radiation therapy with platinum-based chemotherapy for locally advanced head neck cancer." International Journal of Clinical Oncology 19(2): 240-246.

[Full-Text](#)

*Department of Pathology*

*Department of Radiation Oncology*

*Department of Internal Medicine*

*Department of Biomedical Sciences (BHS)*

Purpose: We retrospectively compared the efficacy of intensity-modulated radiotherapy (IMRT) and cetuximab (IMRT/cetuximab) versus IMRT and platinum-based chemotherapy (IMRT/platinum) for locally advanced head neck squamous cell carcinoma (LAHNSCC). Methods: Thirty-one IMRT/cetuximab patients were matched 1:2 with 62 IMRT/platinum patients according to primary site and clinical stage. The primary endpoint was locoregional recurrence (LRR), and secondary endpoints included distant metastasis (DM), cause-specific survival (CSS), and overall survival (OS). Results: Because of inherent selection bias, the IMRT/cetuximab cohort was significantly older and with a higher Charlson Comorbidity Index. IMRT/cetuximab and IMRT/platinum did not have significantly different LRR and DM (33 vs. 23 % at 2 years,  $P = 0.22$ ; 17 vs. 11 % at 2 years,  $P = 0.40$ ; respectively). IMRT/cetuximab had significantly worse CSS and OS (67 vs. 84 %,  $P = 0.04$ ; 58 vs. 83 %,  $P = 0.001$ ; respectively). However, for the subset of elderly patients  $\geq 65$  years old, there is no difference between the two cohorts for all endpoints (all  $P = NS$ ). Conclusion: IMRT/platinum should remain the preferred choice of chemoradiotherapy for LAHNSCC, but IMRT/cetuximab may be a reasonable alternative for elderly patients.

**Huang J**, Chunta JL, **Amin M**, **Lee DY**, **Grills IS**, **Oliver Wong CY**, **Marples B**, **Yan D** and **Wilson GD** (2014). "Early treatment response monitoring using 2-deoxy-2-[18F]fluoro-D-glucose positron emission tomography imaging during fractionated radiotherapy of head neck cancer xenografts." BioMed Research International 2014: Article Number 598052.

[Request Form](#)

*Department of Pathology*

*Department of Internal Medicine*

*Department of Radiation Oncology*

*Department of Diagnostic Radiology and Molecular Imaging*

Background. To determine the optimal timing and analytic method of 2-deoxy-2-[18F]fluoro-D-glucose positron emission tomography (PET) imaging during fractionated radiotherapy (RT) to predict tumor control. Methods. Ten head neck squamous cell carcinoma xenografts derived from the UT-14-SCC cell line were irradiated with 50 Gy at 2 Gy per day over 5 weeks. Dynamic PET scans were acquired over 70 minutes at baseline (week 0) and weekly for seven weeks. PET data were analyzed using standard uptake value (SUV), retention index (RI), sensitivity factor (SF), and kinetic index (Ki). Results. Four xenografts had local failure (LF) and 6 had local control. Eighty scans from week 0 to week 7 were analyzed. RI and SF after 10 Gy appeared to be the optimal predictors for LF. In contrast, SUV and Ki during RT were not significant predictors for LF. Conclusion. RI and SF of PET obtained after the first week of fractionated RT were the optimal methods and timing to predict tumor control. © 2014 Jiayi Huang et al.

**Hussein IH**, Zgheib Z, Zeenny MN, Chams S, Assi TB, Chams N and Jurjus A (2014). "Epigallocatechin-3-gallate reduces mast cells activity TNF-(alpha) and NFKB in colitis by interrupting an inflammatory cascade." Journal of Immunology 192(1): 68.11.

[Full-Text](#)

*Department of Biomedical Sciences (OU)*

There is increasing evidence that (-)-epigallocatechin-3-gallate (EGCG) inhibits carcinogenesis and inflammation among other properties. However, its mechanism is not fully elucidated. To investigate the mechanism of action of EGCG in improving experimental colitis. 35 male Sprague-Dawley rats were randomly divided into 4 groups: Normal control group (n=5), EGCG group (n=9), TNBS group (n=9), and TNBS+EGCG group (n=12). For both, TNBS treated group and EGCG group, 1 mg/Kg EGCG was administered daily by intraperitoneal injection, starting one week before the induction. At days 3, 10 and 17, rats were sacrificed and the descending colon was collected. The score of histological alterations of the colonic mucosa was evaluated. The mast cells were assessed by toluidine blue staining. The mRNA expression of Tumor Necrosis Factor-(alpha) (TNF-(alpha)), and nuclear factor (NF-KB) was measured and ROS was tested by immunofluorescence. EGCG decreased significantly the erosions and the inflammatory cellular infiltration of the mucosa and submucosa. In addition, the mast cells were markedly reduced in number and degranulation. The increased levels NF-KB and TNF-(alpha) after TNBS administration were significantly and concurrently reduced in colonic scrapings after EGCG treatment at all the time points and did ROS. EGCG probably prevented the transcription of inflammatory genes by stabilizing mast cells and reducing its secretory pro-inflammatory factors such as TNF-(alpha).

James M, Harks E, Belt H, Zuo F, Brink R, Stoffregen W, Rankin D, Cockayne D, Cefalu J and **Haines DE** (2014). "Significant tissue expansion occurs after a single RF ablation lesion: Direct visualization of acute swelling using an intra-tissue visualization & ablation system." Heart Rhythm 11(5): S24.

[Full-Text](#)

*Department of Internal Medicine*

Introduction: Edema formation is postulated to be a significant factor for inadequate lesion formation. The timecourse of edema formation has not been measured in vivo. Methods: 74 atrial lesions were created in a canine model (n=6) using a novel 8Fr RF ablation catheter with 4 ultrasound transducers embedded in the ablation tip. When stable contact was seen using the integrated ultrasound, RF was delivered. Power (25-50W) and irrigation (2-8ml/min) were titrated to lesion formation using the integrated US. Lesion growth

and tissue depth were monitored in real time with ultrasound. Tissue depth on ultrasound was assessed by two blinded observers before and immediately after ablation and compared to acute pathology that was assessed independently. The effect of temperature on thermal tissue expansion was assessed in an ex-vivo setting with porcine myocardium (n=4), without blood perfusion, and a hard reflector to control for the speed of sound. Results: Minimal tissue expansion was observed ex-vivo across a range of temperatures (25(degrees)-55(degrees) C), with a maximum of 11% at 55(degrees) C compared to baseline at 37(degrees) C. With the hard reflector, which does not expand, there was a change of 3%. In comparison, in vivo there was significant tissue expansion for all locations in the atria compared to baseline: CTI 44.5(plus or minus)24.9% p<0.0001, Posterior right atrium 44.2(plus or minus)28.6% p<0.0001, PV ostia 26.1(plus or minus)24% p<0.001, mitral valve annulus 20.1(plus or minus)22.2% p<0.01, and right atrial appendage +26.1(plus or minus)18.6% p<0.001 Conclusions: RF ablation results in rapid and significant tissue expansion in vivo in the atria after a single lesion. This can be visualized during ablation using a RF catheter with integrated ultrasound. (Figure Presented).

Jankowski R, Werner S, Snyder S, **Chancellor M**, Kultgen P and Pruchnic R (2014). "Cell therapy for treatment of stress urinary incontinence in women: potential dose effect of autologous muscle-derived cells for urinary sphincter repair (AMDC-USR)." Cytotherapy 16(4): S91.

[Full-Text](#)

*Department of Urology*

Jennings P, Dekelbab B, **Truding R** and Jennings M (2014). "Thyroxine malabsorption in pediatric patient with helicobacter pylori infection autoimmune gastritis." Journal of Pediatric Nursing-Nursing Care of Children & Families 29(3): 293-294.

[Full-Text](#)

*Department of Pediatrics*

Jones CMC, Fisher SG, Lerner EB, Seplaki CL, Veazie PJ, Cushman JT, **Swor RA**, Brasel KJ, Tarima SA, Blatt AJ, Wasserman EB, Guse C, Jurkovich GJ and Shah MN (2014). "The ability of the field triage decision scheme to identify high-risk older adults who need trauma center resources." Academic Emergency Medicine 21(5): S314.

[Full-Text](#)

*Department of Emergency Medicine*

Background: Field triage of older adults is complex due to multiple comorbidities, high-risk medication use, and increased risk of severe injury from low-energy mechanisms. Previously conducted trauma registry-based studies have shown that older adults are more likely to be under-triaged by EMS. Objectives: To compare the classification accuracy of the 2006 ACSCOT/ CDC Field Triage Decision Scheme (FTDS) among older and younger adults using prospective data from a large multi-center cohort of injured EMS patients. Methods: To determine if patients met the FTDS criteria, an interview-based survey was conducted with each patient's EMS provider to collect information about the patient's vital signs, anatomic injuries, and mechanism of injury. A detailed in-hospital medical record review was performed to determine trauma center need, which was defined as in-hospital mortality, ICU admission, and/or emergent nonorthopedic surgery. Age was categorized into three strata: < 55, 55-69, and (greater-than or equal to) 70 years. For each age strata classification accuracy was determined by calculating sensitivity, specificity, under- and over-triage, and corresponding 95% confidence intervals. A Cochran-Armitage test of linear trend was used to determine if there was a statistically significant linear association with age and classification estimates. Results: There were 11,815 subjects available for analysis; 11% needed trauma center resources by the gold standard measure. There was a statistically significant linear trend in measures of classification (p<0.0001). As age increased, sensitivity of the FTDS decreased (79.4%, 63.6%, and 51.9% for ages <55, 55-69, and (greater-than or equal to)70 years, respectively). As age increased, specificity of the FTDS increased (74.3%, 80.9%, and 85.6% for ages <55, 55-69, and (greater-than or equal to)70 years, respectively). This corresponds to under-triage of 20.6%, 36.4%, and 48.1% and overtriage of 25.7%, 19.1%, and 14.4% for subjects aged <55, 55-69, and (greater-than or equal to)70 years, respectively. Conclusion: The 2006 FTDS inadequately identifies older adults who require trauma center care. Compared to younger patients, the FTDS had

comparatively lower sensitivity and higher under-triage among older adults. It is important to note that the FTDS did not perform at the level recommended by the ACS-COT (<5% under-triage) for any of the three age strata.

Joseph S, **Brackney A** and **Bahl A** (2014). "A prospective review of survival rates of ultrasound guided peripheral intravenous catheters." Academic Emergency Medicine 21(5): S326.

[Full-Text](#)

*Department of Emergency Medicine*

Background: Patients with difficult IV access are some of the most challenging patients in the ED. Ultrasound guided peripheral IV placement is a viable alternative to the placement of central venous catheters (CVC) in patients with difficult IV access. However, some studies indicate that US-guided peripheral IVs have short life spans, limiting their utility in hospitalized patients. Objectives: We sought to determine the rates of survival of US-guided peripheral IVs placed by emergency physicians in our ED. Methods: This prospective, observational study was carried out in the ED of a tertiary care center. Emergency physicians were given a 1-hour training session on the placement of US-guided peripheral IVs. Difficult IV access patients were enrolled upon successful US-guided peripheral IV placement. Difficult IV access was determined if an ED nurse or technician was unable to place an IV in the traditional manner after multiple attempts. US-guided peripheral IVs were placed using a linear probe. Emergency physicians recorded vein and patient characteristics and US-guided IV life span was obtained using hospital electronic medical records. Results: Thirty-five US-guided IV were placed by emergency physicians. All were placed in the basilic, median cubital, or cephalic veins. Nineteen catheters were 20 gauge, 14 were 18 gauge, and 1 was 22 gauge. Thirty catheters were 1.88 inches long, 4 were 1.11 inches, and one was 1 inch. It took an average of 1.23 attempts to place each IV (SD 0.49). The average length of stay of each participant was 4.65 days (SD 2.92 days) and the average life span of the US-guided IV was 2.82 days (SD 1.66 days). US-guided IVs survived an average of 60.8% of length of stay (95% CI: 44.3-77.2%), and 55.9% lasted the entire participant hospitalization (95% CI: 39.2-72.6%). At our institution, a patient's IV site is evaluated to be changed at 3 days. 60.9% of participants with hospitalizations greater than 3 days (n=23) had US-guided IVs that survived 3 or more days (95%CI: 40.9-80.8%). After participants were admitted there was a 23.5% rate of CVC placement (95% CI: 9.3-37.8%), including PICC and central lines, and a complication rate of 11.8% (95% CI: 9.3-22.6%), all of which were infiltration. Conclusion: While previous studies have noted a high early fail rate of US-guided peripheral IVs, we determined that US-guided IVs placed in our ED have a rate of survival that spanned, on average, more than half of the patient's hospitalization and often the entire course of the patient's hospitalization. This makes them a viable IV access alternative to CVCs for patients with difficult IV access.

