

**OAKLAND UNIVERSITY WILLIAM BEAUMONT SCHOOL OF MEDICINE
PUBLICATION LIST
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Abbey AM, Hussain RM, Shah AR, **Faia LJ, Wolfe JD** and **Williams GA** (2014). "Sutureless scleral fixation of intraocular lenses: Outcomes of two approaches. The 2014 Yasuo Tano Memorial Lecture." [Graefe's Archive for Clinical and Experimental Ophthalmology](#). ePub Ahead of Print.

[Full-Text](#)

Department of Ophthalmology

Purpose: We sought to assess the clinical outcomes and complications of two approaches to scleral fixation of intraocular lenses (IOLs): transconjunctival fixation through trocar cannulas and fixation using scleral tunnels created with a microvitrectomy (MVR) blade. Methods: This retrospective chart review was comprised of 23 eyes that received scleral fixation of a three-piece IOL with concurrent pars plana vitrectomy between June 2012 and June 2014. Scleral fixation was performed either by transconjunctival fixation through trocar cannulas (cannula fixation) or by the creation of scleral tunnels using an MVR blade (tunnel fixation). The preoperative and postoperative corrected distance visual acuities (CDVA), spherical equivalents (SE), and complications were evaluated. Results: 15 cannula fixations and 8 tunnel fixations were performed. Mean follow-up was 353 days (Range: 94 null 790 days). Fifteen IOLs were fixated 2 mm posterior to the limbus. Seven IOLs were fixated 1.5 mm posterior to the limbus, and one IOL was fixated 0.75 mm posterior to the limbus. Mean preoperative CDVA was logMAR 1.17 (Snellen 20/297), and mean postoperative CDVA was logMAR 0.37 (Snellen 20/47) ($p < 0.0001$). At last follow-up, none of the IOLs have dislocated or subluxed and there has been no erosion of the subconjunctival haptics. Conclusions: Scleral fixation of IOLs using trocar cannulas or scleral tunnels is an effective surgical option for the treatment of aphakia or IOL dislocation. Both techniques result in significant visual improvement with minimal postoperative complications.

Ahmed S, Shaffer A, Geddes T, Studzinski D, Mitton K, Pruetz B, Long G and **Shanley C** (2014). "Evaluation of optimal RNA extraction method from human carotid atherosclerotic plaque." Cardiovascular Pathology. ePub Ahead of Print.
[Full-Text](#)

Department of Surgery

Investigating molecular mechanisms involved in the formation of carotid atherosclerotic plaques has been challenging. Isolating high-quality RNA from plaque tissue can be difficult because of acellularity, calcification, and degradation. It is essential that the mRNA isolated from this tissue preserves and reflects the actual relative gene expression. Two common methods for RNA preservation, snap-freezing and stabilizing reagent, were compared using surgically resected human carotid atherosclerotic tissue. In addition, isolation methods were compared for integrity and quantity: column-based extraction, phenol-based extraction, and a combination of the two. We found that using a stabilizing reagent with column filtration resulted in the lowest yield and quality. Phenol-based extraction resulted in higher yields but also increased fragmentation. Snap-frozen tissue coupled with column-based extraction yielded the highest quality. The higher quality and quantity RNA obtained when processing snap-frozen tissue with column-based extraction make it possible to use difficult sample types for molecular downstream applications.

Aldasouqi S and **Grunberger G** (2014). "The traditions and risks of fasting for lipid profiles in patients with diabetes." Postgraduate Medicine 126(7): 98-107.

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Department of Internal Medicine

Fasting overnight has been traditionally recommended by clinicians when ordering laboratory tests for lipid profiles for the purposes of health screening or monitoring of the effects of lipid-lowering medications. Patients with diabetes are tested for lipid profiles at least annually. This deeply rooted tradition of fasting for lipid testing has recently been challenged. Several studies have shown little benefit obtained by testing lipids in fasting compared with postprandial states. Furthermore, recent studies have shown the importance of postprandial lipid spikes in the pathogenesis of cardiovascular disease. At the same time, recent reports have alerted the medical community to the risk of hypoglycemia in patients with diabetes on antidiabetic medications (particularly insulin and sulfonylureas) who are asked to fast for lab tests. This article reviews the literature on these emerging issues in lipid testing in patients with diabetes, and offers recommendations for lipid testing in these patients in view of these emerging discussions.

Al-Faham Z, Zein RK and **Wong CYO** (2014). "18F-FDG PET assessment of lewy body dementia with cerebellar diaschisis." Journal of Nuclear Medicine Technology 42(4): 306-307.

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Department of Diagnostic Radiology and Molecular Imaging

Alzheimer disease and Lewy body dementia are the 2 most common causes of dementia. Each disease has distinctive regional metabolic reduction patterns on 18F-FDG PET. In this report, we present a rare case of an elderly man with dementia whereby 18F-FDG PET clearly showed Lewy body disease with crossed cerebellar diaschisis.

Anderson BM, Kamrava M, **Wang J**, Demanes DJ, Snyder MB, Kuske RR and **Chen PY** (2014). "Locoregional recurrence risk for women with various molecular subtypes of breast cancer treated with multicatheter interstitial accelerated partial-breast irradiation: Results from Pooled Registry of Multicatheter Interstitial Sites (PROMIS)." Journal of Clinical Oncology 32(Sup 26): Abstr 73.

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Department of Internal Medicine

Department of Radiation Oncology

Background: This study was performed to determine in breast tumor recurrence (IBTR) and regional nodal recurrence (RNR) rates for women with different subtypes of invasive ductal breast cancer treated with multicatheter interstitial accelerated partial breast irradiation (mAPBI). Methods: Data from 5 institutions was collected for patients treated from 1992-2013. We report the outcomes of 821 women with 830 breast

cancers, all with (greater-than or equal to) 1 year of follow-up after completion of mAPBI. Molecular subtype analysis was performed for 582 women in whom ER, PR, Her-2, and grade were known. The Kaplan-Meier method was used to calculate overall survival (OS), IBTR and RNR. A univariate proportional hazard model was performed to estimate the risk of IBTR based upon molecular subtype, age, grade, N-stage, T-stage, margin status, tumor size, dose rate, endocrine therapy, and chemotherapy. Results: The median age of our patient cohort was 60 years. 50.0% (n = 415) of women had luminal A, 6.9% (n = 57) luminal B, 5.7% (n = 47) luminal Her-2, 1.8% (n = 15) Her-2, and 5.8% (n = 48) triple negative breast cancer (TNBC); an additional 29.8% (n = 248) could not be subtyped. With a median follow-up time of 6.5 years, the 5-year OS of our patient cohort was 94.8%. The 5-year IBTR was 3.5% for luminal A, 4.1% for luminal B, 5.1% for luminal Her-2, 13.3% for Her-2, 11.3% for TNBC, and 1.7% for non-subtyped women. Positive surgical margins and high grade correlated with risk for IBTR; molecular subtype and other variables did not. The 5-year RNR rates were 0.3% for luminal A, 4.6% for luminal B, 2.6% for luminal Her-2, 34.5% for Her-2, and 2.3% for TNBC. RNR risk was significantly higher for women with Her-2 compared to the other 4 subtypes. In addition, risk of RNR was significantly higher for women with luminal B compared to those of luminal A. Conclusions: Women with Her-2 and luminal B breast cancer may have higher RNR but not IBTR risk after mAPBI, as compared with women with luminal A subtype. Further follow-up, correlation with use of trastuzumab, and comparison of outcomes with whole breast irradiation will be valuable.

Anton-Martin P, Thompson MT, Sheeran PD, **Fischer AC**, Taylor D and Thomas JA (2014). "Extubation during pediatric extracorporeal membrane oxygenation: A single-center experience." *Pediatric Critical Care Medicine* 15(9): 861-869.

[Full-Text](#)

Department of Surgery

Objectives: Describe aspects of one center's experience extubating infants and children during extracorporeal membrane oxygenation. Design: Retrospective review of medical records. Setting: Seventy-one-bed critical care service (PICU and cardiovascular ICU) in a large urban tertiary children's hospital. Patients: Pediatric and neonatal patients supported on extracorporeal membrane oxygenation between 1996 and 2013 who were either not intubated or extubated greater than 24 hours during their extracorporeal membrane oxygenation course. Interventions: None. Measurements and Main Results: Sixteen of 511 patients on extracorporeal membrane oxygenation were extubated for at least 24 hours during their extracorporeal membrane oxygenation courses. Fourteen had respiratory failure and two had cardiac disease. Five patients died while on extracorporeal membrane oxygenation, but the cause of death was not related to complications associated with extubation. Extubated patients were supported a median of 19.7 days on extracorporeal membrane oxygenation, with a median extubation latency (time between cannulation and first extubation) of 6.2 days and a median extubation duration of 5.5 days. Mean time extubated was 43% of the total time on extracorporeal membrane oxygenation. Two patients were reintubated briefly or had a laryngeal mask airway placed for decannulation (n = 1). The remaining patients were extubated within 5 days of decannulation, weeks afterward (n = 2), transferred to outside facilities (n = 2), or died during extracorporeal membrane oxygenation support (n = 5). We also observed no complications directly attributable to extubation and spontaneous re-aeration of consolidated lungs in acute respiratory distress syndrome in extubated patients on extracorporeal membrane oxygenation. Conclusion: Extubation and discontinuation of mechanical ventilation appear feasible in patients requiring long-term extracorporeal membrane oxygenation. Emergency procedure planning may need to be modified in extubated patients on extracorporeal membrane oxygenation.

Armstrong K, **Dixon S**, May S and Patricolo GE (2014). "Anxiety reduction in patients undergoing cardiac catheterization following massage and guided imagery." *Complementary Therapies in Clinical Practice* 20(4): 334-338.

[Full-Text](#)

Department of Internal Medicine

OBJECTIVE: This study aimed to evaluate the effectiveness of massage with or without guided imagery in reducing anxiety prior to cardiac catheterization. METHOD: A total of 55 inpatients and outpatients received massage, guided imagery, or massage with guided imagery prior to cardiac catheterization. Self-reported anxiety levels and blood pressure (BP) and heart rate (HR) were evaluated in participants and a matched

comparison group. RESULTS: Massage with and without guided imagery resulted in significant reductions in self-reported anxiety ($p < 0.0001$). Patients receiving intervention had lower diastolic BP and HR vs. the comparison group ($p < 0.0001$ and $p < 0.05$). CONCLUSIONS: Massage with or without guided imagery immediately reduced self-reported anxiety. This pilot study has certain limitations: a non-randomized, convenience sample and a matched control group that was created retrospectively. However, the study indicates a benefit to providing massage or massage with guided imagery prior to anxiety-inducing medical procedures such as cardiac catheterization.

Arsanjani R, Berman DS, Gransar H, Cheng VY, Dunning A, Lin FY, Achenbach S, Al-Mallah M, Budoff MJ, Callister TQ, Chang HJ, Cademartiri F, **Chinnaiyan KM**, Chow BJW, DeLago A, Hadamitzky M, Hausleiter J, Kaufmann P, LaBounty TM, Leipsic J, **Raff G**, Shaw LJ, Villines TC, Cury RC, Feuchtner G, Kim YJ, Min JK and Investigators C (2014). "Left ventricular function and volume with coronary CT angiography improves risk stratification and identification of patients at risk for incident mortality: Results from 7758 patients in the prospective multinational confirm observational cohort study." *Radiology* 273(1): 70-77.

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Department of Internal Medicine

Purpose: To assess whether gradations of left ventricular (LV) ejection fraction (LVEF) and volumes measured with coronary computed tomography (CT) would augment risk stratification and discrimination for incident mortality. Materials and Methods: This study was approved by the institutional review board, and informed consent was obtained when required. Subjects without known coronary artery disease (CAD) who underwent cardiac CT angiography with quantitative LV measurements were categorized according to LVEF (>55%, 45%-54.9%, 35%-44.9%, or <35%). LV end-systolic volume (LVESV) and LV end-diastolic volume (LVEDV) were classified as normal (≥ 90 mL) or abnormal (≥ 200 mL). CAD extent and severity was categorized as none, nonobstructive, obstructive ($\geq 50\%$), one-vessel, two-vessel, and three-vessel or left main disease. LVEF and volumes were assessed for risk prediction and discrimination of future mortality by using Cox hazards model and receiver operating characteristic curve analysis, respectively. Results: During a follow-up of 2.0 years \pm 0.9, 7758 patients (mean age, 58.5 years \pm 13.0; 4220 male patients [54.4%]) were studied. At multivariable analysis, worsening LVEF was independently associated with mortality for moderately (hazard ratio = 3.14, $P < .001$) and severely (hazard ratio = 5.19, $P < .001$) abnormal ejection fraction. LVEF demonstrated improved discrimination for mortality ($A(z) = 0.816$) when compared with CAD risk factors alone ($A(z) = 0.781$) or CAD risk factors plus extent and severity. At multivariable analysis of a subgroup of 3706 individuals, abnormal LVEDV (hazard ratio = 4.02) and LVESV (hazard ratio = 6.46) helped predict mortality ($P < .001$). Similarly, LVESV and LVEDV demonstrated improved discrimination when compared with CAD risk factors or CAD extent and severity ($P < .05$). Conclusion: LV dysfunction and volumes measured with cardiac CT angiography augment risk prediction and discrimination for future mortality. (C) RSNA, 2014

Atallah PC, Niculescu O and Franklin B (2014). "Induced hypothermia after out-of-hospital cardiac arrest: Body habitus and survival." *Circulation* 130(Sup 2): A18280.

[Full-Text](#)

Department of Internal Medicine

Introduction: Recent studies have demonstrated an obesity paradox suggesting that overweight and mildly obese patients with cardiovascular disease may have better outcomes when compared with their underweight or normal weight counterparts. Hypothesis: The present study sought to test the hypothesis that body habitus is associated with survival in the setting of induced hypothermia after out-of-hospital cardiac arrest. Methods: We evaluated 90 patients (51 men, 39 women, mean age 60) with out-of-hospital cardiac arrest who underwent induced hypothermia using a target esophageal temperature of 33.5 (degrees)C with specific reference to the association between body mass index (BMI) and survival to hospital discharge for shockable and non-shockable electrocardiographic (ECG) rhythms. Pearson's chi-square tests and Mantel-Haenszel statistics were used to control for associated variables and to test outcomes. Results: 44 patients presented with shockable ECG rhythms (ventricular fibrillation and pulseless ventricular tachycardia) and 29 survived to hospital discharge (OR, 10.77; 95% CI: 3.55, 34.7; $P < 0.0001$), resulting in a

66% overall rate of survival. 46 patients presented with non-shockable ECG rhythms (pulseless electrical activity and asystole) and 7 survived (OR, 10.77; 95% CI: 3.55, 34.7; P 0.000001), resulting in a 15% overall rate of survival. The rates of survival to hospital discharge were significantly different ($p=.007$) across BMI categories for patients with shockable rhythms. Morbidly obese patients (obese II+) had the lowest survival rate (22%). Patients who were overweight or moderately obese (obese I) had the highest survival rates, 90% and 80%, respectively. These findings persisted after adjusting for confounding variables. Conclusions: These data are the first to show that rates of survival to hospital discharge differ across BMI categories for patients who undergo induced hypothermia after experiencing out-of-hospital cardiac arrest. Among patients presenting with shockable ECG rhythms, overweight and moderately obese patients had the highest rates of survival. Further studies are needed to confirm the relationship between body habitus and survival in this cohort of patients.

Austin E, Betz B and **Arndt D** (2014). "The value of 3-T magnetic resonance imaging in acute transverse myelitis." *Pediatric Neurology* 51(6): 860-861.

[Full-Text](#)

Department of Pediatrics

Avery RL, Bakri SJ, Blumenkranz MS, Brucker AJ, Cunningham ET, D'Amico D J, Dugel PU, Flynn HW, Freund KB, Haller JA, Jumper JM, Liebmann JM, McCannel CA, Mieler WF, Ta CN and **Williams GA** (2014). "Intravitreal injection technique and monitoring: Updated guidelines of an expert panel." *Retina* 34(Sup 12): S1-S18.

[Full-Text](#)

Department of Ophthalmology

Purpose: To review evidence and provide updated guidelines on intravitreal (IVT) injection technique and monitoring. Methods: A review of the published literature on IVT injection from 2004 to 2014 formed the basis for round table deliberations by an expert panel of ophthalmologists. Results: The dramatic increase in the number of IVT injections has been accompanied by a comparable increase in evidence surrounding IVT practice patterns and techniques. The expert panel identified a number of areas that have evolved since publication of the original IVT injection guidelines in 2004, the most notable of which were a lack of evidence to support the routine use of pre-, peri-, and postinjection antibiotics to reduce the risk of endophthalmitis, and the role of aerosolized droplets containing oral contaminants from the patient and/or providers as a potential source of infection. The panel emphasized the continued importance of applying povidone-iodine to and avoiding eyelid contact with the intended injection site and needle. Conclusion: Updated guidelines on IVT injection technique and monitoring are proposed based on a review of published literature and expert panel deliberations.

Bagan M, **Bahl A**, **Brackney A** and Joseph S (2014). "Comparison of ultrasound and plain radiography for the detection of long bone fractures." *Annals of Emergency Medicine* 64(4): S24.

[Full-Text](#)

Department of Emergency Medicine

Study Objective: To compare emergency department (ED) residents' ability to correctly identify long bone fractures via two imaging modalities; ultrasound (US) versus plain radiography (X-ray). Methods: This was an IRB-approved, randomized prospective study. Study subjects included ED residents at a single site. Five types of fracture (transverse, comminuted, avulsion, oblique, buckle) were mechanically induced in 5 store-bought chicken legs, and an additional 5 legs were left unfractured. Each of the chicken legs was then imaged by both US (short and long axis video clips) and X-ray (anteroposterior and lateral views). Subjects were randomized to either US or X-ray first, and additionally randomized to viewing order within each arm. Subjects received a 10-minute tutorial on identification of fractures by US and X-ray, and then were given 2 minutes to view each of the US and X-ray images. Subjects decided presence or absence of fracture (primary endpoint). If a fracture was observed, subjects identified the location and type of fracture (secondary endpoints). Mean proportions and standard deviations (SD) were analyzed using paired T-test and linear models (SAS version 9.3, R software version 2.15.2). A P value of 0.05 was considered significant. Results: A total of 40 residents (15 post-graduate year (PGY)-1, 12 PGY-2, 13 PGY- 3) participated in the study.

Thirty-one subjects were male and 19 were randomized to US first. Residents completed a mean of 185 (SD 95.8) US scans prior to the study (98 PGY-1, 205 PGY-2, 268 PGY-3). The primary endpoint of correctly identifying any fracture had a higher mean proportion in the US arm than the X-ray arm, 0.89 (SD 0.11) and 0.75 (SD 0.11) respectively. The secondary endpoint of fracture type was higher in the X-ray than US arm, with a mean proportion of 0.52 (SD 0.12) and 0.51 (SD 0.13) respectively. The secondary endpoint of fracture location was higher in the US than X-ray arm, with a mean proportion of 1.00 (SD 0.03) and 0.97 (SD 0.09) respectively. Paired T-tests comparing the difference in proportions revealed a significant difference ($P < .001$) in the primary endpoint (detection of fracture), by a difference in proportions of 0.145 (0.0948-0.1952, 95% CI). There was no significant difference in proportions for the secondary endpoints, including fracture type ($P = .5903$) and fracture location ($P = .1173$). While these were not significant, buckle and avulsion fractures were more commonly identified by US than X-ray (mean proportion 0.78 versus 0.51, and 0.92 versus 0.55, respectively). Other fracture types were similar between US and X-ray (0.91 versus 0.95 for transverse; 0.80 versus 0.76 for oblique; and 0.93 versus 0.92 for comminuted). A linear model using the difference in proportions of correct answers was performed using PGY level, number of prior scans (surrogate for experience), and to which arm subjects were randomized, as covariates. PGY level ($P < .0001$) and number of previously completed scans ($P < .0146$) were statistically significant, but not to which arm subjects were randomized ($P < .5775$). Conclusion: This study shows that subjects were better able to identify fractures using US compared to X-ray, especially as level of US and ED experience increased. These results encourage the use of US for the assessment of isolated extremity injury, particularly when the injury is diaphyseal and the clinical suspicion for subtle fracture is high.

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 84(7): 1173-1179.

[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.

Bastani A, Donaldson D, Cloutier D, Forbes A, **Ali A** and **Anderson W** (2014). "Streamlining patients with isolated hip fractures from the emergency department to the operating room utilizing a novel hip fracture pathway." Annals of Emergency Medicine 64(4): S101-S102.

[Full-Text](#)

Department of Emergency Medicine

Department of Internal Medicine

Study Objectives: There are approximately 341,000 emergency department (ED) visits annually for patients who present with acute hip fractures. These patients are not typically diagnostically challenging; however, once the diagnosis of a hip fracture is made, surgery within 48 hours of hospital admission has resulted in a

clinically significant decrease in mortality and length of stay. In July 2013 our institution developed a new ED-based algorithm for these patients managed by the trauma service. The primary intent of the algorithm was to eliminate unnecessary delays before hip fractures patients would undergo their operations. Our objective was to describe the impact of this hip fracture pathway (HFP) on the throughput of ED hip fracture patients. Methods: We conducted a before and after evaluation of patients presenting to an 80,000 visit community hospital ED from August 2012 to April 2014. The before cohort included all ED admitted hip fractures patients from August 2012 to July 2013. All patients in the before cohort were evaluated and admitted using an emergency physician-led algorithm. The after cohort included all ED admitted hip fractures patients from August 2013 to April 2014. All patients in this cohort once identified as a hip fracture were admitted and followed using a new Hip Fracture Pathway (HFP). The HFP included the following two major changes: 1) admitting the patient to trauma service with immediate consultation of orthopedics from the ED by the trauma PAs, and 2) consulting anesthesia for urgent evaluation of the patient and arranging any pre-operative testing as deemed necessary. Demographic and quality assurance data was collected on all patients. Our primary outcome measure was to evaluate the nullTime from ED presentation to ORnull (TEDOR) broken down into 12-hour increments. Our secondary outcomes include nullTime from OR to Dischargenull (TORDI) and in-patient mortality rates. Data was analyzed using descriptive statistics and a Fisher's exact test to assess for statistical significance across different 12-hour increments. Results: A total of 221 hip fractures were admitted in the before cohort of which 206 underwent surgery. Complete throughput data available for review on 203 (98.5%) cases. A total of 175 hip fractures were admitted in the after cohort of which 170 underwent surgery and all had throughput data available for review. The breakdown of TEDOR is illustrated in Table 1 with corresponding P values. Across all 12 hour increments beginning at 24 hours there was a statistically significant improvement in TEDOR between the before and after cohorts. This resulted in 10% of patients not meeting the 48-hour metric compared with 33% in the before cohort, an absolute reduction of 23% of patients undergoing surgery within 48 hours of admission to the ED in the after cohort. Neither TORDI nor mortality rates showed any statistically significant change between cohorts. Conclusion: An ED-based hip fracture pathway which incorporates early anesthesia and orthopedic consultation can significantly decrease nullTime from ED presentation to ORnull in the community hospital setting (Table). (Table Presented).

Bastani A, Weintraub CH, Milewski AM, **Rocchini A**, Thurston K, Kumar V and **Anderson W** (2014). "A triage-based algorithm to decrease median time to pain management for long bone fractures." [Annals of Emergency Medicine](#) 64(4): S136.

[Full-Text](#)

Department of Emergency Medicine

Study Objectives: The Centers for Medicare and Medicaid Services (CMS) is the dominant force in the determination of how emergency departments (EDs) and emergency physicians are reimbursed. One avenue in which CMS exerts its influence is through the Outpatient Prospective Payment System (OPPS). The OPPS is a set of outpatient and ED metrics that hospitals must report regarding the quality of care provided. The hospitals score across these metrics may result in a reduction of up to 2% points from a hospital's CMS reimbursement. One of the newest metrics relating to the ED is nullOP-21: Median Time to Pain Management for Long Bone Fracture.null The bar for this metric is currently set at a median time of 47 minutes. During the initial reporting period for OP-21, our institution was not meeting this metric. Therefore our objective was to evaluate the effectiveness of a triage-based nullLong Bone Fracture Algorithmnull (LBFA) to decrease nullMedian Time to Pain Management for Long Bone Fracturennull (TTPM). Methods: At our 80,000-visit community hospital ED, we conducted a before and after study from January 2013 to March 2014. The before cohort extended for the first eight months of the trial and provided baseline data detailing our TTPM. During a one-month washout period in September 2013, a LBFA was created by a multidisciplinary team of ED physician, administrative and nursing personnel. Three key elements of the LBFA include 1) assigning patients in this cohort as priority 2, thereby alerting staff to mobilize the patient into the ED within ten minutes of arrival, 2) creating a nulljust in timenull TTPM tool that stayed with the patient and would include a place to document ED arrival time as well as provide space to document the final time a patient should receive pain control in order to meet the metric, and 3) educating the triage and minor care

staff to document whether the patient received pain medications at home prior to arrival or if they declined pain medications upon initial exam or triage. The after cohort consisted of the following six months to track our process with the LBFA. Our primary outcome measure was TTPM as compared between both cohorts. Data was analyzed using descriptive statistics and a Mann-Whitey U test was to assess for statistical significance. Results: A total of 116 consecutive cases were evaluated in the before cohort over an eight-month period. The median TTPM was 56.50 minutes during that time with 77 (66.4%) of cases not meeting the metric. After a one-month implementation period, a total of 85 consecutive cases comprised the after cohort over the following six months. The median TTPM was 47 minutes with 42 (49.4%) of the cases not meeting the metric. The difference between both cohorts was 9.5 minutes [95% CI of 8.22 minutes] and a $P=.0110$. A graphical breakdown of the before cohort and the after cohorts broken down by month is illustrated in Figure 1 which illustrates a continued improvement in the metric throughout the after cohort. Conclusion: A triage-based long bone fracture algorithm can decrease median time to pain management for long bone fracture in a community hospital setting. (Figure Presented).

Bennett JT, Vasta V, Zhang M, Narayanan J, **Gerrits P** and Hahn SH (2014). "Molecular genetic testing of patients with monogenic diabetes and hyperinsulinism." Molecular Genetics and Metabolism. ePub Ahead of Print.

[Full-Text](#)

Department of Pediatrics

Genetic sequencing has become a critical part of the diagnosis of certain forms of pancreatic beta cell dysfunction. Despite great advances in the speed and cost of DNA sequencing, determining the pathogenicity of variants remains a challenge, and requires sharing of sequence and phenotypic data between laboratories. We reviewed all diabetes and hyperinsulinism-associated molecular testing done at the Seattle Children's Molecular Genetics Laboratory from 2009 to 2013. 331 probands were referred to us for molecular genetic sequencing for Neonatal Diabetes (NDM), Maturity-Onset Diabetes of the Young (MODY), or Congenital Hyperinsulinism (CHI) during this period. Reportable variants were identified in 115 (35%) patients with 91 variants in one of 6 genes: HNF1A, GCK, HNF4A, ABCC8, KCNJ11, or INS. In addition to identifying 23 novel variants, we identified unusual mechanisms of inheritance, including mosaic and digenic MODY presentations. Re-analysis of all reported variants using more recently available databases led to a change in variant interpretation from the original report in 30% of cases. These results represent a resource for molecular testing of monogenic forms of diabetes and hyperinsulinism, providing a mutation spectrum for these disorders in a large North American cohort. In addition, they highlight the importance of periodic review of molecular testing results.

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." American Journal of Medicine 127(10): 905-911.

[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 underused 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.

Boyer A, Cameron L, Munoz-Maldonado Y, **Bronsteen R**, Comstock CH, Lee W and **Goncalves LF** (2014). "Clinical significance of amniotic fluid sludge in twin pregnancies with a short cervical length." [American Journal of Obstetrics and Gynecology](#) 211(5): 506.e501-506.e509.

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Department of Diagnostic Radiology and Molecular Imaging

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 (plus or minus) 5.6 weeks vs 31.0 (plus or minus) 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.

Bradley J and **Juliao TR** (2014). "Somatization," In Henery S and Christie N (ed). [Family Medicine](#): McGraw-Hill.

[Request Form](#)

Department of Internal Medicine

Brandenburg S and **Rhodes C** (2014). "Imaging of patients receiving extracorporeal membrane oxygen therapy: What do radiologists need to know?" [Emergency Radiology](#) 21(5): 441.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Purpose/Aim: Extracorporeal membrane oxygen therapy (ECMO) is an advanced treatment for patients with severe respiratory failure or cardiogenic shock from reversible causes that can be used if conventional treatment methods have failed. This educational poster provides radiographic examples to convey the key imaging findings of adult patients undergoing ECMO therapy, which in turn gives the interpreting radiologist the ability to effectively communicate the necessary information clinicians are seeking in such patients. **Content Organization:** 1. Introduction to ECMO therapy 2. Types of ECMO therapy a. Venoarterial b. Venovenous 3. Catheters used for each method a. Radiographic appearance of different catheters b. Appropriate placement of catheters on standard chest radiography 4. Common radiographic findings and complications of ECMO patients a. Opacification of lungs b. Air collections c. Hemothorax/Pleural effusion 5. Brief summary **Summary/Conclusion:** ECMO therapy is an uncommon indication for chest radiography. However, there are important features that radiologists must be aware of to adequately interpret the images. In addition to the type of ECMO therapy and various catheters used, common expected findings and complications must be recognized and conveyed to the ordering clinician. The ability to recognize these key components offers the radiologist an opportunity to play an important role in guiding patient care.

Cappell MS, Mogrovejo E, Manickam P and **Batke M** (2014). "Endoclips to facilitate cannulation and sphincterotomy during ERCP in a patient with an ampulla within a large duodenal diverticulum: Case report and literature review." Digestive Diseases and Sciences 60(1): 168-173.

[Full-Text](#)

Department of Internal Medicine

Carp J, **Viola S**, Aljasseem A, Weber L and Fana M (2014). "End of life discussions-PM&R residents face deficits in their training programs." PM & R: Journal of Injury, Function & Rehabilitation 6(9): S241.

[Full-Text](#)

Department of Physical Medicine and Rehabilitation

Objective: To determine whether or not enhanced end-of-life and code status education is needed during clinical residency training and support future advocacy in this area if more education is needed. Design: Web-based survey. Setting: Tertiary Hospital. Participants: Physical Medicine and Rehabilitation residents in ACGME accredited residencies throughout the nation. Interventions: A 20-question survey was designed and administered using a web-based system and distributed by the AAPM&R Resident Newsletter. Main Outcome Measures: To gather data about training, education, attitudes and personal experiences of PM&R residents through a web-based survey. Results or Clinical Course: Data collection in process. Conclusions: It is our experience that the age and morbidity of patients coming to the inpatient rehabilitation unit is increasing. End-of-life (EOL) issues have become common place concerns for rehabilitation patients and their families. Given that Physiatrists are focused on Quality of Life, it is inevitable that we are actively involved in code status decisions and health care choices at this final stage of life. Studies have shown that the health care professional's lack of knowledge is the greatest barrier to providing quality care at EOL. As a result, in 2000 the LCME instituted requirements for education on EOL for medical students. However, the extent and quality of training varies, still leaving many doctors feeling unprepared. Talking with patients/families about EOL issues is one of many challenging discussions that physicians are responsible for. We hypothesize that PM&R residents feel inadequately prepared to handle EOL discussions and desire more effective training to meet those needs.

Chauvin C, Al-Faham Z and **Wong CYO** (2014). "The use of 99mTc-MDP bone scanning to assess facial bone growth." Journal of Nuclear Medicine Technology 42(4): 304-305.

[Request Form](#)

Department of Diagnostic Radiology and Molecular Imaging

Bone scanning is an important technique to detect mandibular growth, and its quantitation aids in deciding the optimal timing for surgery. Here, we will discuss a case of abnormal mandibular growth and use of bone scanning to evaluate the facial bone growth.

Chen PY, Kamrava M, Kuske R, Anderson BM, Hayes JK, DeManes J, Wang P, Wang P, Veruttipong D and Snyder M (2014). "Outcomes of "unsuitable" patients by ASTRO guidelines treated with accelerated partial breast irradiation via interstitial multi-catheter brachytherapy: A multi-institution collaborative study." International Journal of Radiation Oncology Biology Physics 90(Sup 1): S135-S136.

[Full-Text](#)

Department of Radiation Oncology

Chen PY, Wobb J, Wallace M, **Grills IS**, Jawad MS, Pietron A, Dilworth JT, **Dekhne N** and **Brabbins DS** (2014). "Clinical efficacy of accelerated partial-breast irradiation in treatment of ER-negative breast cancer: Results of a matched pair analysis." Journal of Clinical Oncology 32(Sup 26): Abstr 70.

[Request Form](#)

Department of Radiation Oncology

Department of Surgery

Background: To assess outcomes of ER-negative breast CA pts treated with APBI, a matched-pair analysis was performed to determine efficacy of APBI vs whole breast RT (WBRT) from a single institution. Methods: From over 1650 pts treated with BCT from 1980-2013, a cohort of ER[-] pts treated with APBI or WBRT were

investigated. Matched-pair analysis with a 1:1 ratio paired 79 APBI with 79 WBRT pts, all ER[-] (total:158). Match criteria included follow-up (FU) > 1.0 yr, stage, & age +/- 5 yrs. Outcomes analyzed included local recurrence (LR), true recurrence/marginal miss (TRMM), regional recurrence (RR), distant metastases (DM), disease-free (DFS), cause-specific (CSS), and overall survivals (OS). Results: As for clinical-pathological traits, no significant differences were noted for age (p=0.302), T-stage (p=1.000), tumor size (p=0.721), N-stage (p=0.062), use of chemoRx (p=0.747), endocrine Rx(p=0.408) or Herceptin (p=1.00). Per ASTRO Guidelines, no differences were seen in cautionary or unsuitable [UnS] groups between APBI & WBRT (p=0.333). With a mean FU of 8.0 yrs (10.1 yrs APBI; 8.4 yrs WBRT p<0.001), no differences were seen in the 10-yr actuarial rates of LR (9.3% vs 22.1% p=0.094), RR (1.3% vs 8.1% p=0.299), DM (7.1% vs 13.0% p=0.429), DFS (83.9% vs. 72.5% p=0.214), CSS (93.5% vs. 89.0 % p=0.677), or OS (79.6% vs. 80.1% p=0.573) between APBI & WBRT. Only TRMM was significantly different (0% APBI vs 12.5% p=0.011). In stratifying patients based on ER% (0%, 1-3%, 4-8%) no outcome differences were noted. Of the 158 ER[-] pts, 124 were cautionary with similar 10-yr outcomes except for TRMM (0% APBI;WBRT 14.4% p=0.017) & CLBF (0% APBI;WBRT17.1% p=0.019). For the 34 UnS patients, no endpoint differences were seen APBI vs WBRT. But, when the entire 158 ER[-] patients were analyzed for # of UnS factors, increasing UnS factors led to significant risk of RR (p<0.001) & DM (p=0.002). Conclusions: With 10-year FU of APBI for ER[-], the clinical results were equivalent to WBRT. No differences were noted based on ER%. Increasing number of unsuitable factors had more RR and DM. Maturation of randomized trial data will be needed to provide Class I evidence for equivalence of APBI to WBRT in ER[-] patients.