Kooiman J, Seth M, **Dixon S**, Wohns D, LaLonde T, Rao SV and Gurm HS (2014). "Response to letters regarding article, "Risk of acute kidney injury after percutaneous coronary interventions using radial versus femoral vascular access: Insights from the Blue Cross Blue Shield of Michigan Cardiovascular Consortium"." Circulation: Cardiovascular Interventions 7(3): 421.

[Full-Text](#)

*Department of Internal Medicine*

**Kowalenko T**, Gates D, Gillespie G and Succop P (2014). "Implementation of a comprehensive intervention to violence against health care workers in the emergency department." Academic Emergency Medicine 21(5): S306.

[Full-Text](#)

*Department of Emergency Medicine*

Background: Violence against emergency department (ED) healthcare workers is a growing problem and little research is focused on the effectiveness of intervention programs. Objectives: Test the effectiveness of a comprehensive intervention program to reduce the incidence of violence against ED workers. Methods: A quasi-experimental design was used with repeated measures. Three intervention EDs were compared to three controls. 213 participants completed monthly, and detailed violent event surveys over 18 months to measure event rates before and after implementation of the intervention. Descriptive statistics were used to describe events and ANOVA was used to test the study hypothesis that intervention sites would have a

significant reduction in violence compared to controls. Results: 86% (179) of participants were threatened or assaulted at least once during the 18 months. 1,333 events were reported on the monthly surveys: 346 (26%) physical assaults and 987 (74%) physical threats. The mean rate for 18 months was 1.66 for assaults and 4.72 for threats. There were 832 violent event surveys completed: 252 (30.3%) assaults and 580 (69.7%) threats. 96% (240) of the assaults and 86.3% (499) of the threats were committed by patients, with the remainder by visitors. The rates of assaults from pre- to post-intervention decreased in all six EDs ( $p < 0.01$ ). All but one of the control EDs also had decreases in threats from pre- to post-intervention. No individual control ED had a significant change in assaults or threats. The community-based intervention ED did demonstrate a significant ( $p < 0.05$ ) decrease in the rate of assaults (nearly 50%). The intervention trauma center ED had a significant decrease in threats ( $p = 0.02$ ). Conclusion: The comprehensive intervention program implemented did reduce physical assaults and physical threats in select locations, but did not result in a significant difference in violence overall. However, all the EDs had reductions in violence over the study period. This may have been due to increased awareness at all of the study hospitals (null Hawthorn effect). This study emphasizes that more research is necessary to develop intervention programs that will result in reduced violence against healthcare workers.

Kozminski MA, Palapattu GS, Mehra R, Montgomery JS, Weizer AZ, Skolarus TA, Hollenbeck BK, Miller DC, He C, Tomlins S, Montie JE, Feng FY, **Wood DP**, Kunju LP and Morgan TM (2014). "Understanding the relationship between tumor size, gland size, and disease aggressiveness in men with prostate cancer." *Urology*. ePub Ahead of Print.

[Full-Text](#)

*Department of Urology*

**OBJECTIVE:** To determine the relationship between prostate gland and tumor volume in men undergoing radical prostatectomy (RP) for prostate cancer. We hypothesized that larger tumors within smaller prostate glands are associated with more aggressive disease characteristics. **METHODS:** Records of patients undergoing RP from 2000-2008 at a single institution were reviewed retrospectively. The dominant nodule was considered to be the largest focus of cancer within the prostate, and the dominant nodule-to-prostate volume ratio (DNVR) was calculated according to the ratio of the dominant nodule volume to the gland weight. Cox regression was performed to assess the relationship between DNVR and both pathologic outcomes (Cancer of the Prostate Risk Assessment post-Surgical score) and biochemical recurrence (BCR). **RESULTS:** At a median follow-up of 3.7 years, 174 patients (7.2%) suffered BCR. There was no linear correlation between tumor volume and gland size ( $R = -0.09$ ). DNVR above the median ( $\geq 0.033$  cc/gm) was closely associated with high clinicopathologic risk as measured by Cancer of the Prostate Risk Assessment post-Surgical score (hazard ratio, 35.53; 95% confidence interval, 14.42-87.55 for high- vs low-risk groups). In the univariable analysis, both tumor diameter and DNVR were associated with increased risk of BCR. However, in the multivariable model, only tumor diameter remained a significant predictor of BCR (hazard ratio, 2.02; 95% confidence interval, 1.04-3.91). **CONCLUSION:** Increased DNVR appears to be a characteristic of aggressive prostate tumors, although it did not predict BCR in the present study. However, these data support the association between tumor diameter and BCR after RP for prostate cancer independent of other key clinicopathologic features.

Krishnamoorthi R, Manickam P and **Cappell MS** (2014). "Liver transplantation of hepatitis B surface antigen positive donors to hepatitis B core antibody recipients: Analysis of 27 patients." *Minerva Gastroenterologica e Dietologica* 60(2): 113-118.

[Request Form](#)

*Department of Internal Medicine*

**Aim.** Shortage of donor livers is the major limiting factor for liver transplantation (LT). While livers from patients with past infection of Hepatitis-B (HBcAb+) are commonly used as donors, scant data exists on outcomes following transplantation of HBsAg+ donor livers. The impact of donor HBsAg positivity on recipient survival is currently analyzed. **Methods.** Post hoc analysis of all adults undergoing LT from October 1987-September 2010 registered in United Network for Organ Sharing/Organ Procurement and Transplantation Network, a concurrent, limited access database of all American LT recipients. Only recipients who were HBcAb+ were analyzed. LTs with missing donor or recipient serologic parameters for Hepatitis-B

were excluded. Significant predictors of survival were determined by univariate analysis. Cox proportional hazards model was used to determine independent risk predictors in the multivariate analysis. Results. The population consisted of 13,329 LT recipients. The mean age of donors and recipients were 40±16 years and 52±9 years respectively. The mean follow-up was 3.7 years. Study population included 27 recipients transplanted with HBsAg+ grafts, of whom 7 (28%) died. Outcomes were adjusted for donor age, recipient age, donor gender, recipient gender, type of LT, MELD score, HCV status, previous LT, and cold ischemic time. On multivariate analysis, LT recipient outcomes were not significantly different for HBsAg+ donors versus donors without prior hepatitis B infection (HR: 1.14, 95% CI: 0.93-1.39, P=0.17). Kaplan-Meier curves revealed no significant survival difference between the two groups. Conclusion. These results suggest that donor HBsAg positivity did not affect overall survival of LT recipients. These findings could potentially expand the pool of liver donors.

Kuske RR, Kamrava M, **Chen P**, Hayes J, Anderson B, Quiet C, Wang PC, Veruttipong D, Snyder M and Demanes J (2014). "Interstitial multicatheter brachytherapy for select DCIS: A multi-institutional study." [Annals of Surgical Oncology](#) 21: 71-72.

[Full-Text](#)

*Department of Radiation Oncology*

Objective: To report outcomes for ductal carcinoma in situ (DCIS) treated with breast-conserving therapy using accelerated partial breast irradiation (APBI) with interstitial multicatheter brachytherapy by a cooperative group of institutions. APBI results with single-entry brachytherapy devices have been reported, and this is the first report with patients treated by interstitial brachytherapy. Methods: Five institutions with extensive experience in treating select breast cancers with interstitial brachytherapy contributed their experience to this retrospective clinical study. From March 1997 to August 2013, 147 patients with stage 0 breast cancer were treated with breast-conserving surgery and adjuvant APBI using interstitial multicatheter brachytherapy. Mean age was 55.6 +/- 8.9 years. All patients underwent surgical excision and received 34 Gy in 10 fractions over 5 days with high-dose-rate Iridium-192. Mean DCIS size was 0.9 +/- 0.75 cm (size unknown for 4 patients). Surgical margins were positive in 2 patients (1.4%), <2 mm in 18 (12%) and >= 2 mm in 65 (44%) of patients, negative but size of margin not specified in 61 (42%), and not known in 1(0.7%). ER/PR was 71/63% positive and 23% were sentinel node-negative. DCIS grade was 1 in 21%, 2 in 43%, 3 in 34% and not reported in 2% of patients. Thirty-eight percent of patients received endocrine therapy. Results: With a median follow-up of 33 months (range, 0.03-192 months), the overall and cause-specific survival rates were 99% and 100%, respectively. The 4-year actuarial risk of an ipsilateral breast tumor recurrence was 4%, with 2 IDC and 3 DCIS. The recurrences included 3 ipsilateral breast (elsewhere), 1 marginal miss, and 1 true recurrence. There was 1 regional nodal recurrence, and no distant recurrences. The median time to recurrence was 94 months (range, 66-97 months). For the 5 patients with local recurrence, the mean age was 53.8 years. ER-negative/positive was 2/3 and PR-negative/positive was 3/2. The DCIS size was 0.8-1.5 cm (mean, 1 cm). DCIS was grade 3 in 4 patients and grade 2 in 1 patient. The surgical margin was <2 mm in 1 patient and >2 mm in another. The absolute margin size was not reported in the other 3 patients. Two patients received hormone therapy and 2 did not (hormone use unreported in 1). All 5 local recurrence patients were salvaged with surgery and are locally/regionally controlled. Conclusion: This cooperative multi-institutional study is the largest published report of the outcomes of patients with DCIS treated by interstitial brachytherapy. This radiotherapy method to complete breast-conserving therapy for pure DCIS was associated with excellent local control and survival rates. APBI is an acceptable option for select women with DCIS with recurrence and survival rates that are similar to published outcomes of 6- to 7-week whole-breast irradiation outcomes or mastectomy.

**Lucia V, Joyce B and Farr A** (2014). "An integrated community health and behavioral health group project (Peer Reviewed)." MedEdPortal Publication No. 9698

[Full-Text](#)

*Department of Biomedical Sciences (OU)*

The activity presented allows for the integration of physician-patient and community perspectives of contemporary biopsychosocial issues. This group project provides opportunity for students to demonstrate

many sub-competencies related to interpersonal and communication skills and patient care, while being exposed to approaches for handling sensitive health-related topics that can be difficult for young medical professionals to discuss in general or directly with patients. It also encourages students to design community programs that address these contemporary topics. In addition, it provides opportunity for students to improve and utilize time-management and teamwork skills.

Lurie JD, Tosteson TD, Tosteson ANA, Zhao W, Morgan TS, Abdu WA, **Herkowitz H** and Weinstein JN (2014). "Surgical versus nonoperative treatment for lumbar disc herniation: Eight-year results for the spine patient outcomes research trial." *Spine* 39(1): 3-16.

[Full-Text](#)

*Department of Orthopedic Surgery*

STUDY DESIGN.: Concurrent prospective randomized and observational cohort studies. OBJECTIVE.: To assess the 8-year outcomes of surgery versus nonoperative care. SUMMARY OF BACKGROUND DATA.: Although randomized trials have demonstrated small short-term differences in favor of surgery, long-term outcomes comparing surgical with nonoperative treatment remain controversial. METHODS.: Surgical candidates with imaging-confirmed lumbar intervertebral disc herniation meeting Spine Patient Outcomes Research Trial eligibility criteria enrolled into prospective randomized (501 participants) and observational cohorts (743 participants) at 13 spine clinics in 11 US states. Interventions were standard open discectomy versus usual nonoperative care. Main outcome measures were changes from baseline in the SF-36 Bodily Pain and Physical Function scales and the modified Oswestry Disability Index-AAOS/Modems version assessed at 6 weeks, 3 months, and 6 months, and annually thereafter. RESULTS.: Advantages were seen for surgery in intent-to-treat analyses for the randomized cohort for all primary and secondary outcomes other than work status; however, with extensive nonadherence to treatment assignment (49% patients assigned to nonoperative therapy receiving surgery versus 60% of patients assigned to surgery) these observed effects were relatively small and not statistically significant for primary outcomes (bodily pain, physical function, Oswestry Disability Index). Importantly, the overall comparison of secondary outcomes was significantly greater with surgery in the intent-to-treat analysis (sciatica bothersomeness [P > 0.005], satisfaction with symptoms [P > 0.013], and self-rated improvement [P > 0.013]) in long-term follow-up. An as-treated analysis showed significant surgical treatment effects for primary outcome measures (mean change, surgery vs. nonoperative care; treatment effect; 95% confidence interval): bodily pain (45.3 vs. 34.4; 10.9; 7.7 to 14); PF (42.2 vs. 31.5; 10.6; 7.7 to 13.5); and Oswestry Disability Index (-36.2 vs. -24.8; -11.3; -13.6 to -9.1). CONCLUSION.: Carefully selected patients who underwent surgery for a lumbar disc herniation achieved greater improvement than nonoperatively treated patients; there was little to no degradation of outcomes in either group (operative and nonoperative) from 4 to 8 years. © 2013, Lippincott Williams & Wilkins.