Chennamsetty A, Ehlert MJ, **Peters KM** and Killinger KA (2014). "Advances in diagnosis and treatment of interstitial cystitis/painful bladder syndrome." Current Infectious Disease Reports 17(1): 454.

[Full-Text](#)

Department of Urology

Interstitial cystitis/bladder pain syndrome (IC/BPS) is a prevalent chronic condition that can be challenging not only to diagnose but also to treat. We review recent diagnostic markers and therapies for IC/BPS from non-medication-based therapies, oral therapies, intravesical therapies, and surgical treatments.

Chinnaiyan K, Hickman L, **Boura JA**, DePetris AM, Peyser P, **Raff G** and Nallamotheu B (2014). "Correlation between appropriate use of coronary CT angiography and downstream resource utilization." Circulation 130(Sup 2): A16738.

[Full-Text](#)

Department of Internal Medicine

Department of Biomedical Sciences (BHS)

Introduction: Limited data exist regarding the correlation between the appropriateness of use of coronary CT angiography (CTA) and downstream resource utilization (RU). Methods: Data from the Advanced Cardiovascular Imaging Consortium, a statewide CTA registry were linked to Blue Cross Blue Shield of Michigan claims data. Based on the 2010 appropriate use criteria, the group was divided into: appropriate (A), inappropriate (I), uncertain (U) and unclassifiable (UC). CTA findings and RU (hospitalizations, invasive angiography, revascularizations, stress testing) at 1 year were compared. Results: The study group consisted of 2307 patients (A =1582, I = 276, U = 195 and UC = 254). The most common indication among the I group was use of coronary CTA for CAD screening (32%). Compared to the A group, patients in the I group were older and more often male, and had higher prevalence both nonobstructive (<50% stenosis, 69.2% vs. 54.1%, p<0.0001) and obstructive ((greater-than or equal to)50% stenosis, 27.8% vs. 19.3%, p<0.0001) CAD. No significant difference was noted between the A and I groups with respect to overall downstream resource utilization (46.9% vs. 44.6%, p = 0.47), invasive procedures (15% vs. 15.2%, p = 0.94) or noninvasive testing (43.1% vs. 40.6%, p = 0.44). On multivariate analysis among all patients, the finding of obstructive CAD was the strongest predictor of overall resource utilization (OR 5.33 [95% CI 3.51-8.10]) followed by acute presentation (OR 2.1 [95% CI 1.48-2.98]) ; inappropriate use was not a significant predictor (OR 0.78 [95% CI 0.51-1.19]). Conclusions: In this population-based cohort, 68.5% of patients were appropriately referred for CTA. Appropriate use did not correlate with downstream resource utilization events, which were driven strongly by CTA findings. Additionally, patients deemed inappropriate for CTA had higher burden of CAD, with implications for early detection and prognosis in these patients. Further studies are needed to

adjudicate appropriateness of use of coronary CTA.

Cho I, Hartaigh B, Gransar H, Schulman-Marcus J, Valenti V, Berman DS, Budoff MJ, Achenbach S, Al-Mallah M, Andreini D, Cademartiri F, Callister TQ, Chang HJ, **Chinnaiyan K**, Cury R, Delago A, Gomez M, Hadamitzky M, Hausleiter J, Hindoyan N, Feuchtner G, Kim YJ, Kaufmann PA, Leipsic J, Lin FY, Maffei E, Pontone G, **Raff G**, Shaw LJ, Villines TC, Dunning A and Min JK (2014). "Absence of coronary artery disease by coronary computed tomographic angiography and the warranty period associated with all-cause mortality: Findings from the CONFIRM long-term follow-up registry." *Circulation* 130(Sup 2): A12044.

[Full-Text](#)

Department of Internal Medicine

Abstract Introduction: Coronary computed tomographic angiography (CCTA) is widely utilized for the detection of coronary artery disease (CAD). Foremost, the very low risk associated with normal CCTA is an important component for the purpose of cardiovascular risk stratification. To date, however, data that accounts for long-term prognosis of normal CCTA is sparse. **Purpose:** Using data from a multi-center, global observational CCTA registry, we sought to determine the potential warranty period of normal CCTA. **Methods:** Among 12,086 patients who underwent CCTA, 7,651 patients without history of previous CAD, aged between 30-74 years, were included in the current analysis and followed consecutively over 5 years. Normal CCTA was defined as the absence of any plaque in the coronary arteries. Annual mortality was calculated and compared with overall patients. The primary event in this study was all-cause mortality (ACM). **Results:** During a median follow-up of 5.8 years (IQR, 5.3-6.3 years), 120 of all-cause deaths occurred among 3,051 patients with normal CAD. Mean age of the study population was 52 (plus or minus) 11 years, and 45% were men. Annual mortality rate was 0.68% (95% confidence interval (CI), 0.57~0.82), while annual mortality of overall patients was 1.31% (95% CI, 1.20~1.42) ($p < 0.001$). When we defined warranty period as a follow-up duration until the estimated mortality reached the threshold of 5% using a Kaplan Meier curve, the warranty period of normal CCTA for ACM was 7.2 years. In subgroup analysis, according to a baseline risk factor profile using Framingham risk scores (FRS), annual mortality rate was 1.31% (95% CI, 0.85~2.03) among patients with high FRS and 0.62% (95% CI, 0.51~0.76) among those with low to intermediate FRS. **Conclusion:** Absence of CAD by CCTA demonstrates a favorable survival rate with a minimum warranty period of at least 7 years. Persons presenting with a high cardiovascular risk profile displayed a relatively higher mortality, which is similar to overall population. Therefore, they should be considered a distinct group of individuals at-risk by physicians and researchers alike.

Chrisman AJ, **Laban M**, **Taylor RS** and **Riutta J** (2014). "Early physical medicine and rehabilitation consultation leads to decreased length of stay for patients admitted with a stroke." *PM & R: Journal of Injury, Function & Rehabilitation* 6(9): S314.

[Full-Text](#)

Department of Physical Medicine and Rehabilitation

Objective: To determine if the timing of consults placed to Physical Medicine and Rehabilitation (PM&R) for patients admitted with a stroke in an acute medical center affects acute hospitalization Length of Stay (LOS). **Design:** Retrospective cohort study. **Setting:** Tertiary Care Hospital. **Participants:** All patients age 18-99 admitted from 2/2009-12/2013 with one of the following ICD-9 codes listed as their primary diagnosis: 430, 431, 432.1, 432.9, 433.01, 433.11, 433.21, 433.31, 433.81, 433.91, 434.01, 434.11, and 434.91. **Interventions:** Not applicable. **Main Outcome Measures:** Acute hospitalization Length of Stay (LOS). **Results or Clinical Course:** The hospital's database was queried to illicit all patients admitted with the above ICD-9 codes and separated into two groups: those who received a PM&R consult and those who did not. Patients were excluded if the ICD-9 code diagnosis was not the primary reason for admission. Acute hospitalization LOS was compared between the two groups and the data was further analyzed to determine if LOS differed based on timing of the consult. LOS was significantly shorter in patients with early PM&R consults. **Conclusions:** This is the first documented study using Electronic Medical Records to investigate how the timing of PM&R consultation affects acute hospitalization length of stay for patients with strokes that has been reported in the literature to date. Our data indicate that early consultation of PM&R in patients admitted with acute strokes reduces acute hospitalization LOS. Given that Physical Medicine and

Rehabilitation focuses on function we are uniquely qualified to both determine and facilitate appropriate disposition plans for patients admitted with strokes.

Chrisman AJ, **Viola S**, Shetty N and Jones MP (2014). "Four extremity gangrene leading to amputation presents a challenging rehabilitation course: A case report." *PM & R: Journal of Injury, Function & Rehabilitation* 6(9): S225.

[Full-Text](#)

Department of Physical Medicine and Rehabilitation

Case Description: A 53-year-old Caucasian woman developed septic shock secondary to nephrolithiasis. She underwent emergent cystoscopy with stent placement. Postoperatively she required multiple vasopressors and intubation. Her hospital course was further complicated by a myocardial infarction as well as dry gangrene of her bilateral hands and feet. Setting: Tertiary Care Hospital. Results or Clinical Course: The patient was originally admitted to the Inpatient Rehabilitation Service prior to any surgical intervention. She required maximal assistance of 2 people for transfers. She was discharged to the surgical service twice; first for an upper extremity amputation of the left second through fifth digits and later for a right below the knee amputation (BKA). Her rehabilitation goals included wound care, increasing strength and endurance, and maximizing functional use of her residual limbs in preparation for future surgery. Discussion: From the time of the initial consult this patient was particularly challenging. In order to preserve as much functional tissue as possible, the treating surgeons recommended performing multiple amputations spread over several months with continuation of intensive therapy and whirlpool debridement between operations. Several discussions with her insurance company were necessary to educate them of the benefit of proceeding in this manner. Had all of her surgeries been performed at once, her thumb would not have been spared and her BKA would likely have been an above the knee amputation. The anticipation of being discharged with amputations in all four extremities led to an emotional burden that manifested as severe anxiety, making pain control difficult. It was not until discharge planning was complete that adequate pain control was achieved. Conclusions: In this case the Physical Medicine and Rehabilitation team functioned as patient advocate, pain management specialist, counselor and care management coordinator. The importance of communication in this case cannot be overemphasized as her successful rehabilitation will continue to require teamwork among multiple medical specialists, surgical specialists, therapists and prosthetists as well as the continued financial support of her insurance company.

Chuang YC, Kaufmann JH, Chancellor DD, **Chancellor MB** and Kuo HC (2014). "Bladder instillation of liposome encapsulated onabotulinumtoxinA improves overactive bladder symptoms: A prospective, multicenter, double-blind, randomized trial." *Journal of Urology* 192(6): 1743-1749.

[Full-Text](#)

Department of Urology

Purpose Cystoscopic intradetrusor injection of botulinum toxin has helped patients with refractory overactive bladder but with the increased risks of urinary tract infection and urinary retention. We assessed whether catheter instillation of 200 U onabotulinumtoxinA formulated with liposomes is safe and effective for the treatment of overactive bladder. Materials and Methods This 2-center, double-blind, randomized, placebo controlled study enrolled patients with overactive bladder inadequately managed with antimuscarinics. Patients were assigned to intravesical instillation of lipo-botulinum toxin (31) or normal saline (31). The primary end point was the mean change in micturition events per 3 days at 4 weeks after treatment. Additional end points included mean changes in urgency events, frequency and urinary urge incontinence, as well as changes in overactive bladder symptom scores and urgency severity scores. Results At 4 weeks after treatment lipo-botulinum toxin instillation was associated with a statistically significant decrease in micturition events per 3 days (-4.64 for lipo-botulinum toxin vs -0.19 for placebo, $p = 0.0252$). Lipo-botulinum toxin instillation was also associated with a statistically significant decrease in urinary urgency events with respect to baseline but not placebo. However, lipo-botulinum toxin instillation was associated with a statistically significant decrease in urgency severity scores compared to placebo ($p = 0.0181$). These observed benefits of lipo-botulinum toxin instillation were not accompanied by an increased risk of urinary retention. The effects of lipo-botulinum toxin on urinary urge incontinence were inconclusive. Conclusions A single intravesical instillation of lipo-botulinum toxin was associated with decreases in

overactive bladder symptoms without side effects. Intravesical instillation of liposomal botulinum toxin may be a promising approach to treat refractory overactive bladder.

Co MJ, **Ghaith G, Amin M** and **Cappell MS** (2014). "Chronic vomiting from esophageal stenosis due to a congenital, ectopic, tracheobronchial ring within the esophagus: Endoscopic and endoscopic ultrasound findings." *Gastrointestinal Endoscopy* 80(6): 1178-1179.

[Full-Text](#)

Department of Internal Medicine

Department of Pathology

Cuttler N, **Heidemann D**, Cendrowski C, **Armin AR** and **Folberg R** (2014). "Extramedullary hematopoiesis of the conjunctiva presenting as active systemic disease in a patient with myelofibrosis." *Cornea* 33(12): 1352-1354.

[Full-Text](#)

Department of Ophthalmology

Department of Pathology

Administration

Purpose: To report the clinicopathological correlation of extramedullary hematopoiesis (EMH) of the conjunctiva in a patient with a history of myelofibrosis. Methods: Case report. Results: Elevated pink conjunctival lesions developed bilaterally in a 73-year-old man who had been treated for myelofibrosis for 13 years. EMH was detected in the examination of tissue from the lesion of the inferior fornix of the right eye. Conclusions: The appearance of conjunctival lesions in a patient with myelofibrosis may indicate underlying pathology of EMH that may necessitate a change in systemic treatment of this condition.

Dadayan S, Muench S, Chiu HH and **Shamoun T** (2014). "Assessing medical residents' knowledge on the use of inhalers." *Pharmacotherapy* 34(10): E194.

[Full-Text](#)

Department of Internal Medicine

Dang V and **Bahl A** (2014). "A retrospective review of variables impacting patient care in the emergency department with the annual change in resident staffing." *Annals of Emergency Medicine* 64(4): S114-S115.

[Full-Text](#)

Department of Emergency Medicine

Study Objective: The July phenomenon describes the period in which new interns begin treating patients while senior residents take on additional responsibility. We aim to describe the impact that resident learning has on emergency department (ED) efficiency based on time within the academic year. Methods: This IRB-approved retrospective chart review was conducted at a suburban academic center with 120,000 ED visits. Data collection was extracted from EPIC, and spanned a one-year period (July 2011 through June 2012) and included patients evaluated by ED residents post-graduate years (PGY) 1-3. Patients seen solely by attendings or midlevels were excluded. Data from months of July and August were grouped together, as were data from May and June. Outcomes assessed included various time intervals: door to resident doctor time, time to disposition, and total length of stay (LOS). Mixed effects models were constructed treating nullPGY levelnull and nulltime of yearnull as fixed effects and nullresidentnull as a random effect, and standard model diagnostics were performed. F-tests of significance were conducted for the fixed effects, using the Satterthwaite approximation for denominator degrees of freedom (R software version 3.0.2). Results: Forty-one residents (14 PGY-1, 11 PGY-2, 16 PGY-3) during the July to August period and 36 residents (13 PGY-1, 10 PGY-2, 13 PGY-3) during the May to June period were included in the study. The proportion of PGY levels did not change significantly between these time periods (chi square test of independence, $P = 0.96$). A total of 16,819 patients were included, and 58,159 were excluded from the study. Residents saw 8607 patients (PGY-1: 1913, PGY-2: 2642, PGY-3: 4052) in the July to August period and 8212 patients (PGY-1: 2389, PGY-2: 2072, PGY-3 3751) in the May to June period. There was not a significant difference between the number of patients seen in the beginning and the end of the year by PGY levels (chi square test of independence, $P < .001$). The mean door to resident doctor time (in minutes:seconds) was

higher at the beginning of the year versus the end of the year across all PGY levels [PGY-1 50:44 (SD 35:35) versus 36:29 (SD 25:55), PGY-2 46:20 (SD 33:51) versus 36:43 (SD 27:37), PGY-3 53:43 (SD 38:48) versus 45:01 (SD 30:40)]. Door to resident time changed significantly ($P < .001$) from beginning to the end of the year, and the amount that it decreased differed significantly between PGY levels (PGY-1 30.8%, PGY-2 21.6%, PGY-3 8.7%). The mean time to disposition (in hours) was higher at the beginning versus the end of the year [PGY-1 4.9 (SD 5.4) versus 3.8 (SD 4.8), PGY-2 4.5 (SD 5.3) versus 3.7 (SD 4.0), PGY-3 4.5 (SD 5.1) versus 4.1 (SD 4.6)]. Time to disposition changed significantly ($P = .02$) with decrease of 13.5% (95% CI: 2.5% to 23.0%) from beginning to end of the year. The amount of this decrease did not differ significantly between PGY levels. The mean LOS (in hours) was higher at the beginning of the year versus the end of the year across all PGY levels [PGY-1 6.8 (SD 5.8) versus 5.4 (SD 6.6), PGY-2 6.4 (SD 5.8) versus 5.4 (SD 4.5), PGY-3 6.5 (SD 5.6) versus 6.0 (SD 5.0)]. ED LOS changed significantly ($P = .01$), with decrease of 14% (95% CI: 3.3% to 23.4%) from beginning to end of the year. The amount of decrease did not differ significantly between the PGY levels. Conclusion: This study shows that residents were able to improve on variables of patient care efficiency including time to resident doctor, time to disposition and ED LOS from the beginning to the end of the academic year.

de Jong MD, Ison MG, Monto AS, Metev H, **Clark C**, O'Neil B, Elder J, McCullough A, Collis P and Sheridan WP (2014). "Evaluation of intravenous peramivir for treatment of influenza in hospitalized patients." Clinical Infectious Diseases 59(12): E172-E185.