Manickam P, Jaurigue M, **Batke M** and **Cappell MS** (2014). "Recurrent ischemic colitis associated with oral contraceptive therapy." *Journal of Digestive Diseases* 15(6): 331-333.

[Full-Text](#)

*Department of Internal Medicine*

Martin LM, **Marples B**, Lynch TH, Hollywood D and Marignol L (2014). "Erratum to exposure to low dose ionizing radiation: Molecular and clinical consequences [Cancer Lett 338 (2) (2013) 209-218]." *Cancer Letters* 349(1): 97.

[Full-Text](#)

*Department of Radiation Oncology*

**Menoch M**, Simon H, Hirsh D, Baxter A and Sturm J (2014). "Imaging rates (CT and ultrasound) for suspected appendicitis: Variation between two different practice models within a single health care system." *Academic Emergency Medicine* 21(5): S100.

[Full-Text](#)

*Department of Emergency Medicine*

Background: Little is known regarding the potential effect of different ED practice models on CT and ultrasound (US) use for suspected appendicitis in the ED, inpatient hospital stay, and return visits. Objectives:

Examine rates of CT and US utilization for suspected appendicitis at two different hospital structures: an academic affiliated tertiary pediatric ED with 24 hr in-house resident coverage for consult (site A), compared to a private practice tertiary care pediatric ED without residents for consult (site B). Methods: All visits with the ICD9 chief complaint of abdominal pain at two free-standing pediatric EDs were retrospectively examined from 5/1/09 - 2/21/2012. Suspected appendicitis visits were defined as any of these visits where a CBC was obtained. Excluded were patients transferred or with chronic diseases. Abdominal CT and US in the ED and during hospital admission, appendicitis rates, and 72-hr return visits were compared. Results: There were 402,573 total combined patient visits during the study period: 155,010 at site A, and 247,563 at site B. Excluding transfers and chronic patients, 7,964 visits were seen with chief complaints of abdominal pain with CBCs obtained: 2,211 at site A and 5,168 at site B. Of these visits in the ED, at site A had less CT use compared to site B (10.8% vs 28.1%,  $p = 0.001$ ) and more US use (16.6% vs 6.6%). Admission rates were significantly higher at site A (28.6% vs 10.8%). Mean age and triage acuity were similar. Appendicitis rates were 3%, the same at both sites. The odds of having a CT scan performed in the ED were significantly higher at site B (OR 3.19; 95% CI 2.74 - 3.71). For the admitted visits, the odds of having a CT were also greater at site B (OR 2.32; 95% CI 1.86 - 2.94). 72-hr ED returns were similar at each site (7%): site A had 11% CT rate and 20% at site B; US was 11% at site A and 8% site B. Admission rates were similar at 30% of these return visits. Conclusion: The academic site had less CT use, higher US use and admission. Practice model, availability of 24-hr-in-hospital resident consult, US use, or admission for observation may be significant factors in CT utilization. Since most children nationwide present to nonacademic EDs for care, reducing CT utilization for suspected appendicitis will require significant changes in clinical decision making on a broad scale.

**Mulhem E, Boyanton BL, Jr., Robinson-Dunn B, Ebert C and Dzebo R (2014).** "Performance of the affirm VP-III using residual vaginal discharge collected from the speculum to characterize vaginitis in symptomatic women." *Journal of Lower Genital Tract Disease*. ePub Ahead of Print.

[Full-Text](#)

*Department of Emergency Medicine*

*Department of Pathology*

*Department of Family Medicine*

**OBJECTIVE:** To evaluate the ability of collecting the Affirm VP-III test sample using the residual vaginal discharge found on the speculum. **METHODS AND METHODS:** One hundred nine symptomatic women ( $\geq 18$  y) participated in this study. During pelvic examination, vaginal fluid was collected onto 3 swabs for office-based diagnostic tests and Affirm (referred to as Affirm-R). A fourth swab was used to collect residual vaginal discharge from the speculum, followed by Affirm testing (referred to as Affirm-RVD). Sensitivity, specificity, and Cohen kappa agreement for office-based diagnostic tests and Affirm-RVD were determined against Affirm-R. **RESULTS:** Complete results were available for 99 samples. Cohen kappa agreement between Affirm-RVD and Affirm-R was 0.66 ( $p < .0001$ ) for *Gardnerella vaginalis*, 0.81 ( $p < .0001$ ) for *Candida* species, and 1.0 ( $p < .0001$ ) for *Trichomonas vaginalis*. Affirm-RVD sensitivity, specificity, and positive and negative predictive values were 73.8%, 91.2%, 86.1%, and 82.5% for *G. vaginalis*; 84.2%, 96.3%, 84.2%, and 96.3% for *Candida* species; and 100%, 100%, 100%, and 100% for *T. vaginalis*, respectively. Cohen kappa agreement between office-based diagnostic tests and Affirm-R was 0.16 ( $p = .141$ ) for *G. vaginalis*, 0.46 ( $p < .0001$ ) for *Candida* species, and 0.55 ( $p < .0001$ ) for *T. vaginalis*. **CONCLUSIONS:** The Affirm VP-III sample collected from the residual vaginal discharge found on the speculum after performing office-based diagnostic tests can produce comparable results to traditionally collected sample.

Nakazato R, Arsanjani R, Achenbach S, Gransar H, Cheng VY, Dunning A, Lin FY, Al-Mallah M, Budoff MJ, Callister TQ, Chang HJ, Cademartiri F, **Chinnaiyan K**, Chow BJW, Delago A, Hadamitzky M, Hausleiter J, Kaufmann P, **Raff G**, Shaw LJ, Villines T, Cury RC, Feuchtnr G, Kim YJ, Leipsic J, Berman DS and Min JK (2014). "Age-related risk of major adverse cardiac event risk and coronary artery disease extent and severity by coronary CT angiography: Results from 15 187 patients from the international multisite CONFIRM study." European Heart Journal Cardiovascular Imaging 15(5): 586-594.

[Full-Text](#)

*Department of Internal Medicine*

Aims Prior studies evaluating the prognostic utility of cardiac CT angiography (CCTA) have been largely constrained to an all-cause mortality endpoint, with other cardiac endpoints generally not reported. To this end, we sought to determine the relationship of extent and severity of coronary artery disease (CAD) by CCTA to risk of incident major adverse cardiac events (MACEs) (defined as death, myocardial infarction, and late revascularization). Methods and results We identified subjects without prior known CAD who underwent CCTA and were followed for MACE. CAD by CCTA was defined as none (0% luminal stenosis), mild (1-49% luminal stenosis), moderate (50-69% luminal stenosis), or severe ( $\geq 70\%$  luminal stenosis), and  $\geq 50\%$  luminal stenosis was considered as obstructive. CAD severity was judged on per-patient, per-vessel, and per-segment basis. Time to MACE was estimated using univariable and multivariable Cox proportional hazards models. Among 15 187 patients ( $57 \pm 12$  years, 55% male), 595 MACE events (3.9%) occurred at a  $2.4 \pm 1.2$  year follow-up. In multivariable analyses, an increased risk of MACE was observed for both non-obstructive [hazard ratio (HR) 2.43,  $P < 0.001$ ] and obstructive CAD (HR: 11.21,  $P < 0.001$ ) when compared with patients with normal CCTA. Risk-adjusted MACE increased in a dose-response relationship based on the number of vessels with obstructive CAD  $\geq 50\%$ , with increasing hazards observed for non-obstructive (HR: 2.54,  $P < 0.001$ ), obstructive one-vessel (HR: 9.15,  $P < 0.001$ ), two-vessel (HR: 15.00,  $P < 0.001$ ), or three-vessel or left main (HR: 24.53,  $P < 0.001$ ) CAD. Among patients stratified by age  $< 65$  vs.  $\geq 65$  years, older individuals experienced higher risk-adjusted hazards for MACE for non-obstructive, one-, and two-vessel, with similar event rates for three-vessel or left main ( $P < 0.001$  for all) compared with normal individuals age  $< 65$ . Finally, there was a dose relationship of CAD findings by CCTA and MACE event rates with each advancing decade of life. Conclusion Among individuals without known CAD, non-obstructive, and obstructive CAD are associated with higher MACE rates, with different risk profiles based on age. © 2014 Published on behalf of the European Society of Cardiology. All rights reserved.

Nirmal J, Wolf-Johnston AS, **Chancellor MB**, **Tyagi P**, Anthony M, Kaufman J and Birder LA (2014). "Liposomal inhibition of acrolein-induced injury in rat cultured urothelial cells." International Urology and Nephrology. ePub Ahead of Print.

[Full-Text](#)

*Department of Urology*

Purpose To study the protection offered by empty liposomes (LPs) alone against acrolein-induced changes in urothelial cell viability and explored uptake of LPs by primary (rat) urothelial cells. Methods Acrolein was used as a means to induce cellular damage and reduce urothelial cellular viability. The effect of acrolein or liposomal treatment on cellular proliferation was studied using 5-bromo-2'-deoxy-uridine assay. Cytokine release was measured after urothelial cells were exposed to acrolein. Temperature-dependent uptake study was carried out for fluorescent-labeled LPs using confocal microscopy. Results Liposome pretreatment protected against acrolein-induced decrease in urothelial cell proliferation. LPs also significantly affected the acrolein-induced cytokine (interferon-gamma) release offering protection to the urothelial cells against acrolein damage. We also observed a temperature-dependent urothelial uptake of fluorescent-labeled LPs occurred at  $37^\circ\text{C}$  (but not at  $4^\circ\text{C}$ ). Conclusions Empty LPs alone provide a therapeutic efficacy against acrolein-induced changes in urothelial cell viability and may be a promising local therapy for bladder diseases. Hence, our preliminary evidence provides support for liposome-therapy for urothelial protection and possible repair. © 2014 Springer Science+Business Media Dordrecht.

**Nojkov B**, Onea M and **Cappell MS** (2014). "Random colonic mucosal biopsies during colonoscopy performed for chronic diarrhea: Differences in practice patterns between gastroenterologists and surgeons in a study of 300 patients." *American Journal of Gastroenterology* 109(5): 776-777.

[Request Form](#)

*Department of Internal Medicine*

Oakley S, **Estanol MV**, Westermann L, Ghodsi V, Fellner A, Crisp CC, Kleeman SD and Pauls RN (2014). "Caregiver burden following urogynecologic surgery in geriatric patients: A prospective cohort." *Journal of Minimally Invasive Gynecology* 21(2): S39.

[Full-Text](#)

*Department of Obstetrics and Gynecology*

Objectives: Despite the growing volume of geriatric patients and their utilization of healthcare resources in the United States, little is known regarding level of burden on their caregivers in surgical subspecialties. Our aim was to characterize this burden following urogynecologic surgery. Materials and Methods: This IRB-approved, prospective cohort study consented female patients aged 65 years or older, undergoing inpatient pelvic floor reconstruction, and their primary caregivers who anticipated providing 50% or more of their postoperative care. All participants answered questionnaires regarding demographics and expected responsibilities following surgery. Patients were administered the Short Form Health Survey-12 (SF-12) at baseline, and at 2 and 6 weeks postoperatively. Caregivers were administered the SF-12, Zarit Burden Inventory (ZBI), and Caregiver Burden Inventory (CBI) at the same intervals. Results: Fifty patients and their caregivers have been enrolled in this study; preliminary data is available on 29 pairs. There was a significant difference in mean (SD) age, 73.9 (5.2) patient vs. 63.7 (12.2) caregiver ( $p = 0.001$ ), and baseline SF-12 physical composite score (PCS), with caregivers reporting better overall health ( $p = 0.002$ ). The majority of caregivers was white (96.6%), male (65.5%), non-smokers (51.7%), and reported an annual income over \$33,500. Seventeen spouses (58.6%), 11 children (37.9%), and 1 parent (3.4%) reported being caregivers during the postoperative period. While 65.5% of caregivers lived with the patient before surgery, 41.4% of patients still considered their caregivers' schedule in timing their procedure. Regarding questionnaires, SF-12 PCS decreased in patients and their caregivers at 2 weeks following surgery ( $p < 0.001$ ) with a return to baseline at 6 weeks ( $p = 0.001$ ). Reflecting an inverse pattern, for caregivers median ZBI increased from 6 to 10 ( $p = 0.001$ ) and CBI from 3 to 7 ( $p = 0.001$ ) at 2 weeks following surgery, suggesting a greater burden on them at that time. Similarly, the patients reported sense of burden they imposed on their caregiver at 2 weeks correlated positively with the caregiver's perception of this (ZBI question 22;  $r = 0.53$ ,  $p = 0.005$ ). Greatest impact to caregiver was noted in questions assessing "less personal time" ( $p = 0.008$ ), "co-dependency" ( $p = 0.017$ ), and "emotional strain" ( $p = 0.025$ ). Nevertheless, caregivers described feeling they "could be doing more" for the patient at 2 weeks ( $p = 0.049$ ). Notwithstanding, improvements were noted by 6 weeks in median ZBI (6;  $p = 0.047$ ) and CBI scores (4;  $p = 0.002$ ) indicating resolution of these constraints. Among caregivers, there were no associations noted between total ZBI or CBI and demographics such as gender, income, or relationship to patient. Conclusion: Caregivers for geriatric urogynecologic surgery patients report diminished physical health and increased burden at 2 weeks postoperatively, with a return to baseline by 6 weeks. Caregivers should be counseled about the anticipated burdens they may experience in the short term and be assured that these are likely to resolve during the postoperative period.

O'Connell MJ, Colangelo LH, Beart RW, Petrelli NJ, Allegra CJ, Sharif S, Pitot HC, Shields AF, Landry JC, Ryan DP, Parda DS, Mohiuddin M, Arora A, Evans LS, Bahary N, Soori GS, Eakle J, **Robertson JM**, Moore DF, Jr., Mullane MR, Marchello BT, Ward PJ, Wozniak TF, Roh MS, Yothers G and Wolmark N (2014). "Capecitabine and oxaliplatin in the preoperative multimodality treatment of rectal cancer: Surgical end points from National Surgical Adjuvant Breast and Bowel Project Trial R-04." *Journal of Clinical Oncology* 32(18): 1927-1934.

[Request Form](#)

*Department of Radiation Oncology*

PURPOSE: The optimal chemotherapy regimen administered concurrently with preoperative radiation therapy (RT) for patients with rectal cancer is unknown. National Surgical Adjuvant Breast and Bowel Project trial R-04 compared four chemotherapy regimens administered concomitantly with RT. PATIENTS AND

**METHODS:** Patients with clinical stage II or III rectal cancer who were undergoing preoperative RT (45 Gy in 25 fractions over 5 weeks plus a boost of 5.4 Gy to 10.8 Gy in three to six daily fractions) were randomly assigned to one of the following chemotherapy regimens: continuous intravenous infusional fluorouracil (CVI FU; 225 mg/m<sup>2</sup>, 5 days per week), with or without intravenous oxaliplatin (50 mg/m<sup>2</sup>) once per week for 5 weeks or oral capecitabine (825 mg/m<sup>2</sup>) twice per day, 5 days per week, with or without oxaliplatin (50 mg/m<sup>2</sup>) once per week for 5 weeks). Before random assignment, the surgeon indicated whether the patient was eligible for sphincter-sparing surgery based on clinical staging. The surgical end points were complete pathologic response (pCR), sphincter-sparing surgery, and surgical downstaging (conversion to sphincter-sparing surgery). **RESULTS:** From September 2004 to August 2010, 1,608 patients were randomly assigned. No significant differences in the rates of pCR, sphincter-sparing surgery, or surgical downstaging were identified between the CVI FU and capecitabine regimens or between the two regimens with or without oxaliplatin. Patients treated with oxaliplatin experienced significantly more grade 3 or 4 diarrhea (P < .001). **CONCLUSION:** Administering capecitabine with preoperative RT achieved similar rates of pCR, sphincter-sparing surgery, and surgical downstaging compared with CVI FU. Adding oxaliplatin did not improve surgical outcomes but added significant toxicity. The definitive analysis of local tumor control, disease-free survival, and overall survival will be performed when the protocol-specified number of events has occurred.

**Ogunyemi D**, Mehta S, Turner A, Kim D and Alexander C (2014). "Emotional intelligence characteristics in a cohort of faculty, residents, and medical students." *Journal of Reproductive Medicine* 59(5-6): 279-284.

[Request Form](#)

*Department of Obstetrics and Gynecology*

**OBJECTIVE:** To assess emotional intelligence (EQ) and the construct validity of the EQ Appraisal survey among academic faculty, residents, and medical students. **STUDY DESIGN:** From 2007 to 2011, 155 medical education personnel participated in 4 self-administered surveys. The EQ Appraisal survey measures Self-Awareness, Self-Management, Social Awareness, and Relationship Management. The DISC survey defines 4 personality domains: Dominance, Influence, Steadiness/Submissiveness, and Conscientious/Compliance. The Thomas-Kilmann Conflict Instrument defines 5 conflict styles: Competing, Collaborating, Compromising, Accommodating, and Avoiding. The Interpersonal Influence Inventory categorizes 4 behavior styles: Openly Aggressive, Assertive, Concealed Aggressive, and Passive behaviors. Statistical analysis was done as indicated. The p value of <0.05 was taken as significant. **RESULTS:** The overall mean EQ score was 75.9 (SD 8.2), and components scores were: Self-Awareness = 74.6 (SD 10), Self-Management = 74.8 (SD 10.6), Social Awareness = 77.0 (SD 9.6), and Relationship Management = 76.8 (SD 9.9). Faculty and residents had higher Social Awareness scores as compared to medical students (79.33 [SD 8] vs. 75.59 [SD 10.3], p = 0.01). Mean EQ scores correlated positively with Collaborating conflict style, Assertive Behavior, Influence, and Steadiness/Submissiveness but correlated negatively with Dominance personality domain, Passive, and Concealed Aggressive behaviors. **CONCLUSION:** EQ varied with level of training. EQ competence may occur by Collaborating and Assertive Behaviors utilizing Influence and Steadiness/Submissiveness personality domains.

**Park DK**, Thomas AO, Clair SS and Bawa M (2014). "Percutaneous lumbar and thoracic pedicle screws: A trauma experience." *Journal of Spinal Disorders and Techniques* 27(3): 154-161.

[Full-Text](#)

*Department of Orthopedic Surgery*

**Design:** Retrospective case study. **Objective:** Percutaneous pedicle screw (PPS) techniques do not allow direct visualization and may lead to erroneous screw placement. A technique utilizing only fluoroscopy is described. Verification of its accuracy and morphometric validation are presented. **Background:** Minimally invasive spine surgical techniques, particularly PPS placement, have been growing in popularity. The purported benefits of minimally invasive spine surgical stated may be even more advantageous in the trauma setting. **Methods:** Jamshidi needles were docked in the typical starting position verified with posterior-anterior image. Jamshidi needle (20 mm) was advanced ensuring that the tip remained lateral to the medial pedicle wall. A Kirschner (K-wire) was placed through the needle. Once all the K-wires were

placed, a lateral image was taken confirming the correct trajectory and that the wire passed the posterior vertebral body wall. Patients with PPS fixation were retrospectively studied with postoperative computed tomography to verify screw accuracy. Screw grade was assessed as grade I when completely within the pedicle, II <2mm, III 2-4mm, and IV >4mm outside the pedicle. Morphometrically, 40 thoracic and lumbar computed tomography scans of patients (<40 y) without spine fractures were reviewed. The pedicle length was defined as the distance from the dorsal cortical margin to the posterior vertebral body in the pedicle's midaxis. Results: A total of 172 screws were placed. Eighteen percent were found to have cortical breach, but only 2.9% were found to have >grade II breach. The morphometric study demonstrated the pedicle length to range from 14.4 to 22.1 mm. The shortest was in the upper thoracic and the longest at L1-L2. Conclusions: The morphometric study demonstrates if a K-wire is placed 20mm into the bone and remains lateral to the medial pedicle wall and the tip just engages the vertebral body, the screw trajectory is safe particularly in the lower thoracic and upper lumbar spine. A smaller distance may be utilized in the upper thoracic. Breach rates are similar to other reports using other techniques; none were clinically significant. The advantage of this technique is the use of only PA fluoroscopy for placing all the wires percutaneously. Copyright © 2014 by Lippincott Williams & Wilkins.

Peeples C, Jenkins C, Mangla J, Riggs T, **Ivascu F** and **Robbins J** (2014). "The impact of perioperative transfusions on cancer recurrence and survival following oncologic resection." Annals of Surgical Oncology 21(1): S131.

[Full-Text](#)

*Department of Surgery*

Background: Blood transfusions have been associated with immunologic suppression. Cancer patients undergoing definitive oncologic resection may require blood transfusion during the peri-operative period. A relationship between transfusions, cancer recurrence, and survival has been proposed but not well established. Objectives: The objective was to investigate the association of peri-operative blood transfusions with cancer recurrence and overall survival in patients undergoing definitive oncologic resections. We also evaluated the correlation of timing of the transfusion with recurrence rates. Methods: We did a retrospective review of the tumor registry at a single institution from January 2004 through November 2010. All patients with a diagnosis of brain, colorectal, esophageal, kidney, lung, liver, ovarian, uterine, pancreatic, and stomach cancers who underwent a definitive oncologic resection were included. Peri-operative blood transfusion was defined as the receipt of blood transfusion within 30 days preoperatively, during surgery, or during the first 30 days post operatively. Multivariate analysis adjusted for age, gender and oncologic stage. Results: A total of 2836 patients were included in the analysis. Oncologic stage was associated with proportion of patients transfused ( $p < 0.0001$ ). Overall, 19.2% of patients received at least one transfusion, and 14.4% had recurrence. Transfusion was associated with shorter time to recurrence (30 vs. 36 months,  $p < 0.001$ ) and risk of recurrence increased with each unit transfused (hazard = 1.09,  $p < 0.005$ ). Median length of follow up was 37 months. After adjustment for oncologic stage, age, gender, and cancer type, a significant association between cancer recurrence and perioperative blood transfusion remained (hazard = 1.40,  $p = 0.009$ ). Conclusion: We identified a significant association between peri-operative blood transfusion, cancer recurrence, and mortality following definitive oncologic resection. In addition, risk of recurrence increased with each unit transfused. While our study demonstrated an association, rather than causation, prudence suggests judicious transfusion use.

**Peters KM, Gilmer H, Feber K**, Girdler BJ, Nantau W, **Trock G**, Killinger KA and **Boura JA** (2014). "US pilot study of lumbar to sacral nerve rerouting to restore voiding and bowel function in spina bifida: 3-year experience." Advances in Urology 2014: 1-7.