[Full-Text](#)

Department of Emergency Medicine

Background. Seasonal influenza causes >200 000 annual hospitalizations in the United States. Current antiviral treatment options are limited to oral or inhaled agents. There is an urgent unmet need for intravenous antiviral treatments. Methods. Patients hospitalized with suspected influenza were randomized to 5-day treatment with intravenous per-amivir (600 mg once daily) or placebo; all received the institution's standard of care (SOC) treatment. Time to clinical resolution and change in viral shedding in nasopharyngeal specimens were the primary and key secondary end points. Results. Influenza infection was confirmed in 338 of 405 enrolled patients. At the time of a preplanned interim analysis, the primary efficacy analysis population comprised 121 patients who did not receive a concurrent neuraminidase inhibitor as part of the SOC. The median (95% confidence interval) time to clinical resolution was 42.5 (34.0-57.9) hours for per-amivir versus 49.5 (40.0-61.9) hours for placebo ($P = .97$). A larger treatment effect was observed in patients with history of symptoms <48 hours or admitted to an intensive care unit. Greater reductions in viral shedding, based on median tissue culture infective dose, were observed in patients who received peramivir than in placebo recipients, although this difference was not statistically significant. The incidence and severity of adverse events and laboratory abnormalities were similar between the 2 treatment groups. The study was terminated for futility after a preplanned interim analysis. Conclusions. A significant clinical benefit was not demonstrated for peramivir plus SOC compared with placebo plus SOC. Peramivir was generally safe and well tolerated. These findings highlight the challenges in designing studies to evaluate influenza antiviral agents in a hospitalized setting.

Debaty G, Aufderheide TP, **Swor RA**, Frascone RJ, Wayne MA, Domeier RM, Olinger ML, Mahoney BD and Yannopoulos D (2014). "The paradoxical association between pulmonary edema and survival with favorable neurological function after cardiac arrest." Circulation 130(Sup 2): A248.

[Full-Text](#)

Department of Emergency Medicine

Introduction: Pulmonary edema (PE) is a sign of heart failure. In a recent out-of-hospital cardiac arrest (OHCA) trial, the presence of PE was associated with increased survival with favorable neurological outcome (SFNO) [PE present (28/200 (14%) vs. no PE 119/1912 (6.2%), $p < 0.001$]. In subjects treated with standard (S) cardiopulmonary resuscitation (CPR), the presence of PE was associated with SFNO [PE 11/75 (14.7%) vs no PE 50/948 (5.3%), $p = 0.003$]. PE was also associated with active compression decompression CPR plus an impedance threshold device (ACD+ITD) and SFNO rates [PE 17/125 (13.6%) vs no PE 69/964 (7.1%), $p = 0.020$]. To help explain this paradox, we examined the relationship between PE in subjects reported to

gasp or manifest agonal breathing during CPR. We hypothesized that gasping decreased intrathoracic pressure, enhanced venous return, lowered intracranial pressure, and in some cases induced PE. Methods: Data related to the frequency of gasping and SFNO was available from 2007-2009 in the ResQTrial, a NIH-funded trial comparing S-CPR with ACD (ResQPUMP)+ITD(ResQPOD-16)(ACD+ITD manufacturer, Advanced Circulatory Systems, Roseville MN). PE was identified by prehospital fluid or secretions in the airway and/or roentgenographic evidence after hospital admission. SFNO was defined as a Modified Rankin Scale score (less-than or equal to) 3 at hospital discharge. Results: PE was more frequent in gasping subjects [30/212 (14.2%)] vs. non-gasping subjects [144/1660 (8.7%)], $p < 0.016$. SFNO was associated with gasping in 49/207 (23.7%) subjects vs. 81/1649 (4.9%) for non gasping patients, $p < 0.001$. PE was more frequent in the ACD+ITD group vs. S-CPR (125/1095 vs. 76/1037, $p < 0.001$). PE was associated with gasping in the ACD+ITD group [24/119 (20.2%) vs 83/846 (9.8%), $p = 0.002$] but not the S-CPR group [6/93 (6.5%) vs. 61/814 (7.5%), $p = 0.84$]. Conclusions: PE frequency in OHCA was associated with a > 2 fold higher rate of survival to hospital discharge with good brain function during S-CPR and ACD+ITD. Increased PE was associated with increased gasping during ACD+ITD but not S-CPR. Higher gasping rates leading to lower intrathoracic pressures may underlie the unanticipated association between increased PE and SFNO with ACD+ITD but not with S-CPR.

Dejam A, **Malley BE**, Feng M, Cismondi F, Park S, Samani S, Samani ZA, Pinto DS and Celi LA (2014). "The effect of age and clinical circumstances on the outcome of red blood cell transfusion in critically ill patients." *Critical Care* 18(4): 487.

[Full-Text](#)

OUWB Medical Student Author

Introduction: Whether red blood cell (RBC) transfusion is beneficial remains controversial. In both retrospective and prospective evaluations, transfusion has been associated with adverse, neutral, or protective effects. These varying results likely stem from a complex interplay between transfusion, patient characteristics, and clinical context. The objective was to test whether age, comorbidities, and clinical context modulate the effect of transfusion on survival. Methods: By using the multiparameter intelligent monitoring in intensive care II database (v. 2.6), a retrospective analysis of 9,809 critically ill patients, we evaluated the effect of RBC transfusion on 30-day and 1-year mortality. Propensity score modeling and logistic regression adjusted for known confounding and assessed the independent effect of transfusion on 30-day and 1-year mortality. Sensitivity analysis was performed by using 3,164 transfused and non-transfused pairs, matched according the previously validated propensity model for RBC transfusion. Results: RBC transfusion did not affect 30-day or 1-year mortality in the overall cohort. Patients younger than 55 years had increased odds of mortality (OR, 1.71; $P < 0.01$) with transfusion. Patients older than 75 years had lower odds of 30-day and 1-year mortality (OR, 0.70; $P < 0.01$) with transfusion. Transfusion was associated with worse outcome among patients undergoing cardiac surgery (OR, 2.1; $P < 0.01$). The propensity-matched population corroborated findings identified by regression adjustment. Conclusion: A complex relation exists between RBC transfusion and clinical outcome. Our results show that transfusion is associated with improved outcomes in some cohorts and worse outcome in others, depending on comorbidities and patient characteristics. As such, future investigations and clinical decisions evaluating the value of transfusion should account for variations in baseline characteristics and clinical context.

Diaz KM, Sheppard EG and Wall T (2014). "Integration of behavioral interviewing practices in residency programs (iCollaborative)." MedEdPortal Resource ID 2384

[Full-Text](#)

Department of Biomedical Sciences (OU)

Selection criteria for family medicine residency programs have primarily focused on academic preparation and successful achievement of educational milestones in undergraduate medical education. Emphasis is often placed on USMLE scores, grade point average, and membership in the national honor society for medical students, Alpha Omega Alpha. The variation in the use of behavioral interviewing practices in the selection process for residency programs appears to lack inclusion of both the ACGME milestones and the academic preparation medical students receive in medical school. Undergraduate medical education has

developed varied holistic approaches to the interviewing process, including but not limited to behavioral interviewing, for entry to medical school. In fact, medical students encounter various types of interviewing methods (one-on-one interviews, Multiple Mini-Interviews) to assess their professionalism, team work, and interpersonal and communication skills as a part of the selection process for medical school. Furthermore, medical students are receiving additional training in the development of these skills, both in the pre-clinical and clinical years. The inclusion of behavioral interviewing in the selection process for a residency program allows for an opportunity to assess the continuation of these skills at an advanced level. Additionally, behavioral interviewing provides an improved ability to establish the goodness-of-fit and ensure the success of both the applicant and residency program. Yet, there appears to be a limited availability of guidelines or best practices with regard to conducting behavioral interviewing for faculty members in residency programs. A panel discussion comprised of members from various family medicine residency programs will review how behavioral interviewing techniques have been developed and implemented in each of their settings, with recommendations of best practices for the selection process including.

Dilworth JT, Val Hymas R, Jawad MS, Mangona VS, Zamdborg L, Wobb J, Pietron A, Wallace M, **Chen PY, Grills IS and Brabbins DS** (2014). "Dosimetric predictors of toxicity and cosmesis in women treated with hypofractionated whole-breast irradiation." Journal of Clinical Oncology 32(Sup 26): Abstr 77.

[Request Form](#)

Department of Radiation Oncology

Background: Large breast volume (BV) and distance of separation (DoS) have historically served as exclusionary criteria for hypofractionated whole breast irradiation (H-WBI). We investigate dosimetric parameters impacting toxicity and cosmesis. Methods: 299 consecutive patients with T0-2,N0-1,M0 breast cancer were treated with H-WBI at a single institution from 2007-2013. 4,256 cGy were delivered in 16 fractions via tangent photon beams utilizing inverse planning, with objectives to limit the V105 to 15%, the V110 to 2%, and the V115% to <0.1%. 227 patients with available treatment planning information and at least 6 months of follow-up (FU) were analyzed. Dosimetric parameters were correlated with acute ((less-than or equal to)6 months post-treatment) and chronic toxicity and overall cosmesis. Proportions of toxicity grade and cosmesis score were compared with chi-square or Fisher exact tests. Results: With a median FU of 2.7 years (range 0.4-6.6 years), there were no local or regional recurrences, 1 distant failure, and one in-field angiosarcoma. Rates of any acute and chronic grade 1/2/3 toxicity were 47%/32%/9% and 53%/22%/7%. Cosmesis (beyond 6 months) was reported as excellent, good, and fair in 45%, 55%, and <1% of patients. The V105 was the best predictor for cosmesis and chronic toxicity, with a V105(less-than or equal to)10% being associated with better cosmesis (excellent vs fair/poor) and lower toxicity (grade 0 vs grade 1 vs grade 2/3) compared to a V105>10% (p=0.09 and 0.03, respectively). The mean DoS was 22 cm, with 22% and 3% of patients having a DoS greater than 25 cm and 28 cm. The mean BV was 1523 cc, with 19% and 5% having a BV greater than 2000 cc and 2500 cc. Neither a larger DoS nor a larger BV correlated with an inability to achieve a V105(less-than or equal to)10% (p= 0.37 and p=0.13, respectively). Neither DoS nor BV predicted for worse acute toxicity, chronic toxicity, or cosmesis. Conclusions: Minimizing the V110 and V115 and limiting the V105 to (less-than or equal to)10% are useful dosimetric objectives to achieve excellent or good cosmesis following H-WBI. Acceptable toxicity and excellent cosmesis are achievable in women with large DoS or BV, provided techniques to maximize dose homogeneity are employed.

Doshi S and Margiewicz S (2014). "Effectively and efficiently evaluating incidental calcified and ossified bodies." Emergency Radiology 21(5): 443.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Purpose/Aim: 1) Provide the radiologist with an understanding of potential etiologies and common locations for various calcified and ossified bodies that may be encountered on radiography or cross sectional imaging in the emergency setting. 2) Provide the radiologist with an algorithmic approach for developing a differential diagnosis for the etiology of commonly encountered calcified or ossified bodies in an emergency setting. Content Organization: This educational exhibit will concisely describe and demonstrate to the radiologist, a method to evaluate the incidentally encountered calcified or ossified body in an emergency

roomsetting. The presentation will illustrate multiple examples of commonly located incidental bodies, and the potential etiologies utilizing various imaging modalities including radiography, CT, and MRI. Additionally, an algorithmic approach for evaluation of these bodies will be provided to aid the emergency radiologist in efficiently describing and diagnosing these incidentally encountered bodies. Summary/Conclusion: Incidental calcified and ossified bodies are commonly encountered by emergency radiologists. The detection, evaluation, diagnosis, and determination of possible further workup may lead to inefficiencies in the emergency setting. These inefficiencies may be avoided by understanding the anatomy and potential donor sites or etiologies for these bodies. Utilizing an algorithmic approach may assist the radiologist in efficiently evaluating the incidentally encountered calcified or ossified body.

Eskandari M, Thal L, Gibson J, **Boyanton B** and **Amin M** (2014). "Comparison of FDA-approved HPV digene hybrid capture 2 assay with laboratory developed test (LDT) HPV genotyping assay." *Journal of Molecular Diagnostics* 16(6): 776.

[Full-Text](#)

Department of Pathology

Introduction: Digene Hybrid Capture 2 (HC) was the FDA-approved methodology for HPV detection in cervical thin-prep samples until recently when it was replaced by the newer FDA approved Cobas HPV test. Our laboratory has a PCR-based LDT for common low-risk and high-risk HPV genotype detection, developed for paraffin-based tissue. As the HC did not indicate subtypes, gynecologists ordered our LDT for assessing presence of HPV 16/18 versus other subtypes. We sought to compare test results from these assays in conjunction with Pap-smear findings. Methods: The cohort includes 105 consecutive thin-prep specimens that had simultaneous clinical order of HC, LDT and Pap-smear from January 2013 to May 2014. Results of HC, LDT and Pap-smears were compared. Also assessed were HC and/or Pap-smear significant results in discordant cases. Any specimen that had two out of three significant results was considered true positive. Results: 20/105 cases (19%) had discordant results. 12/20 cases were HC positive/LDT negative and only 4 of these had significant Papsmear results. 2/20 cases were HC positive/LDT showing only low risk HPV and negative Pap-smear result. 5/20 cases were HC positive/LDT positive for high risk HPV 66 (not part of HC spectrum of HPV) with only one of these having a significant Papsmear result. 1/20 case had HC negative/Pap-smear negative but LDT positive; however the patient's immediate prior HC was positive. Analyzing the RLU/CO ratios in the 12 cases (HC+/LDT-) showed that 4/12 cases were Pap-smear positive (suggesting false negative LDT result) and 8/12 cases were Pap-smear negative (suggesting false positive HC result). Of these (HC+ but LDT-/PAP-), 6/8 cases had ratio <6. Interestingly, the cases that showed presence of HPV 66 had ratio >6 in four out of five cases. Conclusions: This study indicates some differences in test performance of hybrid capture assay and LDT in high-risk HPV detection. Due to limitation of sample bias and sample size, we could not assess comparative specificity or statistical significance. Although HC appears to be more sensitive assay on simple comparison, the concern for false positive HC test results is important for possible downstream implications to the patient.

Ezhuthachan AS and **Maisels MJ** (2014). "Acute abdominal pain in a 2-year-old child." *Clinical Pediatrics*. ePub Ahead of Print.

[Full-Text](#)

Department of Pediatrics

Ferrante KL, Kim HY, Brubaker L, Wai CY, Norton PA, Kraus SR, Shepherd J, **Sirls LT** and Nager CW (2014). "Repeat post-op voiding trials: An inconvenient correlate with success." *Neurourology and Urodynamics* 33(8): 1225-1228.

[Full-Text](#)

Department of Urology

Aims: This study examined the association between the need for a repeat voiding trial after midurethral sling (MUS) surgery and 1-year success rates. Methods: We conducted this secondary analysis of the participants in the Urinary Incontinence Treatment Network trial of midurethral sling (TOMUS) study which compared retropubic versus transobturator MUS. A standard voiding trial was attempted on all subjects. The "repeat voiding trial" group included subjects discharged with catheterization. All others were considered "self

voiding." Success rates between the groups at 1-year were compared, followed by multivariate analyses controlling for previously reported clinical predictors of success. Results: Most women (76%) were self-voiding, while 24% required a repeat voiding trial. The objective success rate at 1-year was 85.8% in the repeat voiding trial group and 75.3% in the self-voiding group ($P = 0.01$). Subjective success rate at 1-year was 61.0% in the repeat voiding trial group and 55.1% in the self-voiding group ($P = 0.23$). Women in the repeat voiding trial group continued to demonstrate greater objective success than the self-voiding group in multivariate analysis that controlled for previous incontinence surgery, pad weight, urethral mobility, urge score, and type of MUS ($P = 0.04$, OR 1.82, 95% CI 1.03-3.22). Conclusions: Women who require a repeat voiding trial following MUS surgery have greater objective success at 1-year postoperatively when compared to those who are self-voiding at the time of discharge. These results may help reassure women who require catheterization after MUS surgery that their outcome is not compromised by this immediate transient post-operative result.

Ferris JA, Ostola L and **Long RJ** (2014). "Development of gluteal hematoma following greater trochanteric bursa injection: A case report." *PM & R: Journal of Injury, Function & Rehabilitation* 6(9): S354.

[Full-Text](#)

Department of Physical Medicine and Rehabilitation

Case Description: The patient is an 85-year-old man admitted to inpatient rehabilitation (IPR) with a diagnosis of critical illness myopathy. He had a prolonged intensive care unit (ICU) stay with ventilator dependent respiratory failure. Medical complications included deep venous thrombosis (DVT) treated with Fondaparinux. While on IPR, the patient developed right lateral hip pain thought to be trochanteric bursitis. He received a steroid injection to the right greater trochanteric bursa. Three days following injection, the patient developed worsened right hip pain. MRI of the right hip noted extensive intramuscular edema with abnormal postcontrast enhancement involving the right gluteal, right obturator, and right adductor musculature. Multiple pockets of complex fluid collections were found in both the supratrochanteric and posterior peritrochanteric regions. The patient's hemoglobin dropped from 8.0 g/dL to 4.9 g/dL. Follow up CT performed at that time noted significant enlargement of the fluid collections predominately in the right gluteus minimus and medius musculature concerning for intramuscular hemorrhage. Patient had no history of fall or trauma. Setting: Tertiary care hospital. Results or Clinical Course: The patient required multiple blood transfusions and eventually underwent irrigation/debridement with evacuation of the hematoma. Bacterial cultures taken during surgery were negative. Patient had a complicated acute hospital stay but was ultimately readmitted to IPR to complete his rehabilitation process. He was discharged to home at ambulatory level. He was restarted on anticoagulation for treatment of his DVT without further bleeding. Discussion: This is a rare case of development of a large right gluteal hematoma three days following right greater trochanteric bursa injection. The patient was on Fondaparinux for treatment of DVT at the time of the injection. He had no history of trauma. It is hard to ignore the close proximity of these two events without speculation of a causal relationship. Conclusions: Steroid injections are commonly performed for treatment of acute bursitis in hospitalized and non-hospitalized patients, including those on anticoagulation. Although these injections are usually benign, this case highlights the potential for devastating complications.

Ferris JA and **Taylor R** (2014). "Development of dry beriberi following gastric bypass surgery due to inadequate vitamin supplementation: A case report." *PM & R: Journal of Injury, Function & Rehabilitation* 6(9): S209.

[Full-Text](#)

Department of Physical Medicine and Rehabilitation

Case Description: A 29-year-old woman presented with 2 weeks of worsening lower extremity weakness, numbness/tingling, and falls. She had bariatric surgery 4 months prior and had lost 80 lbs since her surgery. She had been taking a daily gelatin based nullgummy null multivitamin supplement. Her whole blood thiamine level was 35 nmol/L (reference 70 - 180 nmol/L). She had negative magnetic resonance imaging (MRI) of the cervical, thoracic, and lumbar spine in addition to a negative lumbar puncture. Electromyography (EMG) findings were indicative of an acute axonal peripheral neuropathy. She was treated with intravenous (IV) thiamine supplementation. Patient had notable improvement with this treatment plan. She later received intravenous immunoglobulin (IVIG), although no studies were indicative of Guillain-Barre

Syndrome and working diagnosis remained dry beriberi. Review of patient's nullgummynull multivitamin supplement was notable for the absence of vitamin B1 (thiamine) despite being marketed as a complete multivitamin. Setting: Tertiary care hospital. Results or Clinical Course: Patient was admitted to the inpatient rehabilitation unit where she continued to receive IV thiamine in addition to intensive physical and occupational therapy. She made significant gains in function and was ambulatory at the time of discharge. She also reported improvement in her lower extremity numbness/tingling. Discussion: There are few reported cases of dry beriberi secondary to bariatric surgery. This case is unique in that the patient was taking what she believed to be a complete multivitamin supplement. Conclusions: Physiatrists often encounter patients with nutritional deficiencies due to a variety of factors. Although a rare entity in an otherwise healthy female, dry beriberi is something we must recognize and treat appropriately. It is important to note that multivitamin supplements, although listed as complete, may be lacking in specific vitamins essential to those patients at risk for nutritional deficiencies. This seems to be especially true in gelatin based vitamins that have been gaining popularity in recent years.

Ferris JA and **Taylor R** (2014). "Inflammatory myelitis with acute paraparesis following epidural steroid injection: A case report." *PM & R: Journal of Injury, Function & Rehabilitation* 6(9): S355.

[Full-Text](#)

Department of Physical Medicine and Rehabilitation

Case Description: A 61-year-old man presented to the emergency department (ED) with complaint of acute lower extremity weakness following epidural steroid injection (ESI). He had a history of chronic low back pain managed at a pain clinic and had received multiple ESI in the past. One week prior to admission, he presented to the emergency department with an exacerbation of his low back pain. MRI of the lumbar spine performed at that time noted a large left sided L2-L3 disk herniation with impingement of the left L3 nerve root. He had a normal neurologic examination. Patient went to his pain clinic where he received an ESI. Following the procedure, the patient reported difficulty using his lower extremities. The following day he presented to the ED with bilateral foot drop, significant lower extremity weakness, and absent reflexes in the lower extremities. MRI of lumbar spine noted high signal intensity in the central portion of the lower thoracic cord at approximately T12 level that was new since the prior examination. Lumbar puncture was performed with a mildly elevated cerebrospinal fluid (CSF) white blood cell count. CSF cultures and viral studies were negative, including West Nile virus. EMG was performed noting a peripheral polyneuropathy. Repeat MRI one week later showed progression of high signal intensity from the T12 vertebral body level to the conus with multiple enhancing nerve roots throughout the thecal sac consistent with an inflammatory myelitis. Setting: Tertiary care hospital. Results or Clinical Course: Patient was admitted to the inpatient rehabilitation unit where he was treated with intensive physical and occupational therapy. He was started on a tapering dose of steroids with some improvement in his symptoms. At the time of discharge, he was able to ambulate using a left knee ankle foot orthosis (KAFO) and right ankle foot orthosis (AFO). Discussion: Only a handful of cases are present in the literature describing the development of an acute inflammatory myelitis following ESI. Conclusions: Given the popularity of ESI injections, it is important to be aware of the possible complications associated with this procedure.

Fisher JE, Mecca L, Leahy J and Baxi R (2014). "Vaginal cuff dehiscence rate in robotic assisted total laparoscopic hysterectomy for benign indications." *Journal of Minimally Invasive Gynecology* 21(6): S71.

[Full-Text](#)

Department of Obstetrics and Gynecology

OUIWB Medical Student Author

Study Objective: To determine the vaginal cuff dehiscence rate following Robotic Assisted Total Laparoscopic Hysterectomy for benign indications at a large teaching hospital. Design: Retrospective, chart review. Setting: Large, suburban teaching hospital. Patients: Women who underwent robotic assisted total laparoscopic hysterectomy for benign indications. Women who had concurrent urologic procedures (sacro-colpopexy, sling procedure, etc.) were excluded. Intervention: Patients had a total laparoscopic hysterectomy performed with robotic assistance a cuff closure technique of either: 1) unidirectional, barbed, self-locking 2-0 polyglactin suture in 2 layers, 2) interrupted, braided 0 polyglactin suture in a figure of eight fashion, or 3) a

combination of the two above methods. Measurements and Main Results: Chart review was performed on all 253 patients who met inclusion criteria for post operative complications and readmission to the hospital for further intervention. There were 3 patients who required post-operative intervention (one for hemoperitoneum on post operative day 1 and 2 for vaginal bleeding, remote from the index surgery, from the angle of the vaginal cuff requiring a single suture and pressure to control the bleeding). None (0/253, 0.0%) of the cases met the definition of cuff dehiscence. 19 different surgeons were evaluated using 3 different cuff closure techniques. Surgeon experience (number of cases) ranged from 1 - 62. Conclusion: In our series of robotic assisted total laparoscopic hysterectomies done for benign indications, the rate of vaginal cuff dehiscence was extremely low (0%) and appears to be much lower than previously reported studies. This finding appears to be independent of surgeon experience or cuff closure technique.

Georgiadis AG, Siegal DS, Scher CE and **Zaltz I** (2014). "Can femoral rotation be localized and quantified using standard CT measures?" [Clinical Orthopaedics and Related Research](#). ePub Ahead of Print.

[Full-Text](#)

Department of Orthopedic Surgery

Background: The terms nullfemoral anteversionnull and nullfemoral torsionnull have often been used interchangeably in the orthopaedic literature, yet they represent distinct anatomical entities. Anteversion refers to anterior tilt of the femoral neck, whereas torsion describes rotation of the femoral shaft. Together, these and other transverse plane differences describe what may be considered rotational deformities of the femur. Assessment of femoral rotation is now routinely measured by multiple axial CT methods. The most widely used radiographic technique (in which only two CT-derived axes are made, one through the femoral neck and one at the distal femoral condyles) may not accurately quantify proximal femoral anatomy nor allow identification of the anatomic locus of rotation. Questions/purposes: (1) What CT methodology (a two-axis CT-derived technique, a three-axis technique adding an intertrochanteric axisnullthe nullKim method,null or a volumetric three-dimensional reconstruction of the proximal femur) most accurately quantifies transverse plane femoral morphology; (2) localizes those deformities; and (3) is most reproducible across different observers? Methods: We constructed a high-definition femoral sawbones model in which osteotomies were performed at either the intertrochanteric region or femoral shaft. Transverse plane deformity was randomly introduced and CT-derived rotational profiles were constructed using three different CT methods. Accuracy and consistency of measurements of femoral rotation were calculated using p values and Fishernulls exact test and intraclass correlation coefficients (ICCs). Results: All three CT methodologies accurately quantified overall transverse plane rotation (mean differences 0.69(degrees) (plus or minus) 3.88(degrees), 0.69(degrees) (plus or minus) 3.88(degrees), and null1.09(degrees) (plus or minus) 4.44(degrees) for the two-plane, Kim, and volumetric methods, respectively). However, use of a single neck and single distal femoral axis does not reliably identify the anatomic locus of rotation, whereas the Kim and volumetric methods do ($p < 0.0001$). All three methods were highly reproducible between observers (ICCs of 0.9569, 0.9569, and 0.9359 for the traditional two-plane, Kim, and volumetric methods, respectively). Conclusions: Only the Kim and volumetric methods can identify the anatomic location of transverse plane rotation and we recommend using one of the two techniques. Accurate anatomic localization of transverse plane rotation enables using precise anatomic terminology (nullfemoral torsionnull versus nullfemoral [ante]versionnull). Clinical Relevance: Current descriptions and treatment of femoral rotational deformities do not discriminate the location of rotation. The transverse plane femoral rotation requires a precise definition based on its anatomic location to maintain consistent communication between clinicians, because version of the neck and torsion of the shaft may have different treatment.

Georgiadis AG and **Zaltz I** (2014). "Slipped capital femoral epiphysis: How to evaluate with a review and update of treatment." [Pediatric Clinics of North America](#) 61(6): 1119.

[Full-Text](#)

Department of Orthopedic Surgery

Slipped capital femoral epiphysis (SCFE) involves displacement of the proximal femoral metaphysis relative to a fixed epiphysis, usually during a period of rapid growth and unique physeal susceptibility. Patients have characteristic clinical, histologic, and radiologic features. Several clinical signs and medical diagnoses should

prompt radiologic and laboratory workup. Limp or hip or knee pain in a patient 10 to 16 years old should include SCFE in the differential. If confirmed, appropriate treatment involves proximal femoral physeal stabilization and/or realignment. The optimal surgical treatment of severe SCFE and its late sequela remain an evolving and controversial subject.

Gillespie GL, Gates DM, **Kowalenko T**, Bresler S and Succop P (2014). "Implementation of a comprehensive intervention to reduce physical assaults and threats in the emergency department." Journal of Emergency Nursing 40(6): 586-591.

[Full-Text](#)

Department of Emergency Medicine

Introduction: The purpose of this study was to test the effectiveness of a comprehensive program to reduce the incidence of workplace violence (WPV) against ED providers by patients and visitors. Methods: An intervention study was conducted with 3 intervention and 3 comparison emergency departments. Participants completed monthly surveys during an 18-month period to measure violent event rates before and after the WPV intervention implementation. Descriptive statistics were used to describe violent events. Analysis of variance was used to assess if the emergency departments participating in the WPV intervention experienced a significant reduction in violence rates compared with nonintervention emergency departments. Results: On average, participants experienced more than 6 incidents of violence during the 18-month study period. Although the study hypothesis was not supported, 2 intervention sites had a significant decrease in violence. Discussion: This study emphasizes the risk of WPV to ED workers and highlights the need for prevention programs. Future research needs to be conducted to test additional comprehensive WPV prevention interventions.

Goldstein JA (2014). "Bioresorbable coronary devices advances illuminated by imaging." JACC: Cardiovascular Imaging 7(11): 1149-1150.

[Full-Text](#)

Department of Internal Medicine

Griebling TL, DuBeau CE, Kuchel G, Wilde MH, Lajiness M, Tomoe H, **Diokno A**, Vereecke A and **Chancellor MB** (2014). "Defining and advancing education and conservative therapies of underactive bladder." International Urology and Nephrology 46(1): 29-34.

[Full-Text](#)

Department of Urology

In contrast to other forms of voiding dysfunction, underactive bladder (UAB) has traditionally received little research or educational attention. This is changing as our understanding of the underlying mechanisms of detrusor dysfunction and other forms of underactive bladder improves. In addition, the impact of UAB on patient symptoms, general and health-related quality of life, and caregiver burden are becoming more recognized. However, there remains a paucity of data on the subject, and an extensive need for additional research and education on the topic. This paper explores the current state of knowledge about UAB with an emphasis on education regarding the condition and conservative methods of assessment and treatment. Recommendations for future work in this area are considered.

Grunberger G (2014). "Response to comment on Grunberger "Insulin analogs—Are they worth it? Yes!" Diabetes Care 2014;37:1767–1770 and Davidson "Insulin analogs—Is there a compelling case to use them? No!" Diabetes Care 2014;37:1771–1774." Diabetes Care 37(10): e232.

[Full-Text](#)

Department of Internal Medicine

Guckenberger M, Mantel F, Gerszten PC, Flickinger JC, Sahgal A, Letourneau D, **Grills IS**, Jawad M, **Fahim DK**, Shin JH, Winey B, Sheehan J and Kersh R (2014). "Safety and efficacy of stereotactic body radiotherapy as primary treatment for vertebral metastases: A multi-institutional analysis." Radiation Oncology 9(226): 1-8.

[Full-Text](#)

Department of Radiation Oncology

Department of Neurosurgery

Purpose: To evaluate patient selection criteria, methodology, safety and clinical outcomes of stereotactic body radiotherapy (SBRT) for treatment of vertebral metastases. Materials and methods: Eight centers from the United States (n = 5), Canada (n = 2) and Germany (n = 1) participated in the retrospective study and analyzed 301 patients with 387 vertebral metastases. No patient had been exposed to prior radiation at the treatment site. All patients were treated with linac-based SBRT using cone-beam CT image-guidance and online correction of set-up errors in six degrees of freedom. Results: 387 spinal metastases were treated and the median follow-up was 11.8 months. The median number of consecutive vertebrae treated in a single volume was one (range, 1-6), and the median total dose was 24 Gy (range 8-60 Gy) in 3 fractions (range 1-20). The median EQD2(10) was 38 Gy (range 12-81 Gy). Median overall survival (OS) was 19.5 months and local tumor control (LC) at two years was 83.9%. On multivariate analysis for OS, male sex (p < 0.001; HR = 0.44), performance status < 90 (p < 0.001; HR = 0.46), presence of visceral metastases (p = 0.007; HR = 0.50), uncontrolled systemic disease (p = 0.007; HR = 0.45), > 1 vertebra treated with SBRT (p = 0.04; HR = 0.62) were correlated with worse outcomes. For LC, an interval between primary diagnosis of cancer and SBRT of = 30 months (p = 0.01; HR = 0.27) and histology of primary disease (NSCLC, renal cell cancer, melanoma, other) (p = 0.01; HR = 0.21) were correlated with worse LC. Vertebral compression fractures progressed and developed de novo in 4.1% and 3.6%, respectively. Other adverse events were rare and no radiation induced myelopathy reported. Conclusions: This multi-institutional cohort study reports high rates of efficacy with spine SBRT. At this time the optimal fractionation within high dose practice is unknown.

Hanna-Mitchell AT, Wolf-Johnston AS, Barrick SR, Kanai AJ, **Chancellor MB**, De Groat WC and Birder LA (2014). "Effect of botulinum toxin A on urothelial-release of ATP and expression of SNARE targets within the urothelium."

Neurourology and Urodynamics 34(1): 79-84.