[Full-Text](#)

*Department of Urology*

*Department of Neurosurgery*

*Department of Pediatrics*

*Department of Biomedical Sciences (BHS)*

Objective. To report our experience with creating a skin-central nervous system-bladder reflex arc with intradural lumbar to sacral motor root microanastomosis to restore bladder/bowel function in spina bifida

patients. Methods. Urinary/bowel changes from baseline to three years were evaluated with questionnaires, voiding diaries, urodynamics (UDS), and renal function studies. Treatment response was defined as CIC once/day with stable renal function, voiding efficiency > 50%, and no worsening of motor function. Results. Of 13 subjects (9 female, median age 8 years), 3 voided small amounts at baseline, one voided 200 cc (voiding efficiency 32%), 4/13 reported normal bowels, and 2/13 were continent of stool. Postoperatively, all had transient lower extremity weakness; one developed permanent foot drop. Over three years, renal function remained stable and mean maximum cystometric capacity (MCC) increased (). In the 10 that returned at 3 years, 7 were treatment responders and 9 had discontinued antimuscarinics, but most still leaked urine. Only 2/8 with baseline neurogenic detrusor overactivity (NDO) still had NDO, all 3 with compliance <10 mL/cm H<sub>2</sub>O had normalized, 7/10 considered their bowels normal, 5/10 were continent of stool, and 8/10 would undergo the procedure again. Conclusion. Lumbar to sacral nerve rerouting can improve elimination in spina bifida patients. This trial is registered with ClinicalTrials.gov NCT00378664.

Piatt GA, Valerio MA, Nwankwo R, **Lucas SM** and Funnell MM (2014). "Health literacy among insulin-taking African Americans: A need for tailored intervention in clinical practice." *Diabetes Educator* 40(2): 240-246.

[Full-Text](#)

*Department of Internal Medicine*

Aims: To determine the levels of functional health literacy (FHL) among insulin-taking African Americans with diabetes from an urban medical practice and to determine if associations exist between FHL levels and glycemic control. Methods: Seventy insulin-taking African Americans seen for diabetes management comprised the analysis cohort. Patients were 18 years or older, African American, had diabetes, and currently using insulin via syringe, pen, or insulin pump. All participants completed a one-time assessment of FHL levels, using the Newest Vital Sign (NVS). Scores ranged from 0 to 6 (0-1 = high likelihood of limited FHL; 2-3 = possibility of limited FHL; 4-6 = adequate FHL). A combination of t tests, Pearson's chisquare tests, and multivariate logistic regression models were used to determine associations between glycemic control and FHL. Results: Average age was 58.7, 59.1% were female, 90.8% with type 2 diabetes, and 15.1% using an insulin pump. Glycemic control was: A1C < 7%: 22.9%, A1C < 8%: 47.1%. Of participants, 47.1% had adequate FHL, 31.4% had possible limited FHL, and 21.4% had a high likelihood of limited FHL. Also, 67.7% of participants with A1C ≥ 8% had a high likelihood of limited FHL. After adjusting for age and gender, participants with a high likelihood of limited FHL were 6.2 times (95% confidence interval [CI], 1.4-28.3) more likely to have A1C ≥ 8%. Conclusions: Insulin-taking African Americans with a high likelihood of limited FHL are approximately 6 times more likely to have an A1C ≥ 8% compared to patients with a possibility of limited FHL, or adequate FHL, demonstrating the need for focused interventions tailored to FHL needs. © 2014 The Author(s).

Platts-Mills TF, Isenberg EE, Pereira GF, Weaver MA, Mangipudi SA, Rathlev NK, Hendry PL, Peak DA, Jones JS, **Swor RA**, Lee DC, Domeier RM, Keefe FJ and McLean SA (2014). "Older adults with persistent musculoskeletal pain after motor vehicle collision are at increased risk of functional decline." *Academic Emergency Medicine* 21(5): S81-S82.

[Full-Text](#)

*Department of Emergency Medicine*

Background: Functional decline is common among older adults experiencing traumatic events such as motor vehicle collision (MVC), but factors contributing to this decline remain poorly understood. Objectives: We sought to determine the association between persistent MVC-related pain and functional decline among older adults. We hypothesized that individuals with persistent pain would be more likely to experience functional decline. Methods: We conducted a prospective multicenter longitudinal study of independent living adults aged 65 years and older presenting to the ED after MVC. MVC-related pain (0-10 scale) and a validated measure of self-reported higher-level function combining ability to walk, climb stairs, and carry groceries were measured in the ED and by phone 2 weeks, 6 weeks, 6 months, and 1 year after MVC. Joint trajectory analyses were conducted (Stata 11.1) with the number of groups determined using Bayesian information criterion and interpretability. Results: Within the cohort (N = 115), trajectory analyses identified three pain groups (resolving, persistent moderate, and persistent severe) and two functional groups (preserved and declining). The average probabilities of group membership for functional trajectories were

37% for preserved function and 63% for declining function. The conditional probability of membership in the declining function group varied with pain trajectories: resolving pain=10% (95% CI 0%-24%); persistent mild pain=52% (95% CI 30%-74%); and persistent moderate pain=100% (95% CI 96%-100%; Figure 195). A sensitivity analysis restricting the sample to patients with no pain or mild pain (NRS<4) prior to the MVC and no difficulty walking 1/4 mile prior to the MVC (N = 56) showed a similar effect of pain trajectory on the probability of functional decline: resolving pain=9% (95% CI, 0%-29%); persistent mild pain=36% (95% CI, 10%-62%); and persistent moderate pain=100% (95% CI 91%-100%). Conclusion: These data support the hypothesis that among older adults experiencing MVC pain has an important influence on functional outcome. (Figure Presented).

Platts-Mills TF, Pereira GF, Isenberg EE, Weaver MA, Rathlev NK, Hendry PL, Peak DA, Jones JS, **Swor RA**, Lee DC, Domeier RM and McLean SA (2014). "Older adults with persistent musculoskeletal pain after motor vehicle collision are at increased risk of functional decline." Journal of the American Geriatrics Society 62: S103-S104.

[Full-Text](#)

*Department of Emergency Medicine*

Background: A subset of older adults experience substantial functional decline after an ED visit for a traumatic event such as MVC, but factors contributing to this decline remain poorly understood. Methods: We examined the effect of persistent post-MVC musculoskeletal pain on function among independent living adults aged 65 years and older presenting to the ED after MVC. MVC-related pain (0-10 scale) and a validated measure of self-reported higher-level function combining ability to walk, climb stairs, and carry groceries were measured in the ED and by phone 2 weeks, 6 weeks, 6 months, and 1 year after MVC. Results: Within the cohort (N=111), trajectory analyses (Stata 11.1) identified three pain groups (resolving, persistent moderate, and persistent severe) and two functional groups (preserved and declining). The average probabilities of group membership for functional trajectories were 37% for preserved function and 63% for declining function. The conditional probability of membership in the declining function group varied with pain trajectories: resolving pain=8% (95% CI 0%-24%); persistent moderate pain=50% (95% CI 26%- 74%); and persistent severe pain=100% (95% CI 96%-100%). A sensitivity analysis restricting the sample to patients with no pain or mild pain (NRS<4) prior to the MVC and no difficulty walking 1/4 mile prior to the MVC (N=56) showed a similar effect of pain trajectory on the probability of functional decline: resolving pain=9% (95% CI, 0%-29%); persistent mild pain=36% (95% CI, 10%-62%); and persistent moderate pain=100% (95% CI 91%-100%). Conclusions: These data support the hypothesis that among older adults experiencing MVC pain has an important influence on functional outcome.

Pople B, **Shah P**, Pilotto J, Marsack P and **Bastani A** (2014). "An opportunity for real-time guidance: Suboptimal antibiotic prescribing patterns among emergency physicians for uncomplicated UTIs and pyelonephritis." Academic Emergency Medicine 21(5): S53-S54.

[Full-Text](#)

*Department of Emergency Medicine*

Background: Approximately 1.2 million cases of uncomplicated urinary tract infections (UTI) and 250,000 cases of pyelonephritis are evaluated in the ED annually. One of the advantages of computerized physician order entry (CPOE) is its ability to direct emergency physician (EPs) towards antibiotic prescribing practices that follow evidencebased guidelines. However, CPOE does not guide EPs when prescribing antibiotics for outpatient treatment at our institution. For patients with uncomplicated UTIs and pyelonephritis, this lack of guidance can allow for significant variability in antibiotic prescribing practices. Objectives: Our goal was to describe our EPs' compliance with optimal antibiotic choices for discharged adults with culture-confirmed uncomplicated UTI or pyelonephritis. Methods: We conducted a retrospective chart review of all adults discharged from our community ED with either uncomplicated UTI or pyelonephritis between January 1, 2013 and July 31, 2013. Patients were included in the study if they were diagnosed with uncomplicated UTI or pyelonephritis and were prescribed antibiotic at their index visits. Using treatment guidelines set forth by the Infectious Disease Society of America (IDSA), we defined optimal therapy as prescribing the appropriate first-line antibiotic at the recommended dose, frequency, and duration. Our primary outcome was to quantify our EPs compliance with IDSA recommendations. Our secondary outcome was to compare the

efficacy of EPs' prescribed antibiotic therapy with optimal therapy based on culture/sensitivity results. Data were reported using descriptive statistics. Results: One hundred patients with positive urine cultures were discharged from the ED with uncomplicated UTIs (n = 77) or pyelonephritis (n=23) and empirically treated with antibiotics during the study period. Optimal therapy was prescribed in 3 of 77 uncomplicated UTI patients [3.9% +/- 3.0%] and 10 of 23 pyelonephritis patients [43.5% +/- 17.9%]. Variation in prescribing practices are noted in Table 123. All identified deviations represented increases in either dose, frequency, or duration above optimal. Furthermore, sensitivity testing showed that the EPs' initial antibiotic therapy would have covered 83.9% [+/- 9.6%] of patients while optimal therapy would have covered 92.0% [+/- 7.8%] of patients. Conclusion: Our EPs' discharge antibiotic choices for adults with Figure 122: Skibsted. uncomplicated UTI or pyelonephritis deviate negatively from optimal guidelines. Future studies to evaluate the ability of CPOE software to prompt EPs may improve compliance. (Table Presented).

**Rajasekaran S, Hall L and Afonso N** (2014). "Prescription writing – best practices to reduce prescribing errors (Peer Reviewed)." MedEdPortal Publication No. 9790

[Full-Text](#)

*Department of Biomedical Sciences (OU)*

*Department of Biomedical Sciences (BHS)*

This is a fully developed set of material for the session to teach prescription writing to undergraduate medical students. This is a resource for small group session within a large classroom. The instructor's guide provides a step-by-step approach to implementing this session. The PowerPoint slides have been animated and notes added for each relevant slide to help faculty to make the best use of this resource. There are two handouts. One with set of 5 prescriptions that have commonly identified prescribing errors and this is for the first formal small group activity. The second handout is a set of blank prescriptions that each student should be required to fill out at the end of the session.

**Safian RD** (2014). "Carotid artery stenting: Looking at the bright side of regulatory oversight." *Catheterization and Cardiovascular Interventions* 83(7): 1167-1168.

[Full-Text](#)

*Department of Internal Medicine*

Sag AA, **Savin MA, Lal NR** and Mehta RR (2014). "Yttrium-90 radioembolization of malignant tumors of the liver: Gallbladder effects." *American Journal of Roentgenology* 202(5): 1130-1135.

[Request Form](#)

*Department of Diagnostic Radiology and Molecular Imaging*

OBJECTIVE. After 90Y-microsphere radioembolization for unresectable hepatic neoplasms, the nearby gallbladder is susceptible to radiation-induced cholecystitis, an uncommon complication. The purpose of this study was to characterize the imaging findings after 90Y radioembolization of the gallbladder and to assess the incidence of clinically significant radiation-induced cholecystitis. MATERIALS AND METHODS. Medical records were retrospectively reviewed for cholecystectomy after 90Y treatment of 133 consecutively registered patients (76 men, 57 women; average age, 65 years). Thirty-four of the patients had primary and 99 had secondary liver neoplasms. The pretreatment and posttreatment cross-sectional images of 85 of the patients were available for review. RESULTS. Clinically significant radiation-induced cholecystitis occurred in 1 of the 133 patients (0.8%). After radioembolization, gallbladder imaging abnormalities were found in 84 of 85 patients (99%), but none was associated with clinically significant radiation-induced cholecystitis. CONCLUSION. The incidence of clinically significant radiation-induced cholecystitis was only 0.8% despite a high prevalence of gallbladder imaging abnormalities after 90Y radioembolization. Therefore, in the postinterventional care of patients with abdominal pain after 90Y radioembolization, even if imaging abnormalities of the gallbladder are identified, cholecystectomy should be reserved for patients in whom other causes of pain have been excluded. © American Roentgen Ray Society.