[Full-Text](#)

Department of Urology

Aims Botulinum neurotoxin serotype A (BoNT/A) has emerged as an effective treatment of urinary bladder overactivity. Intravesical lipotoxin (BoNT/A delivery using liposomes), which may target the urothelium, is effective in blocking acetic acid induced hyperactivity in animals. The objective of this study was to assess the possible site of toxin action within the urothelium. Methods We examined expression of the toxin receptor (SV2) and its cleavage targets (SNAP-25 and SNAP-23) within urothelium as well as effects of the toxin on mechanically evoked release of ATP from cultured rat urothelial cells. ATP release was measured using the luciferin-luciferase assay; we examined expression of SNAP-23 and -25 in urothelial cells and mucosa of rat and human bladders. Results BoNT/A (1.5 U; 1-3 hr) blocked hypotonic evoked release of urothelial ATP, without affecting morphology. The expression of protein targets for BoNT/A binding (SV2) was detected in human and rat bladder mucosa and catalytic action (SNAP-23, -25) in urothelial cells and mucosa (differed in intensity) from rat and human bladder. Incubation of cultured (rat) urothelial cells with BoNT/A decreased expression levels of both SNAP-23 (44%) and SNAP-25 (80%). Conclusions Our findings reveal that the bladder urothelium expresses the intracellular targets and the binding protein for cellular uptake of BoNT/A; and that the toxin is able to suppress the levels of these targets as well as hypotonic-evoked ATP release. These data raise the possibility that intravesical treatment with BoNT/A suppresses bladder reflex and sensory mechanisms by affecting a number of urothelial functions including release of transmitters. *Neurourol. Urodynam.* 34:79-84, 2015.

Hanson ID, David SW, **Dixon SR**, Metzger DC, Genereux P, Maehara A, Xu K and Stone GW (2014). ""Optimized" delivery of intracoronary supersaturated oxygen in acute anterior myocardial infarction: A feasibility and safety study." Catheterization and Cardiovascular Interventions. ePub Ahead of Print.

[Full-Text](#)

Department of Internal Medicine

Objectives: We sought to evaluate the feasibility and safety of catheter-based supersaturated oxygen (SSO₂) delivery via the left main coronary artery (LMCA) following primary percutaneous coronary intervention (PCI). **Background:** In the multicenter, randomized AMIHOT II trial, SSO₂ delivered into the proximal or mid left anterior descending (LAD) artery via an indwelling intracoronary infusion catheter in patients with acute anterior ST-segment elevation myocardial infarction (STEMI) following primary PCI significantly reduced infarct size but resulted in a numerically higher incidence of safety events. **Methods:** Patients with acute anterior STEMI presenting within 6 hours of symptom onset were enrolled at 3 centers. Following successful LAD stenting, SSO₂ was infused into the LMCA via a diagnostic catheter for 60 minutes. The primary safety endpoint was the 30-day rate of target vessel failure (composite of death, reinfarction, or target vessel revascularization). Cardiac magnetic resonance imaging (cMRI) was performed at 3-5 days and 30 days to assess infarct size. **Results:** Twenty patients with acute anterior STEMI were enrolled. The infarct lesion was located in the proximal LAD in 7 cases (35%) and the mid LAD in 13 cases (65%). Following primary PCI, SSO₂ was delivered successfully in all cases. Target vessel failure within 30 days occurred in 1 patient (5%). Median [interquartile range] infarct size was 13.7% [5.4%-20.6%] at 3-5 days and 9.6% [2.1%-14.5%] at 30 days. **Conclusions.** Following primary PCI in acute anterior STEMI, infusion of SSO₂ via the LMCA is feasible, and is associated with a favorable early safety and efficacy profile. This article is protected by copyright. All rights reserved.

Hanson ID and **Goldstein JA** (2014). "Plaque characterization in unstable versus stable diabetics: Insights illuminated by OCT." Catheterization and Cardiovascular Interventions 84(5): 708-709.

[Full-Text](#)

Department of Internal Medicine

Hawasli A, Jacquish B, Almahmeed T, Vavra J, Roberts N, **Meguid A** and Szpunar S (2014). "Early effects of bougie size on sleeve gastrectomy outcome." American Journal of Surgery. ePub Ahead of Print.

[Full-Text](#)

Department of Surgery

BACKGROUND: When performing sleeve gastrectomy, a bougie (32 to 60 French) is used. We evaluated 2 different bougie sizes on early postoperative outcomes and long-term weight loss. **METHODS:** A 1-year prospective study was conducted on patients undergoing sleeve gastrectomy. In the first 6 months, patients had 32-French bougies (Group 1); in the second 6 months, they had 36-French bougies (Group 2). **RESULTS:** We evaluated 131 patients. No intraoperative complications or mortality occurred. Postoperatively, Group 1 (n = 72) had a longer hospital stay (1.6 +/- .8 vs 1.3 +/- .5 days, P = .04) and used more Ondansetron for nausea than Group 2 (n = 59) (6.7 +/- 8.0 vs 5.3 +/- 4.5 mg, P = .2, respectively). Ten (14%) patients in Group 1 returned to the emergency department compared with 5 (9%) in Group 2. One-year percent excess weight loss was similar (73.0 +/- 20.6% vs 71.1 +/- 20.9%, P = .73, respectively). **CONCLUSIONS:** The smaller bougie resulted in a longer hospital stay, with tendency toward increased nausea, more emergency department visits, and readmissions. Long-term weight loss was not affected.

Heidlebaugh M, Kurz MC, Turkelson CL and **Sawyer KN** (2014). "Full neurologic recovery and return of spontaneous circulation following prolonged cardiac arrest facilitated by percutaneous left ventricular assist device." Therapeutic Hypothermia and Temperature Management 4(4): 168-172.

[Request Form](#)

Department of Emergency Medicine

Sudden cardiac arrest is associated with high early mortality, which is largely related to postcardiac arrest syndrome characterized by an acute but often transient decrease in left ventricular (LV) function. The stunned LV provides poor cardiac output, which compounds the initial global insult from hypoperfusion. If

employed early, an LV assist device (LVAD) may improve survival and neurologic outcome; however, traditional methods of augmenting LV function have significant drawbacks, limiting their usefulness in the periarrest period. Full cardiac support with cardiopulmonary bypass is not always readily available but is increasingly being studied as a tool to intensify resuscitation. There have been no controlled trials studying the early use of percutaneous LVADs (pLVADs) in pericardiac arrest patients or intra-arrest as a bridge to return of spontaneous circulation. This article presents a case study and discussion of a patient who arrested while undergoing an elective coronary angioplasty and suffered prolonged cardiopulmonary resuscitation. During resuscitation, treatment included placement of a pLVAD and initiation of therapeutic hypothermia. The patient made a rapid and full recovery.

Henke P, Park YJ, **Bove P**, Cuff R, Kazmers A, Hans S, Gurm H and Grossman PM (2014). "Periprocedural transfusion is associated with a dramatic increase in morbidity and mortality in patients undergoing percutaneous vascular interventions: Insights from the the bmc2-vic." *Circulation* 130(Sup 2): A14653.

[Full-Text](#)

Department of Surgery

Objective: Blood transfusions are common among patients undergoing vascular interventions. The impact of transfusion on patients undergoing vascular percutaneous interventions has been poorly defined. Methods: We examined data from a large multicenter (n=44 hospitals) quality improvement (QI) vascular interventional registry of all patients undergoing percutaneous vascular interventional (PVI) procedures for peripheral arterial disease (PAD) between 2010 and 2013. Multiple logistic regression modeling was used to identify predictors of, and effect of transfusion on outcomes. Results: Of the 18,127 patients enrolled in the registry, 4.1% received a blood transfusion. The median hemoglobin of those transfused was 7.7 mg/dL (IQR =7.2 - 8.4). Transfusion rates varied from 0 to 14% amongst the hospitals in the registry. From a logistic regression model for transfusion (C-statistic = 0.84 and Hosmer-Lemeshow P-value = 0.653), significant factors (all p<.01) that were independently associated with transfusion included low creatinine clearance (OR= 1.7; 95% CI:1.5 - 2.1), pre-procedural anemia (4.7; 3.8 - 5.9), CHF (1.5; 1.3 - 1.8), COPD (1.3; 1.1 - 1.5), CVD or TIA (1.3; 1.1 - 1.5), warfarin use (1.4; 1.1 - 1.8), critical limb ischemia (1.9; 1.5 - 2.3), urgent procedure (2.7; 2.3 - 3.3), and emergent procedure (8.3; 5.7 - 12.1). As compared with non-transfused patients, MI, death, major cardiac adverse events (MACE), and vascular complications were all significantly elevated (p<.001). Adjusting for patient demographics, disease states, and peri-procedural medications, transfusion was a significant risk factor for increased risk with MI, (OR = 25; 95% CI = 13.7 - 45.8), death (12.7; 7.9 - 20.4), MACE (15.3; 10.6 - 22.1), and vascular access complications (49; 37 - 67), respectively (all p < .001). Over 4 years, a focused performance improvement program was associated with a drop from observed to expected transfusion ratio from 1.2 (2010) to .89 (2013) (p < .001). Conclusion: In a large PVI registry, post procedure transfusion was common and highly correlated with a specific set of clinical risk factors and with major morbidity and mortality. However, using a focused QI program, a significant reduction in transfusion is possible.

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* 46(10): 1953-1959.

[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 (mu)g/kg significantly increased intercontraction intervals in the CYP-treated group. Intrathecal administration of BAM8-22 at 0.03, 0.1 and 0.3 (mu)g 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.

Jawad MS, Wobb J, Wallace M, **Grills IS**, Pietron A, Marvin K, Dilworth JT and **Chen PY** (2014). "Outcomes after local recurrence following breast-conserving therapy for early-stage breast cancer." Journal of Clinical Oncology 32(Sup 26): Abstr 66.

[Request Form](#)

Department of Radiation Oncology

Background: Limited data exist for patients who develop local recurrence (LR) following breast conserving therapy (BCT) for early stage breast cancer (ESBC). This study is to evaluate outcomes and predictors of failure following LR in patients treated with BCT. Methods: 1,654 women with ESBC underwent BCT from 1980 - 2013 at a single institution. All patients had breast-conserving surgery followed by whole breast irradiation (WBI) or accelerated partial breast irradiation (APBI). Subset analysis was performed for patients who developed LR as a first event. Clinical outcomes analyzed include contralateral breast failure (CLBF), regional recurrence (RR), distant metastases (DM), cause-specific survival (CSS), and overall survival (OS). Continuous variables were analyzed with an independent samples t-test and categorical variables with χ^2 . Univariate analysis was performed to determine factors predictive for events after LR. Results: 112 (7%) patients developed LR (87 WBI; 25 APBI), with median time to LR of 6.6 yrs (0.1-28). Median follow-up for the LR group was 14 yrs (0.7-31) overall; 10 (0.7-19) and 16 yrs (1.4-31) for APBI and WBI, respectively ($p=0.01$). A change from initial to LR pathology was seen for: ER status 21%, PR status 25%, HER2 status 13%, grade 38%, histology 40%, and LVSI 38%. Salvage treatment following LR was mastectomy (plus or minus) chemotherapy (CHT) in 75%, wide local excision (plus or minus) RT in 19%, CHT in 2%, and other in 4%. Outcomes following salvage treatment for LR are shown in the table. No differences were seen in outcomes between patients treated with APBI v WBI. Univariate analysis failed to demonstrate any factors predictive for events following LR. Conclusions: Patients who developed LR following BCT for ESBC had excellent clinical outcomes at 5 and 10 yrs, demonstrating effective salvage treatment in this cohort of patients. No differences were noted between patients undergoing APBI v WBI. Further identification of histopathologic patterns between first cancer and LR is currently underway. (Table Presented).

Jones M, Ferris JA and **Riutta JC** (2014). "Non traumatic spinal cord injury due to a spontaneous thoracic subdural hematoma in a patient on anticoagulation, a case report." PM & R: Journal of Injury, Function & Rehabilitation 6(9): S338.

[Full-Text](#)

Department of Physical Medicine and Rehabilitation

Case Description: A 62-year-old woman presented to the emergency center with progressive weakness and lack of sensation in bilateral lower extremities for 24 hours. Her past medical history was remarkable for rheumatic heart disease with a mechanical mitral valve replaced in the 1970s, as well as, a recent tricuspid valve replacement. Patient required lifelong anticoagulation. Setting: Tertiary Care Hospital. Results or Clinical Course: Patient-s symptoms progressed over a 24 hour period. She had no sensation below T3, O/5 strength in the lower extremities, and absent reflexes. CT myelogram demonstrated complete effacement of the thecal sac and cord compression at the T3 level from subdural hemorrhage. Patient was given a dismal prognosis due to length of time and extent of compression. Patient-s symptoms progressed to include upper extremity weakness. Spinal surgery performed emergent decompression laminectomy with durotomy. A copious amount of subdural hematoma was removed. Post operatively the patient was admitted to the inpatient rehabilitation (IPR) unit. Discussion: At the time of admission to IPR, the patient was a maximum assist for Activities of Daily Living (ADLs), transfers and bed mobility. Patient-s hip flexion strength was 3/5 on the right and 0/5 on the left. Her IPR length of stay was 23 days. She was discharge to home at a wheelchair level requiring minimal assistance with transfers and ADLs. Hip flexion had improved to 2/5 on the left. Patient continued her therapies as an outpatient. At 4 months post-operatively she was able to ambulate with a walker. Conclusions: Patient had a relatively positive outcome despite a dismal prognosis

due to a spontaneous subdural hematoma with compression of the thecal sac. A prolonged IPR stay resulted in her transition home. Continued outpatient therapies facilitated her progression to ambulation. This case highlights a rare risk of anticoagulation even though the benefits of anticoagulation have clearly been documented in patients with mechanical valves.

Kashani AH, Brown KT, Chang E, **Drenser KA, Capone A** and **Trese MT** (2014). "Diversity of retinal vascular anomalies in patients with familial exudative vitreoretinopathy." Ophthalmology 121(11): 2220-2227.

[Full-Text](#)

Department of Ophthalmology

Main Outcome Measures Clinical and angiographic findings. **Purpose** To describe the diversity of clinical findings associated with familial exudative vitreoretinopathy (FEVR) using wide-field angiography and to update the current classification system. **Design** Retrospective case series at a single tertiary referral vitreoretinal practice. **Participants** A total of 174 eyes of 87 subjects were studied. **Methods** A retrospective chart review was conducted of patients with a diagnosis of FEVR between January 2011 and January 2013 at a single tertiary care retina practice. Data were collected from patient charts, including sex, gestational age at birth, age at presentation, referring diagnosis, family history, prior ocular surgery, clinical presentation, and diagnostic imaging in each eye. **Inclusion criteria** included clinical diagnosis of FEVR in patients referred to our clinic for evaluation of decreased vision. Patients were excluded if a diagnosis of FEVR could not be made. **Results** A total of 87 subjects met the inclusion criteria for this study. A broad spectrum of previously undescribed clinical and angiographic findings were associated with FEVR on wide-field angiography. These findings can be grossly divided into anatomic and functional changes. Anatomic changes include aberrant circumferential peripheral vessels, venous and arterial tortuosity, late-phase disc leakage, central and peripheral telangiectasias, capillary anomalies, and capillary agenesis. Functional changes include venous-venous shunting, delayed arteriovenous transit, and delayed or absent choroidal perfusion on fluorescein angiography. **Conclusions** Familial exudative vitreoretinopathy has a wide range of unrecognized or under-recognized clinical and angiographic findings that are easily identified using wide-field fluorescein angiography. These novel findings have led to an update of the original FEVR classification scheme and more complete characterization of early stages of FEVR.

Kazanji N, Falatko J, Neupane S and **Reddy G** (2014). "Calciphylaxis presenting as digital ischemia." Internal and Emergency Medicine. ePub Ahead of Print.

[Full-Text](#)

Department of Internal Medicine

Kejbou L, **Forsyth L**, Natavio A and **Shannon F** (2014). "Impact of three antifibrinolytic regimens in cardiac surgery." Critical Care Medicine 42(12): A1626.

[Full-Text](#)

Department of Biomedical Sciences (BHS)

Department of Surgery

Learning Objectives: Antifibrinolytic agents are widely utilized to minimize bleeding and avoid the complications following allogenic blood transfusions during cardiac surgeries. These agents work by disrupting the pathway for dissolution of clots through inhibition of plasminogen activators and plasmin. The objective was to determine postoperative bleeding and adverse event rates in three dosing strategies of antifibrinolytic agents utilized over three distinct three month time frames. **Methods:** This was a single-center, retrospective cohort of adult cardiac surgery patients requiring cardiopulmonary bypass who received one of the following regimens: epsilon aminocaproic acid (EACA) bolus doses, EACA bolus + continuous infusions (CI), and tranexamic acid (TXA) bolus + CI. Patients who were < 18 years, had transcatheter aortic valve replacement surgery, or expired during surgery were excluded. Data collected included: patient demographics, baseline and postoperative (up to 72 hours) lab values, surgical data, antifibrinolytic regimen, chest/mediastinal tube output, re-exploration, acute kidney injury and 30-day thrombotic complications (stroke, myocardial infarction, venous thromboembolism). **Results:** A total of 90 patients were included, 30 consecutive patients per group. Incidences of postoperative bleeding from

chest/mediastinal tubes were 3 (10%) in the EACA bolus group, 1 (3.3%) in the EACA bolus + CI group and 2 (6.7%) in the TXA group ($p = 0.6$). Between the two EACA regimens more bleeding within the EACA bolus group was noted (1185 mL vs 846 mL, $p = 0.055$). Massive transfusions were administered to one patient in each of the EACA bolus and TXA groups. Acute kidney injury occurred in 7 patients of the EACA bolus group, 11 patients in the EACA bolus + CI group and 9 patients in the TXA group ($p = 0.53$). One stroke was noted in the EACA bolus + CI group. Conclusions: No significant differences were found in postoperative bleeding rates or incidences of adverse events between the three dosing regimens. Further investigation is needed to determine the optimal dosing strategy of the antifibrinolytic agents.

Kennedy AS, Ball D, Cohen SJ, Cohn M, Coldwell DM, Drooz A, Ehrenwald E, Kanani S, Moeslein FM, Nutting CW, Putnam SG, Rose SC, **Savin M**, Schirm S, Sharma NK and Wang E (2014). "Pre-Y-90 hepatic radiotherapy hemoglobin and liver functions to predict overall survival in unresectable, chemotherapy-refractory metastatic colorectal cancer." Journal of Clinical Oncology 32(Sup 3): Abstr 292.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Kitta T, **Chancellor MB**, De Groat WC, Kuno S, Nonomura K and Yoshimura N (2014). "Roles of adenosine A1 and A2A receptors in the control of micturition in rats." Neurourology and Urodynamics 33(8): 1259-1265.

[Full-Text](#)

Department of Urology

Aims: Adenosine is a neurotransmitter that exerts numerous physiological effects in many organs. However, few studies have focused on the role of adenosine receptors in the control of micturition. Therefore, we examined the role of adenosine A1 and A2A receptors in the control of bladder activity in rats with normal or acetic acid (AA) irritated bladders. Methods: Cystometrograms during saline or 0.2% AA infusion were recorded under urethane anesthesia in female Sprague-Dawley rats. After a stabilization period, CCPA (A1 receptor agonist) and/or ZM24138 (A2A receptor antagonist) were administered intravenously (i.v.), intrathecally (i.t.), intracerebroventricularly (i.c.v.), or intravesically. Micturition parameters were recorded and compared before and after drug administration. Results: I.v., i.t., or i.c.v. administration of CCPA or ZM24138 significantly increased intercontraction intervals (ICIs) in both saline and AA infusion groups. During AA infusion, the inhibitory effects induced by i.c.v. CCPA or i.t. ZM24138 were significantly greater than those by i.t. or i.c.v. administration, respectively. Intravesical administration of CCPA, but not ZM24138, significantly increased ICI. Conclusions: These results indicated that: (1) when nociceptive signals from the bladder increase, adenosine A1 receptor-mediated inhibition of micturition is enhanced in the brain, compared to the normal condition, (2) A1 receptor activation also exerts a peripheral inhibitory effect on micturition, and (3) adenosine A2A receptor-mediated excitatory mechanisms are enhanced in the spinal cord following C-fiber bladder afferent stimulation. Thus adenosine A1 receptor agonists and A2A receptor antagonists might be effective for the treatment of overactive bladder and/or bladder hypersensitive disorders, in which C-fiber afferent function is enhanced.

LaBan MM and Ferris JA (2014). "Letter to the editor regarding "Peripheral nerve stimulation compared with usual care for pain relief of hemiplegic shoulder pain" Am J Phys Med Rehabil 2014;93:17 27." American Journal of Physical Medicine and Rehabilitation 93(10): 929.

[Full-Text](#)

Department of Physical Medicine and Rehabilitation

LaBan MM and Hughes C (2014). "Discontinuation of anticoagulation therapy in patients who have experienced an acute intramuscular bleed and are also at risk for a stroke." American Journal of Physical Medicine and Rehabilitation 93(10): 925-926.

[Full-Text](#)

Department of Physical Medicine and Rehabilitation

Larkin B, Van Holsbeeck M, Koueiter D and **Zaltz I** (2014). "What is the impingement-free range of motion of the asymptomatic hip in young adult males?" [Clinical Orthopaedics and Related Research](#). ePub Ahead of Print.

[Full-Text](#)

Department of Orthopedic Surgery

Background: Femoroacetabular impingement is a recognized cause of chondrolabral injury. Although surgical treatment for impingement seeks to improve range of motion, there are very little normative data on dynamic impingement-free hip range of motion (ROM) in asymptomatic people. Hip ultrasound demonstrates labral anatomy and femoral morphology and, when used dynamically, can assist in measuring range of motion. Questions/purposes: The purposes of this study were (1) to measure impingement-free hip ROM until labral deflection is observed; and (2) to measure the maximum degree of sagittal plane hip flexion when further flexion is limited by structural femoroacetabular abutment. Methods: Forty asymptomatic adult male volunteers (80 hips) between the ages of 21 and 35 years underwent bilateral static and dynamic hip ultrasound examination. Femoral morphology was characterized and midsagittal flexion passive ROM was measured at two points: (1) at the initiation of labral deformation; and (2) at maximum flexion when the femur impinged on the acetabular rim. The mean age of the subjects was 28 (plus or minus) 3 years and the mean body mass index was 25 (plus or minus) 4 kg/m². Results: Mean impingement-free hip passive flexion measured from full extension to initial labral deflection was 68(degrees) (plus or minus) 17(degrees) (95% confidence interval [CI], 65null72). Mean maximum midsagittal passive flexion, measured at the time of bony impingement, was 96(degrees) (plus or minus) 6(degrees) (95% CI, 95null98). Conclusions: Using dynamic ultrasound, we found that passive ROM in the asymptomatic hip was much less than the motion reported in previous studies. Measuring ROM using ultrasound is more accurate because it allows anatomic confirmation of terminal hip motion. Clinical Significance: Surgical procedures used to treat femoroacetabular impingement are designed to restore or increase hip ROM and their results should be evaluated in light of precise normative data. This study suggests that normal passive impingement-free femoroacetabular flexion in the young adult male is approximately 95(degrees).

Learned D, Nudleman E, Robinson J, Chang E, **Stec L, Faia LJ, Wolfe J and Williams GA** (2014). "Multimodal imaging of West Nile Virus chorioretinitis." [Retina-the Journal of Retinal and Vitreous Diseases](#) 34(11): 2269-2274.

[Full-Text](#)

Department of Ophthalmology

Purpose: To report the results of multimodal imaging of West Nile virus chorioretinitis. Methods: Three patients with West Nile virus chorioretinitis were evaluated by color fundus photography, fluorescein angiography, enhanced depth optical coherence tomography, indocyanine green angiography, and fundus autofluorescence. Results: Imaging results demonstrate outer retinal and retinal pigment epithelial involvement with inner retinal sparing. Conclusion: Multiple fundus imaging modalities used during the diagnosis of West Nile chorioretinitis are consistent with outer retinal and pigment epithelial changes, suggesting outer retina and retinal pigment epithelium as the primary sites of ocular involvement.

Ledbetter KA, **Shetty M** and Myers DT (2014). "Hysterosalpingography: An imaging Atlas with cross-sectional correlation." [Abdominal Imaging](#). ePub Ahead of Print.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Hysterosalpingography (HSG) provides a unique combination of both fallopian tube and uterine cavity evaluation. A comprehensive understanding of both HSG and correlative cross-sectional imaging findings are essential radiologic skills. This article will review the spectrum of technical artifacts, anatomic variants, congenital uterine anomalies, uterine and tubal pathology, and postsurgical findings as they appear on HSG. Additionally, correlation with MR and ultrasound images is provided. This review article serves as a reference for residents new to HSG as well as staff who perform and interpret HSG infrequently.

Leipsic J, Abbara S, Achenbach S, Cury R, Earls JP, Mancini GBJ, Nieman K, Pontone G and **Raff GL** (2014). "SCCT guidelines for the interpretation and reporting of coronary CT angiography: A report of the Society of Cardiovascular Computed Tomography Guidelines Committee." Journal of Cardiovascular Computed Tomography 8(5): 342-358.

[Full-Text](#)

Department of Internal Medicine

Leipsic J, Taylor CM, Gransar H, Shaw LJ, Ahmadi A, Thompson A, Humphries K, Berman DS, Hausleiter J, Achenbach S, Al-Mallah M, Budoff MJ, Cademartiri F, Callister TQ, Chang HJ, Chow BJW, Cury RC, Delago AJ, Dunning AL, Feuchtner GM, Hadamitzky M, Kaufmann PA, Lin FY, **Chinnaiyan KM**, Maffei E, **Raff GL**, Villines TC, Gomez MJ and Min JK (2014). "Sex-based prognostic implications of nonobstructive coronary artery disease: Results from the international multicenter CONFIRM study." Radiology 273(2): 393-400.

[Request Form](#)

Department of Internal Medicine

Purpose: To determine the clinical outcomes of women and men with nonobstructive coronary artery disease (CAD) with coronary computed tomographic (CT) angiography data in patients who were similar in terms of CAD risk factors, angina typicality, and CAD extent and distribution. Materials and Methods: Institutional review board approval was obtained for all participating sites, with either informed consent or waiver of informed consent. In a prospective international multicenter cohort study of 27 125 patients undergoing coronary CT angiography at 12 centers, 18 158 patients with no CAD or nonobstructive (< 50% stenosis) CAD were examined. Men and women were propensity matched for age, CAD risk factors, angina typicality, and CAD extent and distribution, which resulted in a final cohort of 11 462 subjects. Nonobstructive CAD presence and extent were related to incident major adverse cardiovascular events (MACE), which were inclusive of death and myocardial infarction and were estimated by using multivariable Cox proportional hazards models. Results: At a mean follow-up(plus or minus)standard deviation of 2.3 years(plus or minus)1.1, MACE occurred in 164 patients (0.6% annual event rate). After matching, women and men experienced identical annualized rates of myocardial infarction (0.2% vs 0.2%, P = .72), death (0.5% vs 0.5%, P = .98), and MACE (0.6% vs 0.6%, P = .94). In multivariable analysis, nonobstructive CAD was associated with similarly increased MACE for both women (hazard ratio: 1.96 [95% confidence interval {CI}: 1.17, 3.28], P = .01) and men (hazard ratio: 1.77 [95% CI: 1.07, 2.93], P = .03). Conclusion: When matched for age, CAD risk factors, angina typicality, and nonobstructive CAD extent, women and men experience comparable rates of incident mortality and myocardial infarction.

Lerner AM and Beqaj S (2014). "Beneficial response of cervical dystonia spasmodic torticollis to cidofovir, An acyclic phosphonate analog (s-1-3-hydroxy-2- phosphonylmethoxypropyl) of cytosine." Virus Adaptation and Treatment 6: 33-36.

[Request Form](#)

Department of Internal Medicine

We report the case of a 23-year-old healthy man who had sudden onset of cervical dystonia spasmodic torticollis in October 2012. He was treated with intravenous cidofovir, which was started on February 20, 2013, followed by oral valganciclovir and famciclovir. Pulling of the neck and tilt of the head far to the left is no longer present (as at April 22, 2014). Human herpesvirus 6 total antibody titers fell from 11.27 (negative1) on January 15, 2013 to 1.89 on August 5, 2013. To our knowledge, this is the first case of improvement in cervical dystonia spasmodic torticollis with treatment.

Levasseur KA, Stankovic C, Duffy E, Du W and Mahajan P (2014). "Prevalence of serious bacterial infections in return visits to the emergency department among infants aged 90 days or younger." Pediatric Emergency Care 30(10): 694-698.

[Full-Text](#)

Department of Emergency Medicine

Objective: The main objective of this study was to describe the epidemiology of return visits (RVs) in well-appearing infants to an urban emergency department (ED) who were evaluated for serious bacterial infection (SBI) at their index ED visit. Methods: We conducted a retrospective chart review on infants aged 90

days and younger who were evaluated for SBI at their initial ED visit from 2003 through 2009. A parent database of all febrile infants evaluated for SBI was queried to identify patients who had an RV within 7 days of the index visit. We collected demographic variables including age, sex, and past medical history as well as laboratory test results including white blood cell count, blood, urine, and cerebrospinal fluid cultures and viral studies. Results: Of eligible febrile infants, 10.8% (350/3220) had an RV to the ED within 7 days. The prevalence of SBI in the RV cohort was 6.0% (21/350), which included 1.7% (6/350) bacteremia, 3.7% (13/350) urinary tract infection, and 0.6% (2/350) combined urinary tract infection and bacteremia. The blood culture contamination rate was 88%. Conclusions: Infants aged 90 days or younger who are evaluated for SBI have high RV rates. A substantial number of RVs are due to contaminated blood cultures. Future studies should be conducted to identify predictors for false-positive blood cultures.

Lewis GC, Platts-Mills TF, Liberzon I, Bair E, **Swor R**, Peak D, Jones J, Rathlev N, Lee D, Domeier R, Hendry P and McLean SA (2014). "Incidence and predictors of acute psychological distress and dissociation after motor vehicle collision: a cross-sectional study." Journal of Trauma and Dissociation 15(5): 527-547.

[Request Form](#)

Department of Emergency Medicine

Objective: We examined the incidence and predictors of peritraumatic distress and dissociation after one of the most common forms of civilian trauma exposure: motor vehicle collision (MVC). Method: In this study, patients presenting to the emergency department after MVCs who were without serious injury and discharged to home after evaluation (n = 935) completed an emergency department interview evaluating sociodemographic, collision-related, and psychological characteristics. Results: The incidence and predictors of distress (Peritraumatic Distress Inventory score (greater-than or equal to)23) and dissociation (Michigan Critical Events Perception Scale score >3) were assessed. Distress was present in 355 of 935 patients (38%), and dissociation was present in 260 of 942 patients (28%). These outcomes showed only moderate correlation (r =.45) and had both shared and distinct predictors. Female gender, anxiety symptoms prior to the MVC, and vehicle damage severity predicted both distress and dissociation. Higher socioeconomic status (higher education, higher income, full-time employment) had a protective effect against distress but not dissociative symptoms. Better physical health and worse overall mental health were associated with increased risk of dissociation but not distress. Distress but not dissociation was associated with lower patient confidence in recovery and a longer expected duration of recovery. Conclusion: There are unique predictors of peritraumatic distress and dissociation. Further work is needed to better understand the neurobiology of peritraumatic distress and dissociation and the influence of these peritraumatic outcomes on persistent psychological sequelae.

Likosky DS, Al-Attar PM, Malenka DJ, Furnary AP, Lehr EJ, Paone G, Kommareddi M, Helm R, Jin R, Maynard C, **Hanson EC**, Olmstead EM, Mackenzie TA, Ross CS and Zhang M (2014). "Geographic variability in potentially discretionary red blood cell transfusions after coronary artery bypass graft surgery." Journal of Thoracic and Cardiovascular Surgery 148(6): 3084-3089.

[Full-Text](#)

Department of Surgery

Objective A number of established regional quality improvement collaboratives have partnered to assess and improve care across their regions under the umbrella of the Cardiac Surgery Quality Improvement (IMPROVE) Network. The first effort of the IMPROVE Network has been to assess regional differences in potentially discretionary transfusions (<3 units red blood cells [RBCs]). (copyright) 2014 The American Association for Thoracic Surgery Methods We examined 11,200 patients undergoing isolated nonemergent coronary artery bypass graft surgery across 56 medical centers in 4 IMPROVE Network regions between January 2008 and June 2012. Each center submitted the most recent 200 patients who received 0, 1, or 2 units of RBC transfusion during the index admission. Patient and disease characteristics, intraoperative practices, and percentage of patients receiving RBC transfusions were collected. Region-specific transfusion rates were calculated after adjusting for pre- and intraoperative factors among region-specific centers. Results There were small but significant differences in patient case mix across regions. RBC transfusions of 1 or 2 units occurred among 25.2% of coronary artery bypass graft procedures (2826 out of 11,200). Significant

variation in the number of RBC units used existed across regions (no units, 74.8% [min-max, 70.0%-84.1%], 1 unit, 9.7% [min-max, 5.1%-11.8%], 2 units, 15.5% [min-max, 9.1%-18.2%]; P <.001). Variation in overall transfusion rates remained after adjustment (9.1%-31.7%; P <.001). Conclusions Delivery of small volumes of RBC transfusions was common, yet varied across geographic regions. These data suggest that differences in regional practice environments, including transfusion triggers and anemia management, may contribute to variability in RBC transfusion rates.

Maerz T, Newton MD, Kristof K, Motovylyak O, **Fischgrund JS**, **Park DK** and **Baker KC** (2014). "Three-dimensional characterization of invivo intervertebral disc degeneration using EPIC-(mu)CT." *Osteoarthritis and Cartilage* 22(11): 1918-1925.