**Sangal RB** and Sangal JM (2014). "Use of EEG beta-1 power and theta/beta ratio over Broca's area to confirm diagnosis of attention deficit/hyperactivity disorder in children." Clinical EEG and Neuroscience. ePub Ahead of Print.  
[Full-Text](#)

*Department of Family Medicine*

The Food and Drug Administration has approved a medical device using the electroencephalogram (EEG) theta/beta ratio (tbr) to help assess pediatric attention deficit/hyperactivity disorder (ADHD). Tbr is reported to be higher in ADHD, with increased theta and decreased beta. This study examined theta and beta-1 power differences between ADHD and normal children, during tasks of selective attention, and elucidated topographical differences. EEGs were collected from 28 normal and 58 ADHD children, aged 6 to 14 years, using 31 scalp electrodes during auditory and visual tasks requiring selective attention. Spectral analysis was performed. Tbr was higher in ADHD than in normal children (2.60 vs 2.25,  $P = .007$ ), with lower beta-1 (3.66 vs 4.22,  $P = .01$ ), but no difference in theta power. There was lower beta-1 ( $P < .001$ ) and higher tbr ( $P = .002$ ) over Broca's area (electrode locations F7 and FC5). Beta-1 power over Broca's area was the best diagnostic test, with sensitivity 0.86 and specificity 0.57. Tbr is higher and beta-1 power lower in ADHD than in normal children, especially over Broca's area. Beta-1 power and tbr assist in confirming the diagnosis of ADHD in a sample with moderate pretest probability of ADHD.

**Savasan ZA, Goncalves LF and Bahado-Singh RO** (2014). "Second- and third-trimester biochemical and ultrasound markers predictive of ischemic placental disease." Seminars in Perinatology 38(3): 167-176.

[Full-Text](#)

*Department of Obstetrics and Gynecology*

Ischemic placental disease is a recently coined term that describes the vascular insufficiency now believed to be an important etiologic factor in preeclampsia, intrauterine fetal growth restriction, and placental abruption. Given the increased risk for poor maternal and fetal outcomes, early prediction and prevention of this disorder is of significant clinical interest for many. In this article, we review the second- and third-trimester serum and ultrasound markers predictive of ischemic placental disease. Limited first-trimester data is also presented. While current studies report a statistical association between marker levels and various adverse perinatal outcomes, the observed diagnostic accuracy is below the threshold required for clinical utility. An exception to this generalization is uterine artery Doppler for the prediction of early-onset preeclampsia. Metabolomics is a relatively new analytic platform that holds promise as a first-trimester marker for the prediction of both early- and late-onset preeclampsia. © 2014.

**Sawyer KN** and Kurz MC (2014). "Caution when defining prolonged downtime in out of hospital cardiac arrest as extracorporeal cardiopulmonary resuscitation becomes accessible and feasible." Resuscitation 85(8): 979-980.

[Full-Text](#)

*Department of Emergency Medicine*

**Sawyer KN** and Lundbye JB (2014). "History of smoking: A form of ischemic preconditioning? Implications for surviving cardiac arrest." Resuscitation 85(1): 13-14.

[Full-Text](#)

*Department of Emergency Medicine*

Senoo I, Espinoza Orias AA, An HS, Andersson GB, **Park DK**, Triano JJ and Inoue N (2014). "In vivo three-dimensional morphometric analysis of the lumbar foramen in healthy subjects." Spine 39(16): E929-E935.

[Full-Text](#)

*Department of Orthopedic Surgery*

STRUCTURED ABSTRACT: Study Design. In vivo three-dimensional (3D) morphometric analysis of the lumbar foramen using 3D computed tomography (CT) models in normal subjects. Objective. To describe foraminal geometry in an asymptomatic cohort measured in 3D. Summary of Background Data. Appropriate assessment of the complex 3D lumbar foraminal geometry is key for correct radiculopathy diagnosis and treatment planning. To the best of our knowledge, there is no other study that quantifies the normal lumbar foramen 3D geometry considering gender, age groups and spinal levels in vivo. Methods. Subject-based

3D-CT lumbar models were created in 59 asymptomatic volunteers and foraminal height and width were measured based on the model by custom software. The foraminal height and width were compared by gender, age and lumbar level. Results. Overall, the foraminal height decreased with age. However, while the foraminal height in males decreased with age at all spinal levels, the foraminal heights in females did not. The foraminal height was significantly larger in the upper lumbar levels in both genders. The foraminal width in males was significantly smaller than in females for all age groups. The foraminal width in both genders also decreased similarly with age. The foraminal widths at the lower lumbar levels were significantly smaller than those at the upper levels. Age-related foraminal width decreases were seen in all lumbar levels as well. Conclusions. The present study described foraminal geometry in vivo in an asymptomatic cohort measured in 3D. Age-related foraminal height decrease was noticeable in males and in the lower lumbar levels. Age-related foraminal width decrease was shown in both genders and in all lumbar levels. Such information can be used as baseline data for diagnosis of foraminal stenosis and treatment modality planning.

Shah C, Lanni T, Wilkinson JB, Jawad M, Wobb J, **Berry S**, Wallace M, **Chen P** and **Grills IS** (2014). "Cost-effectiveness of 3-dimensional conformal radiotherapy and applicator-based brachytherapy in the delivery of accelerated partial breast irradiation." *American Journal of Clinical Oncology: Cancer Clinical Trials* 37(2): 172-176.

[Full-Text](#)

*OUWB Medical Student Author*

*Department of Radiation Oncology*

Purpose: To compare reimbursement and cost efficacy between accelerated partial breast irradiation (APBI) techniques. Materials/Methods: Four hundred fifty-three patients were treated with APBI using either 3-dimensional conformal radiotherapy (3DCRT, n = 207) or balloon-based brachytherapy (BB) [single-lumen (SL, n = 161) and multilumen (ML, n = 85)] between March 2000 and October 2011. To evaluate cost-effectiveness, reimbursement by treatment technique was calculated based on 2011 Medicare schedules. Facility costs were generated by technique based on ICD-9 codes. Incremental cost effectiveness ratios (ICER), which compares cost with clinical outcomes, were calculated according to the difference in reimbursement to the criteria being evaluated. Results: With a median follow-up of 3.6 years, the 5-year rate of local recurrence was 1.9% for all patients (3D-CRT, 0%; BB, 4.1%; P = 0.23). When pooled, BB patients had a significant improvement in excellent/good cosmesis (91.6% vs. 80.0%; P = 0.03). Rates of combined grade 2 or higher dermatitis, hyper/hypopigmentation, pain, or fibrosis per technique were 62%, 28%, and 34% for 3D-CRT, SL, and ML patients, respectively (P = 0.26). The ICER per percent improved cosmesis for SL/ML was \$519/\$850 based on reimbursement and \$301/\$643 based on cost compared with 3D-CRT. Conclusions: On the basis of ICER, brachytherapy for APBI is a cost-effective option with regard to cosmesis and toxicity. This economic analysis suggests the increased cost of applicator-based brachytherapy may be justified in appropriately selected patients. Copyright © 2012 by Lippincott Williams & Wilkins.

Shi X, **Sims MD**, Hanna MM, **Xie M**, Gulick PG, Zheng Y-H, Basson MD and **Zhang P** (2014). "Neutropenia during HIV infection: Adverse consequences and remedies." *International Reviews of Immunology*. ePub Ahead of Print.

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*Department of Internal Medicine*

*Department of Pathology*

Neutropenia frequently occurs in patients with human immunodeficiency virus (HIV) infection. Causes for neutropenia during HIV infection are multifactorial, including the viral toxicity to hematopoietic tissue, the use of myelotoxic agents for treatment, complication with secondary infections and malignancies, as well as the patient's association with confounding factors which impair myelopoiesis. An increased prevalence and severity of neutropenia is commonly seen in advanced stages of HIV disease. Decline of neutrophil phagocytic defense in combination with the failure of adaptive immunity renders the host highly susceptible to developing fatal secondary infections. Neutropenia and myelosuppression also restrict the use of many antimicrobial agents for treatment of infections caused by HIV and opportunistic pathogens. In recent years, HIV infection has increasingly become a chronic disease because of progress in antiretroviral therapy (ART). Prevention and treatment of neutropenia becomes critical for improving survival of HIV-infected patients.

Skrzynski J, **Sahi S** and **Kelekar AK** (2014). ""Heavy" breathing: A case of cement pulmonary embolism." Journal of General Internal Medicine 29: S262.

[Full-Text](#)

*OUWB Medical Student Author*

*Department of Internal Medicine*

LEARNING OBJECTIVE 1: Recognize and diagnose a potentially clinically significant sequela of vertebroplasty. CASE: Our patient is a 53 year old man presenting with dyspnea and cough. He had a complicated medical course since receiving kyphoplasty 6 months prior to admission, and was intermittently hospitalized for recurrent pneumonia and COPD exacerbation. Due to high suspicion of pulmonary embolism at presentation, contrast CT of the chest was obtained which revealed multiple nonocclusive densities in the right pulmonary artery system as well as opacities in the right middle and lower lobe. Patient later corroborated a history of bone cement embolism following his procedure. He was admitted to the intensive care unit and treated for multifactorial respiratory failure with antibiotics, diuretics, steroids and nebulizers. Despite aggressive treatment, on the ninth day of his admission he developed sudden bradycardia and expired. Autopsy was performed with final pathology results pending. DISCUSSION: Kyphoplasty and vertebroplasty are common procedures in the treatment of vertebral compression fracture in which bone cement is injected percutaneously into a vertebral body to restore height and integrity. While the incidence of local leakage of cement into adjacent spaces can be high (up to 80-90 %), intravasation is less common (24 %) and embolization of cement less common still (4.6-6.8 %). The vast majority of cement emboli are asymptomatic and long term or serious sequelae, including death, are rarely reported. In our patient, the exact role of his cement emboli thus far remains uncertain. While our patient demonstrated no peripheral eosinophilia, he did have persistent bronchospasm which was resistant to steroids and nebulizers; we hypothesize that the long term presence of foreign material in the lungs may have caused a chronic hypersensitivity reaction. Though he had right sided opacities on imaging, he was afebrile and the differential for this finding could include pulmonary hemorrhage. Unfortunately, the patient expired before bronchoscopy could be performed. At this time, autopsy has been performed and initial pathology did demonstrate cement material in the right pulmonary artery system. The vast majority of reported cement emboli were asymptomatic, but our patient's clinical course clearly deteriorated significantly following his kyphoplasty. Currently no consensus exists in the treatment of this condition, with attempted therapies ranging from antibiotics to anticoagulation to mechanical extraction. The exact effect of bone cement on vascular or lung tissue remains to be determined and to our knowledge no pathologic examination of cement pulmonary embolus exists in the literature. Identifying this effect as well as the true incidence of cement embolization may help in reducing morbidity and mortality for kyphoplasty and vertebroplasty in the future.

**Smythe MA**, Conger EA, Hoffman JL, Forman MJ, Koerber JM, Saboo SA, Dezia AL, Pillen HA, Qasem LY and Priziola JL (2014). "Management and outcomes of major bleeding events in patients taking dabigatran or warfarin in clinical practice." American Journal of Hematology 89(6): E70.

[Full-Text](#)

*Department of Biomedical Sciences (BHS)*

**Soto RG**, Davis M and **Faulkner MJ** (2014). "A comparison of the incidence of hypercapnea in non-obese and morbidly obese peri-operative patients using the SenTec transcutaneous pCO<sub>2</sub> monitor." Journal of Clinical Monitoring and Computing 28(3): 293-298.

[Full-Text](#)

*Department of Anesthesiology*

Obese patients are at increased risk for hypoventilation, leading to hypercapnea and acidosis. The primary objective of this study was to compare the incidence of perioperative hypercapnea in non-obese and morbidly obese patients using the SenTec transcutaneous PCO<sub>2</sub> (tcPCO<sub>2</sub>) monitor. 10 morbidly obese subjects (BMI  $\geq$  40 kg/m<sup>2</sup>) undergoing laparoscopic bariatric surgery, and 10 non-obese subjects (BMI  $\leq$  30 kg/m<sup>2</sup>) undergoing laparoscopic abdominal procedures were studied, using a standardized

anesthesia regimen. TcPCO<sub>2</sub> and SpO<sub>2</sub> were monitored continuously intraoperatively, and during the first 24 h postoperatively. Opiate consumption, respiratory rate (RR), and pain scores were collected from postanesthesia care unit (PACU) and ward nursing notes. RR, SpO<sub>2</sub>, and tcPCO<sub>2</sub> did not differ significantly between groups during PACU or ward time periods. End-tidal CO<sub>2</sub> (EtCO<sub>2</sub>) values were similar between groups during the intraoperative period, but tcPCO<sub>2</sub> was significantly higher in the obese group at specific time points, and trended towards being higher throughout the case. Our study did not show significant tcPCO<sub>2</sub> differences between non-obese and obese post-surgical patients, however, it did allow for continuous, trendable, nonobtrusive monitoring throughout the perioperative period. As V/Q mismatch increases with the PaCO<sub>2</sub>/EtCO<sub>2</sub> gradient, and this effect is most pronounced in morbidly obese patients, tcPCO<sub>2</sub> monitoring may prove to be a useful additional monitor in these patients during the intraoperative period. © 2013 Springer Science+Business Media.

**Stahl AR, Qu L, Swor RA and Sawyer KN** (2014). "Risk stratification of pulmonary embolism in the emergency department: There is room for improvement." *Academic Emergency Medicine* 21(5): S261.

[Full-Text](#)

*OUWB Medical Student Author*

*Department of Emergency Medicine*

Background: Patients diagnosed with pulmonary embolism, who also have right ventricular dysfunction and/or myocardial injury, are at higher risk for morbidity and mortality. Objectives: Our objective is to describe the risk stratification of PE patients in our ED. Methods: We performed a retrospective study of adult patients presenting to the ED in a large, community academic health system who were diagnosed with pulmonary embolism from August 2007 to May 2013. Patients were identified based on ICD codes and included if ED CT was positive for pulmonary embolism. Structured chart review was used to collect demographics, diagnostic testing performed, and medications administered during the ED stay, as well as short-term outcomes, including death or cardiac arrest after admission. Troponin I < 0.04 ng/mL and BNP < 100 pg/mL were considered as normal. CT reports were reviewed manually for signs of right ventricular strain, including assessment of right ventricular size, reflux of contrast (into IVC or hepatic veins), and deviation of the interventricular septum. Results: Our population included 1,337 patients with acute pulmonary embolism (mean age 62.0 years (SD 17.17) and 46.6% female). Few patients ultimately died (n=27) or suffered cardiac arrest (n=9). In total, 79% and 48% had troponin and BNP testing, respectively. Signs of right ventricular strain were documented as present in only 131 (9.8%) CT studies, with the vast majority of reports lacking mention of right ventricle size or function. In those with right ventricular strain on CT, 19/20 echocardiography studies confirmed right ventricular strain. Of patients with right ventricular strain on CT or echo (n=167), 125 (74.9%) had initially abnormal biomarkers. Only 17 (15.2%) of these physiologically significant pulmonary emboli received tPA. Of patients with strain unmentioned on CT (n=1108), 245 (22.1%) had no biomarker testing despite right ventricular strain on echo (n=5) and central pulmonary embolism on CT (n=16). Patients from this group accounted for 4 arrests and 5 deaths overall. Conclusion: ED risk stratification of patients diagnosed with pulmonary embolism remains low. Implementation of a standardized protocol for risk stratification in the ED, including structured CT interpretation for right ventricular strain, may be a key effort toward patient-centered outcomes in this population. (Table Presented).

**Swor R, Ziadeh J and Jayasankar S** (2014). "Comparison of attending-only and resident with attending supervision Press Ganey scores in ED patients." *Academic Emergency Medicine* 21(5): S218.

[Full-Text](#)

*Department of Emergency Medicine*

Background: Press Ganey scores are a commonly used patient satisfaction metric in EDs. Objectives: The objective of this study is to determine if there is a difference in scores when patients are treated by attending physicians alone versus resident care with attending supervision. Methods: We performed a retrospective cohort study of adult (age>18) responses to Press Ganey surveys at a single large academic community hospital during 2011. We dichotomized cases based on whether they were evaluated by an attending physician alone, or a resident with attending supervision. Physician assistant cases were excluded. Our

primary outcome was the likelihood of recommending the physician. Secondary outcomes included the physician's ability to listen and concern for wellbeing. Responses were stratified by highest likelihood of recommending (5 on 1-5 Likert scale). Because dissatisfied patients represent management challenges, we also assessed whether residents had a higher level of dissatisfaction (1 of 5). Chi-square tests are calculated for associations, and t-tests were calculated for continuous variables. Results: During the study period, 2237 (18.2% of surveyed) patients responded. Residents saw 57.8 % of cases. The respondents most likely to recommend their physicians were older ( $p < 0.001$ ); male ( $p = 0.003$ ), those triaged to rooms vs. hallway beds ( $p = 0.023$ ); and those with shorter lengths of stay ( $p = 0.017$ ). Attending-only patients had significantly shorter LOS (4.6 hrs vs. 4.9 hrs;  $p = .004$ ), but resident and attending patients were otherwise not different between groups. No significant differences were observed regarding overall likelihood to recommend the physician (54.6% vs. 53.8%;  $p = 0.74$ ), perceived concern that the physician showed (56.2% vs. 53.2%;  $p = 0.21$ ), and the likelihood the physician was to listen (62.6% vs. 61.7%;  $p = 0.73$ ). Though few patients rated physicians poorly, resident cases tended to be more likely to receive a poor rating from patients (3.8% vs 2.2%,  $p = 0.07$ ). Conclusion: Within the limitations of Press Ganey survey methodology, we identified no difference in patient satisfaction between patients seen only by attending physicians and those seen by resident physicians with attending supervision. Resident cases were slightly more likely to receive dissatisfied ratings.

Taylor JLE and **Oleszkowicz A** (2014). "Is methylphenidate useful for teenagers with attention deficit/hyperactivity disorder (ADHD)?" Evidence-Based Practice 17(5): 12.

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*Department of Family Medicine*

**Tyagi P**, Tyagi V, Qu XG, Lin HT, Kuo HC, Chuang YC and **Chancellor M** (2014). "Association of inflammaging (inflammation plus aging) with higher prevalence of OAB in elderly population." International Urology and Nephrology 46(5): 871-877.

[Full-Text](#)

*Department of Urology*

Although epidemiology studies consistently report increased prevalence of overactive bladder (OAB) with age, an accurate deciphering of causative links between the two entities remains elusive. Studies on aged rodent bladder have so far yielded contradictory results on age-associated changes in muscarinic receptors, which highlight the challenge posed by species differences in understanding OAB pathology. We hypothesized that age-related biochemical changes in bladder leading to altered bladder function will be reflected in altered urinary proteome of elderly OAB patients. Single time point urine specimens were obtained from 140 OAB patients in the age range of 25-90 years of either sex coming routinely to the urology clinics. Eight chemokines in urine were measured by MILLIPLEX MAP human cytokine/chemokine multiplex immunoassay and ELISA. Multivariate and univariate statistical analyses were done to determine association of age with urinary chemokines in OAB patients. In agreement with age-dependent higher prevalence of OAB, the logistic regression of the data also revealed the significant association of OAB symptoms with age [odds ratio (OR) 1.12; 95 % CI, (1.072, 1.187),  $p = 0.0001$ ]. Univariate analysis of 8 urinary proteins revealed an age-associated elevation of NGF (nerve growth factor) in 137 out of 140 OAB patients [Pearson  $r = 0.274$ ; 95 % CI (0.112-0.422);  $p = 0.001$ ]. Modest correlation with age was also noted for MCP-1 (monocyte chemoattractant protein-1), which was detected in 115 OAB patients, and the remaining chemokines were undetectable in nearly two-third of OAB patients included in our cohort. Based on our findings, we postulate that age-associated biochemical changes may accentuate the inflammation associated with OAB. Urinary NGF elevation in elderly OAB patients may be a homeostatic response to counter the senescence of bladder nerves and arrest the progression of OAB into detrusor hyperactivity with impaired contractility. Likewise, elevation of MCP-1 may be related to decreased muscle mass and increased content of adipose tissue in bladder of elderly OAB patients. Urinary NGF and MCP-1 can serve as surrogate markers for monitoring age-associated biochemical changes and the effect of therapeutic interventions in OAB patients.

Van Raemdonck J, McLean KZ, Cappocia D, Turkelson C, **Sawyer K, Devlin W** and **Swor R** (2014). "Delayed awakening is not uncommon after post cardiac arrest therapeutic hypothermia." *Academic Emergency Medicine* 21(5): S278.

[Full-Text](#)

*Department of Emergency Medicine*

*Department of Internal Medicine*

Background: Much emphasis is placed on who survives cardiac arrest and how to optimize outcomes. After cardiac arrest, patients may undergo therapeutic hypothermia (TH). A body of knowledge is evolving describing prolonged periods of coma prior to awakening after TH. Though some centers advocate a 72-hour period of observation to determine awakening, there are still few data to guide policy makers. Objectives: The objective of this study was to describe the time to awakening of patients who receive post-arrest TH for non-traumatic cardiac arrest. Methods: This was a retrospective chart review of adult patients treated with post-arrest TH between January 2006 and June 2013 at two large, academic community hospitals. We included patients sustaining arrests in the field or in the ED after arrival. Transfer patients were excluded. We queried a prospectively collected quality improvement database regarding characteristics of patients who survived to hospital discharge for demographics, Utstein characteristics, and post-arrest treatment variables. We report intervals from hospital arrival (EMS cases), return of spontaneous circulation (ROSC), and rewarming to 36(degrees)C until time of Glasgow Coma Scale of (greater-than or equal to)9 (awake) as recorded by ICU nurses. We defined a nullgoodnull outcome as discharge cerebral performance category (CPC) of 1 or 2. Descriptive statistics are presented. Results: During the study period, 214 patients received TH and 68 (31.8%) survived to hospital discharge. Survivors were more often male (61.8%), had an average age 60.0 years, and most often had VF arrests (70.6%). Overall 45 (66.2%) had good outcomes. Time intervals from ROSC-awakening, arrival-awakening, and rewarming-awakening are reported in Table 673. Shorter ROSC-awakening and rewarmingawakening intervals were weakly associated with good outcomes. However, of patients with ROSC-awakening >72 hours, 10 of 16 (62.5% +/-24%) had good outcomes. Amongst patients with rewarmingawakening time >72 hours, 2 of 4 had good outcomes. Conclusion: Using GCS >9 as a measure, awakening more than 72 hours after ROSC was not uncommon and is often associated with a good outcome. Although most patients awoke within 72 hours of rewarming, we identified patients with good outcomes after this period of observation. Further work is needed to identify predictors of which TH patients who will have delayed awakening. (Table Presented).

Wang Y, Wolforth SC, Doshi M, Khan S, **Rooney MT, Li W** and **Zhang PL** (2014). "Identifying iron deposition in proximal tubules is a useful method to distinguish sickle cell disease (SCD) associated renal tubular injury from other injury etiologies." *Laboratory Investigation* 94: 416A.

[Full-Text](#)

*Department of Pathology*

Background: Sickle cell nephropathy (SCN) has been thought to be a vascular disorder since blood clot formation from sickle cells is considered to be the cause of renal disease. We hypothesize that sickle cells, known vulnerable for broken, may dump large amount of iron to proximal tubules and cause renal tubular injury, thus partially contributing to renal failure seen in sickle cell nephropathy. We compared iron stains in 3 cases with SCD and 29 controls. Design: Three biopsies from patients with SCD (one native and two transplant biopsies) were stained for iron using conventional Prussian blue method. The proximal tubules were evaluated for iron staining (0 to 3+) and correlated with clinical scenarios. Controls include 12 IgA nephropathy, 13 thrombotic microangiopathy (TMA) and 4 nullpurenull acute tubular necrosis (ATN) cases were also stained for iron. Results: All controls showed negative or minimal iron staining in proximal tubules, except two TMA with 2+ iron staining in proximal tubules. The first native biopsy with SCD showed membranoproliferative pattern of glomerulopathy and 3+ iron staining in proximal tubules, consistent with a SCN. The second patient, status post renal transplant 2 years ago, developed acute renal failure, and his renal biopsy was found to have acute tubular injury (ATI). Diffusely increased iron staining (2+) in proximal tubules was present, thus the ATI was most likely resulted from iron toxicity to proximal tubules, and EM confirmed aggregated sickled RBC in glomeruli, indicating a recurrent SCN. The third patient, status post renal transplant 4 years ago, developed acute renal failure and positive donor specific antibody. His renal biopsy revealed 1a acute cellular rejection, diffuse positive C4d in peritubular capillaries and thrombotic

microangiopathy (TMA). The iron staining was focally and weakly present, implying that the TMA was most likely associated with the acute antibody mediated rejection (AAMR, type 2) rather than recurrent SCN. Conclusions: Our data indicate that iron staining is a non-expensive but effective method in distinguishing SCD associated renal injury from other etiologies, supporting the view that iron overloading in proximal tubules could be a cause of ATI.

Wang Y, Wolforth SC, Doshi M, Khan S, **Rooney MT, Li W and Zhang PL** (2014). "Identifying iron deposition in proximal tubules is a useful method to distinguish sickle cell disease (SCD) associated renal tubular injury from other injury etiologies." *Modern Pathology* 27: 416A.

[Full-Text](#)

*Department of Pathology*

**Wasserman JA** (2014). "On art and science: An epistemic framework for integrating social science and clinical medicine." *Journal of Medicine and Philosophy (United Kingdom)* 39(3): 279-303.

[Full-Text](#)

*Department of Biomedical Sciences (OU)*

Calls for incorporating social science into patient care typically have accounted for neither the logistic constraints of medical training nor the methodological fallacies of utilizing aggregate "social facts" in clinical practice. By elucidating the different epistemic approaches of artistic and scientific practices, this paper illustrates an integrative artistic pedagogy that allows clinical practitioners to generate social scientific insights from actual patient encounters. Although there is no shortage of calls to bring social science into medicine, the more fundamental processes of thinking by which art and science proceed have not been addressed to this end. As such, the art of medical practice is conceptualized as an innate gift, and thus little is done to cultivate it. Yet doing so is more important than ever because uncertainty in diagnosing and treating chronic illnesses, the most significant contemporary mortality risks, suggests a re-expanding role for clinical judgment. © 2014 The Author.

**Wasserman JA**, Suminski R, Xi J, Mayfield C, Glaros A and Magie R (2014). "A multi-level analysis showing associations between school neighborhood and child body mass index." *International Journal of Obesity*. ePub Ahead of Print.

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*Department of Biomedical Sciences (OU)*

Objective: The objective of this study is to examine associations between aspects of the environment in school neighborhoods and childhood body mass index percentile (BMI<sub>p</sub>). Methods: Trained medical students visited 46 elementary schools in the Kansas City metropolitan area to conduct medical screenings that included the height and weight measurements of 12 118 boys and girls 4-12 years of age in the academic year 2008-2009. For the same time period, aspects of the built environment in a 2-mile radius around each school was obtained from the Walkscore database. Other environmental characteristics (for example, population change) of these areas were also obtained from various sources. Hierarchical linear modeling was used to estimate the associations between neighborhood- and individual-level factors and BMI<sub>p</sub>. Results: Population size along with the number of fast-food restaurants and grocery stores were positively associated with BMI<sub>p</sub>, whereas population change along with the number of parks and fitness centers were inversely associated with BMI<sub>p</sub>. Conclusions: After considering individual-level factors and the random effects of schools, environmental elements of school neighborhoods predict childhood BMI<sub>p</sub>. This study offers evidence of the health influence of school neighborhoods in a way that can inform neighborhood redevelopment efforts. *International Journal of Obesity* advance online publication, 20 May 2014; doi:10.1038/ijo.2014.64.

Wenzler DL and **Rosenberg BH** (2014). "Urologists' personal feelings on PSA screening and prostate cancer treatment." Journal of Evaluation in Clinical Practice 20(4): 408-410.

[Full-Text](#)

*Department of Urology*

RATIONALE, AIMS AND OBJECTIVE: This study aimed to determine if urologists' feelings on prostate cancer screening with prostate-specific antigen (PSA) and treatment on themselves are consistent with what they recommend to patients. METHODS: A survey regarding prostate cancer screening and treatment was assembled using the SurveyMonkey web site. The link to the survey was then emailed to urologists. Participation was voluntary. RESULTS: The survey was sent to 2672 American urologists and completed by 215 urologists; response rate was 8%. One hundred ninety-eight (92%) were male. Most (56%) urologists recommend PSA screening beginning at age 50 for patients, and this corresponded with the age at which survey responders began their PSA screening. Two urologists did not recommend screening, and 10% were 'not sure' if screening saves lives. Of those that had not had their PSA checked, 34% plan to begin screening at 40-44 with 11% stating they 'never' plan to be screened. One hundred thirty-eight (70%) men completing the survey had their PSA checked. The majority (86%) had it drawn for screening. Nineteen respondents had an elevated PSA with nine men diagnosed with prostate cancer. Eight of these had radical prostatectomy. When faced with the hypothetical diagnosis of an elevated PSA and low-grade prostate cancer, respondents favoured repeat PSA (94%) and surveillance (48%), respectively, than any other option. CONCLUSION: Despite recommendations from the American Urologic Association to screen men for prostate cancer, a significant percentage of urologists do not wish to be screened with PSA. Almost all, however, continue to recommend prostate cancer screening for their patients. Treatment recommendations also varied among the respondents.

Wright MJ, Harks E, Kolen A, Van Der Horst A, Fokkenrood S, Stoffregen W, Rankin D, Cockayne D, Cefalu J and **Haines DE** (2014). "Contact force is a poor marker of tissue compression in the left atrium. Utility of a novel intra-tissue visualization & ablation system to assess tissue depth in real time." Heart Rhythm 11(5): S445-S446.

[Full-Text](#)

*Department of Internal Medicine*

Introduction: Left atrial wall thickness and structure is variable throughout the chamber. We used a novel 8FR RF ablation catheter with integrated ultrasound (US) to assess whether tissue compression at varying contact force was constant throughout the atrium. Methods: Ex vivo porcine myocardium was mounted on a custom designed rig to measure contact force (0-50g) at the PV ostium (tissue depth: 2.7 (plus or minus)1.2mm) and LA roof (4.2(plus or minus)0.8mm), (n=27). A novel RF ablation catheter with integrated US was used to measure tissue compression and this was compared to tissue pathology. Results: Integrated US accurately measures atrial wall thickness compared to pathology (plus or minus) 15%. At 10g axial contact force at the PV antrum there was significant tissue compression with the wall thickness being 55(plus or minus)11% compared to baseline, in contrast at the LA roof there was significantly less compression at the same contact force 72(plus or minus)14%; p<0.005. This was similar at a 45(degrees) contact angle with the PV antrum being compressed to 59(plus or minus)8% of baseline compared to the LA roof 86(plus or minus)13%; p<0.001. Reduction in tissue thickness to <50% baseline took significantly less force at the PV antrum than at the LA roof, p=0.022 Conclusions: At 10g of contact force there is greater tissue compression at the PV antrum than the LA roof, independent of contact angle. The depth of tissue across all contact force can be accurately measured using integrated US which could allow for more accurate power titration. (Figure presented) .

**Xu X** (2014). "Compton coincidence volumetric imaging: A new x-ray volumetric imaging modality based on Compton scattering." Progress in Biomedical Optics and Imaging - Proceedings of SPIE. Vol. 9033: Article Number 90331N.

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*Department of Radiation Oncology*

Compton scattering is a dominant interaction during radiography and computed Tomography x-ray imaging. However, the scattered photons are not used for extracting imaging information, but seriously degrade image quality. Here we introduce a new scheme that overcomes most of the problems associated

with existing Compton scattering imaging schemes and allows Compton scattered photons to be effectively used for imaging. In our scheme, referred as Compton coincidence volumetric imaging (CCVI), a collimated monoenergetic x-ray beam is directed onto a thin semiconductor detector. A small portion of the photons is Compton scattered by the detector and their energy loss is detected. Some of The scattered photons intersect the imaging object, where they are Compton scattered a second time. The finally scattered photons are recorded by an areal energy resolving detector panel around the object. The two detectors work in coincidence mode. CCVI images the spatial electron density distribution in the imaging object. Similar to PET imaging, the event location can be located within a curve; therefore the imaging reconstruction algorithms are also similar to those of PET. Two statistical iterative imaging reconstruction algorithms are tested. Our study verifies the feasibility of CCVI in imaging acquisition and reconstruction. Various aspects of CCVI are discussed. If successfully implemented, it will offer a great potential for imaging dose reduction compared with x-ray CT. Furthermore, a CCVI modality will have no moving parts, which potentially offers cost reduction and faster imaging speed. © 2014 SPIE.

Yadav S, Chisti MM, **Rosenbaum L** and **Barnes MA** (2014). "Intravascular large B cell lymphoma presenting as cholecystitis: Diagnostic challenges persist." *Annals of Hematology* 93(7): 1259-1260.

[Full-Text](#)

*Department of Internal Medicine*

Yokoyama T and **Chancellor MB** (2014). "Statin-associated underactive bladder." *LUTS: Lower Urinary Tract Symptoms* 6(2): 124-125.

[Full-Text](#)

*Department of Urology*

Case: Statins are widely used to treat hypercholesterolemia but can lead to side-effects. We present a case of statin-associated permanent urinary retention in a 69-year-old woman. Outcome: Oral Cerivastatin was prescribed 2 months prior to the onset of retention. With the discontinuation of Cerivastatin, the patient reported modest improvement in symptoms. Conclusion: The findings of this case support the potential risk of permanent bladder smooth muscle damage due to statin that may lead to underactive bladder and urinary retention. © 2013 Wiley Publishing Asia Pty Ltd.

Yoshimura N, Oguchi T, Yokoyama H, Funahashi Y, Yoshikawa S, Sugino Y, Kawamorita N, Kashyap MP, **Chancellor MB, Tyagi P** and Ogawa T (2014). "Bladder afferent hyperexcitability in bladder pain syndrome/interstitial cystitis." *International Journal of Urology* 21: 18-25.

[Full-Text](#)

*Department of Urology*

Bladder pain syndrome/interstitial cystitis is a disease with lower urinary tract symptoms, such as bladder pain and urinary frequency, which results in seriously impaired quality of life of patients. The extreme pain and urinary frequency are often difficult to treat. Although the etiology of bladder pain syndrome/interstitial cystitis is still not known, there is increasing evidence showing that afferent hyperexcitability as a result of neurogenic bladder inflammation and urothelial dysfunction is important to the pathophysiological basis of symptom development. Further investigation of the pathophysiology will lead to the effective treatment of patients with bladder pain syndrome/interstitial cystitis.

**Zhou Y**, Narayana PA, Kumaravel M, Athar P, Patel VS and Sheikh KA (2014). "High resolution diffusion tensor imaging of human nerves in forearm." *Journal of Magnetic Resonance Imaging* 39(6): 1374-1383.

[Full-Text](#)

*Department of Diagnostic Radiology and Molecular Imaging*

Purpose To implement high resolution diffusion tensor imaging (DTI) for visualization and quantification of peripheral nerves in human forearm. Materials and Methods This HIPAA-compliant study was approved by our Institutional Review Board and written informed consent was obtained from all the study participants. Images were acquired with T1- and T2-weighted turbo spin echo with/without fat saturation, short tau inversion recovery (STIR). In addition, high spatial resolution (1.0mm x 1.0mm x 3.0mm) DTI sequence was

optimized for clearly visualizing ulnar, superficial radial and median nerves in the forearm. Maps of the DTI derived indices, fractional anisotropy (FA), mean diffusivity (MD), longitudinal diffusivity ( $\lambda_{//}$ ) and radial diffusivity ( $\lambda_{\perp}$ ) were generated. Results For the first time, the three peripheral nerves, ulnar, superficial radial, and median, were visualized unequivocally on high resolution DTI-derived maps. DTI delineated the forearm nerves more clearly than other sequences. Significant differences in the DTI-derived measures, FA, MD,  $\lambda_{//}$  and  $\lambda_{\perp}$ , were observed among the three nerves. A strong correlation between the nerve size derived from FA map and T2-weighted images was observed. Conclusion High spatial resolution DTI is superior in identifying and quantifying the median, ulnar, and superficial radial nerves in human forearm. Consistent visualization of small nerves and nerve branches is possible with high spatial resolution DTI these normative data could potentially help in identifying pathology in diseased nerves. Copyright (copyright) 2013 Wiley Periodicals, Inc.