[Full-Text](#)

Department of Surgery

Department of Obstetrics and Gynecology

Department of Orthopedic Surgery

Objective: Small animal models are commonly employed to study progression of and potential treatment techniques for degenerative disc disease (DDD), but assessment using conventional imaging techniques is challenging due to resolution. The objective of this study was to employ equilibrium partitioning of an ionic contrast agent micro computed tomography (EPIC - (mu)CT) to map three-dimensional (3D) degenerative changes in the rabbit intervertebral disc (IVD). Materials and methods: Invivo degeneration was induced surgically in 12 New Zealand White rabbits via percutaneous annular puncture and percutaneous nucleotomy. IVDs were harvested after 3 and 6 weeks. EPIC-(mu)CT imaging was performed on fresh, IVDs before and after formalin fixation, and 3DIVD volumes were segmented. IVDs were histologically stained with Safranin-O/Fast-Green and Hematoxylin & Eosin (H&E). EPIC-(mu)CT attenuation and 3D morphological measurements were assessed in healthy and degenerate IVDs and compared to qualitative grading and disc height measurement from histology. Results: EPIC-(mu)CT caused pronounced contrast enhancement of the IVD. Annular puncture and nucleotomy produced mild and severe degenerative changes, respectively. IVD attenuation following contrast enhancement increased significantly in nucleotomized discs at 3 and 6 weeks. IVD attenuation correlated significantly with histologic score and disc height measurements. Disc height decreased most extensively in the posterior and lateral aspects of the IVD. 3D morphological measurements correlated strongly to IVD attenuation and were more sensitive to degenerative changes than histologic measurements. Formalin fixation reduced the attenuation of IVDs by ~10%. Conclusion: EPIC-(mu)CT is sensitive to invivo DDD induced by nucleotomy and provides a high resolution 3D method for mapping degenerative changes in rabbit IVDs.

Maisels MJ and Watchko JF (2014). "Hyperbilirubinemia introduction." *Seminars in Perinatology* 38(7): 395-396.

[Full-Text](#)

Department of Pediatrics

Maisels MJ and Watchko JF (2014). "Jaundiced newborn: Introduction." *Seminars in Perinatology* 38(7): 395-396.

[Full-Text](#)

Department of Pediatrics

Maltese Jr JT, LaBan MM, Gorab K and Maltese JC (2014). "Particle disease osteolysis of the pelvis and the hip after hip arthroplasty." American Journal of Physical Medicine and Rehabilitation 93(5): 453-454.

[Full-Text](#)

Department of Physical Medicine and Rehabilitation

Mangla J, Jenkins CS, Somerset A, Yang W, Akoni OM, **Welsh RJ, Krause K and Chengelis D** (2014). "Laparoscopic inguinal hernia repair versus open inguinal hernia repair." Journal of the American College of Surgeons 219(4): e16-e17.

[Full-Text](#)

Department of Surgery

INTRODUCTION: Multiple studies have compared outcomes of Laparoscopic Inguinal Hernia Repair (LIHR) with Open Inguinal Hernia repair (OIHR). However, these studies have had conflicting results in regard to wound complications. The objective of this study was to compare 30-day outcomes for elective LIHR versus OIHR for initial and recurrent inguinal hernia (IH). METHODS: Patients undergoing elective LIHR and OIHR for initial and recurrent IH between January 2005 and December 2012 were identified using Common Procedural Terminology codes from the American College of Surgeons National Surgical Quality Improvement Project Participant Use Data Files. Patients with incarcerated IHs were excluded. Pearson's Chi-square tests were used to compare 30-day outcomes in LIHR versus OIHR. RESULTS: Of 103,809 patients undergoing IH repair, 76,910 (74.1%) had OIHR and 26,899 (25.9%) had LIHR. Of these patients, 6,988 (6.7%) underwent OIHR and 3,359 (3.2%) underwent LIHR for recurrent IH. Open repair was associated with significantly higher rates of postoperative wound disruption (odds ratio (OR) =3.85, p=0.005), superficial incisional surgical site infection (OR=1.36, p=0.016), pneumonia (OR=1.60, p=0.034), and 30-day mortality (OR=1.95, p=0.019). However, OIHR had significantly lower rates of intra-operative or postoperative blood transfusion (OR=0.57, p=0.006). Subset analysis of elective Open IHR versus Laparoscopic IHR for recurrent IHs showed higher wound complications in OIHR (OR=1.75, p=0.029). CONCLUSIONS: Although open inguinal hernia repair is associated with statistically higher wound complications and 30-day mortality than laparoscopic inguinal hernia repair, both techniques are associated with very low overall morbidity and mortality and are feasible options for elective inguinal hernia repair.

Mangona VS, **Aneese AM**, Marina O, Hymas RV, **Ionascu D, Robertson JM, Gallardo LJ and Grills IS** (2014). "Toxicity after central versus peripheral lung stereotactic body radiation therapy: A propensity score matched-pair analysis." International Journal of Radiation Oncology Biology Physics. ePub Ahead of Print.

[Full-Text](#)

OUWB Medical Student Author

Department of Radiation Oncology

Department of Diagnostic Radiology and Molecular Imaging

Purpose: To compare toxicity after stereotactic body radiation therapy (SBRT) for "central" tumors-within 2 cm of the proximal bronchial tree or with planning tumor volume (PTV) touching mediastinum-versus noncentral ("peripheral") lung tumors. Methods and Materials: From November 2005 to January 2011, 229 tumors (110 central, 119 peripheral; T1-3N0M0 non-small-cell lung cancer and limited lung metastases) in 196 consecutive patients followed prospectively at a single institution received moderate-dose SBRT (48-60 Gy in 4-5 fractions [biologic effective dose=100-132 Gy, (alpha)/(beta)=10]) using 4-dimensional planning, online image-guided radiation therapy, and institutional dose constraints. Clinical adverse events (AEs) were graded prospectively at clinical and radiographic follow-up using Common Terminology Criteria for Adverse Events version 3.0. Pulmonary function test (PFT) decline was graded as 2 (25%-49.9% decline), 3 (50.0%-74.9% decline), or 4 ((greater-than or equal to)75.0% decline). Central/peripheral location was assessed retrospectively on planning CT scans. Groups were compared after propensity score matching. Characteristics were compared with (chi)² and 2-tailed t tests, adverse events with (chi)² test-for-trend, and cumulative incidence using competing risks analysis (Gray's test). Results: With 79 central and 79 peripheral tumors matched, no differences in AEs were observed after 17 months median follow-up. Two-year cumulative incidences of grade (greater-than or equal to)2 pain, musculoskeletal, pulmonary, and skin AEs were 14%, 5%, 6%, and 10% (central) versus 19%, 10%, 10%, and 3% (peripheral), respectively (. P=.31, .38,

.70, and .09). Grade (greater-than or equal to)2 cardiovascular, gastrointestinal, and central nervous system AEs were rare (<1%). Two-year incidences of grade (greater-than or equal to)2 clinical AEs (28% vs 25%, . P=.79), grade (greater-than or equal to)2 PFT decline (36% vs 34%, . P=.94), grade (greater-than or equal to)3 clinical AEs (3% vs 7%, . P=.48), and grade (greater-than or equal to)3 PFT decline (0 vs 10%, . P=.11) were similar for central versus peripheral tumors, respectively. Pooled 2-year incidences of grades 4 and 5 AEs were <1% and 0%, respectively, in both the prematched and matched groups. Conclusion: Moderate-dose SBRT with these techniques yields a similarly safe toxicity profile for both central and peripheral lung tumors.

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

Mavroudis CD, Copelan A, **Sokhandon F** and **Altshuler J** (2014). "Hybrid repair of a ruptured right-sided aortic arch with an aberrant left subclavian artery arising from a diverticulum of Kommerell: A case report." World Journal for Pediatric and Congenital Heart Surgery 5(4): 623-626.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Department of Surgery

Right-sided aortic arch with an aberrant left subclavian artery is a rare aortic arch anomaly. Although usually asymptomatic, aneurysm formation, dissection, and rupture can occur due to the aberrant vasculature and can be life-threatening. Hybrid, endovascular techniques have been implemented in instances of elective repair of aneurysmal diverticula of Kommerell in similar anatomical settings, but little has been written regarding urgent cases of rupture. We report a case of ruptured right-sided aortic arch with an aberrant left subclavian artery arising from a diverticulum of Kommerell successfully treated with hybrid aortic debranching and thoracic endovascular aortic stenting.

McClain R, **Wassermen J**, Mayfield C, Berry AC, Grenier G and Suminski R (2014). "In response to: Injury profile of mixed martial arts competitors... McClain R, Wasserman J, Mayfield C, et al. Injury profile of mixed martial arts competitors. Clin J Sport Med. 2014;24: 497-501." Clinical Journal of Sport Medicine 24(6): 519-520.

[Full-Text](#)

Department of Biomedical Sciences (OU)

McLean KZ, Van Raemdonck J, Capoccia D, Turkelson C, **Devlin W**, **Swor R** and **Sawyer KN** (2014). "An assessment of who dies after cardiac arrest in the era of therapeutic hypothermia." Circulation 130(Sup 2): A143.

[Full-Text](#)

OUWB Medical Student Author

Department of Internal Medicine

Department of Emergency Medicine

Introduction: Much emphasis is placed on who survives after cardiac arrest and how to optimize nullgoodnull outcomes. Despite this stress on aggressive post-arrest care and early temperature management, many people still die after admission to the hospital, often with care being withdrawn. The purpose of this study was to assess how and when patients die after undergoing in-hospital post-arrest therapeutic hypothermia (TH) Methods: This was a retrospective chart review of adult patients suffering non-traumatic cardiac arrest who had post-arrest care, including TH, initiated between January 2010 and June 2013 in a large, community academic center. All patients followed the same treatment protocol, with TH induced as soon as possible after arrest, regardless of initial rhythm or arrest location. Demographics, Utstein characteristics, and post-arrest variables, including time to withdrawal of care were collected until death or hospital discharge as part of an on-going quality improvement database. Descriptive statistics and associations are presented Results: During the study period, 139 patients were included and 92 (66.2%) died prior to discharge (mean age 61.9 (SD 16.31) years, 88 (63.3%) male). Few (12, 13.0%) of these had early

termination of the TH protocol or died (8, 10.0%) while intubated. Overall, 72 (78.3%) patients had care withdrawn. The median time from return of spontaneous circulation (ROSC) to withdrawal of care was 96.6 hours (IQR 66.2, 164.1) and 18 (27.3%) patients had care withdrawn <72 hours from ROSC. All patients were referred to the Gift of Life service but only 9 (12.5%) contributed to organ donation. A minority of patients (20, 27.8%) received a formal palliative care consult. Factors associated with withdrawal of care included family wishes, older age, initial non-shockable arrest rhythm, and longer time from arrest to ROSC. Conclusion: More than 75% of this cohort had care withdrawn. Although the majority had care withdrawn more than 72 hours after ROSC, early withdrawal of care was not uncommon. Further study of this group of patients is needed to understand the relationships between pre-arrest predictors of poor prognosis, pre-existing co-morbidities, patient clinical status, and family wishes on the early withdraw of care.

McNamara MW, **Dixon SR** and **Goldstein JA** (2014). "Impact of intra-aortic balloon pumping on hypotension and outcomes in acute right ventricular infarction." *Coronary Artery Disease* 25(7): 602-607.

[Full-Text](#)

Department of Internal Medicine

Objectives This study investigated the immediate hemodynamic effects of intra-aortic balloon pump (IABP) support and clinical outcomes in patients with acute right ventricular infarction (RVI) complicated by hypotension. **Background** IABP improves hypotension in patients with acute myocardial infarction and left ventricular shock, but the effects have not been well studied in acute RVI with predominant right ventricular shock. **Methods** We retrospectively analyzed hemodynamics and clinical outcomes in 32 patients with acute inferior ST elevation myocardial infarction complicated by RVI, in whom hypotension requiring IABP placement developed despite intact left ventricular ejection fraction. **Results** Pre-IABP hypotension was present in all (100%) patients, and in every case IABP augmentation increased mean arterial pressure (55.9+/- 7.4 to 76.8+/- 14.7 mmHg, P< 0.0001). Adverse clinical events included respiratory distress requiring intubation in 46.9%, cardiopulmonary resuscitation in 25%, episodes of ventricular tachycardia/fibrillation in 56.3%, and transvenous pacemaker placement in 56.3% of patients. There were six in-hospital deaths (18.8%). Pre-IABP hemodynamics were similar in those patients who survived to discharge compared with those who died. However, in those patients who died, there was significantly lower augmentation of peak systolic blood pressure during IABP support compared with survivors (2.7 +/- 17 vs. 27 +/- 22 mmHg, P< 0.015). **Conclusion** IABP support results in immediate hemodynamic improvement in patients with acute RVI complicated by shock. The majority of these shock patients survived and the magnitude of mean arterial pressure and peak systolic blood pressure augmentation may impart prognostic value. *Coron Artery Dis* 25: 602-607 (C) 2014 Wolters Kluwer Health | Lippincott Williams & Wilkins.

Mogrovejo E, Manickam P, **Polidori G** and **Cappell MS** (2014). "Dislodgement of variceal bands after esophageal balloon tamponade for variceal bleeding." *Annals of Hepatology* 13(6): 832-837.

[Request Form](#)

Department of Internal Medicine

A 43-year-old male with alcoholic cirrhosis underwent EGD for hematemesis which revealed bleeding, grade II, lower esophageal varices that were endoscopically ligated with 6 bands. All the bands remained attached to varices at the completion of EGD. Despite apparent initial hemostasis, balloon tamponade was performed one hour later for suspected continued bleeding. Due to suspected continuing bleeding, EGD was repeated 4 h after initial EGD, and 3 h after balloon tamponade. This EGD revealed the esophageal varices; none of the bands remaining on esophageal mucosa; multiple mucosal stigmata likely from trauma at initial site of variceal bands before dislodgement; and 3 dislodged bands in gastric body, duodenal bulb, or descending duodenum. The patient expired 17 h thereafter from hypovolemic shock. This single report may suggest an apparently novel, balloon tamponade complication: dislodgement of previously placed, endoscopic bands. The proposed pathophysiology is release of bands by stretching entrapped, esophageal mucosa during esophageal balloon tamponade. This complication, if confirmed, might render balloon tamponade a less desirable option very soon after band ligation.

Mundell T, Miladore N and Ruitter T (2014). "Extensor carpi radialis longus and brevis rupture in a boxer." *Eplasty* 14:

ic40.

[Full-Text](#)

OUWB Medical Student Author

Nguyen PL, Aizer A, Assimos DG, D'Amico AV, Frank SJ, Gottschalk AR, **Gustafson GS**, Hsu IC, McLaughlin PW, Merrick G, Rosenthal SA, Showalter TN, Taira AV, Vapiwala N, Yamada Y and Davis BJ (2014). "ACR appropriateness criteria(R) definitive external-beam irradiation in stage T1 and T2 prostate cancer." *American Journal of Clinical Oncology* 37(3): 278-288.

[Full-Text](#)

Department of Radiation Oncology

PURPOSE: To present the most updated American College of Radiology consensus guidelines formed from an expert panel on the appropriate use of external-beam radiation to manage stage T1 and T2 prostate cancer. **METHODS:** The American College of Radiology 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 where evidence is lacking or not definitive, expert opinion may be used to recommend imaging or treatment. **RESULTS:** The panel summarized the most recent and relevant literature on the topic and voted on 3 clinical variants illustrating the appropriate dose, techniques, and use of adjuvant hormone therapy with external-beam radiation for low-risk, intermediate-risk, and high-risk prostate cancer. Numerical rating and commentary reflecting the panel consensus was given for each treatment approach in each variant. **CONCLUSIONS:** External-beam radiation is a key component of the curative management of T1 and T2 prostate cancer. By combining the most recent medical literature and expert opinion, this guideline can aid clinicians in the appropriate use of external-beam radiation for prostate cancer.

Norton P, Brubaker L, Nager CW, Lemack GE, Zyczynski HM, **Sirls L**, Rickey L, Stoddard A and Varner RE (2014). "Pelvic organ prolapse in a cohort of women treated for stress urinary incontinence." *American Journal of Obstetrics and Gynecology* 211(5): 550.e551-550.e555.

[Full-Text](#)

Department of Urology

Objective The aim of our study was to observe pelvic organ prolapse (POP) over time, treated and untreated, in a group of highly characterized women being followed up subjectively and objectively over 5-7 years following continence surgery. **Study Design** We measured baseline prolapse symptoms and anatomic prolapse in subjects enrolled in the trial of midurethral sling (TOMUS) and E-TOMUS, and measured these same parameters annually for 5-7 years after the index surgery. Additional information about subsequent treatment for POP was also recorded. **Results** In all, 597 women were randomized to 1 of 2 midurethral sling procedures in the TOMUS; concomitant vaginal procedures for POP were allowed at the surgeon's discretion. Stage 2 POP was present at baseline in 291 subjects (49%). Symptoms of POP were reported in 67 (25%). Of the asymptomatic women, 34 of 223 (15%) underwent a concomitant POP repair at the time of index sling surgery. Anatomic progression of prolapse in women with asymptomatic, unoperated stage 2 POP over the next 72 months was infrequent and occurred in only 3 of 189 subjects (2%); none underwent surgery for POP. Most symptomatic women (47/67 [70%]) underwent a concomitant repair for POP at the index sling surgery. Three of the 47 women who had undergone concomitant repair for symptomatic stage 2 POP underwent repeat POP surgery (2 at 36 months and 1 at 48 months.) **Conclusion** For patient populations similar to the TOMUS and E-TOMUS populations, surgeons may counsel women with asymptomatic stage 2 POP that their prolapse is unlikely to require surgery in the next 5-7 years.

Nudleman E, Witmer MT, Kiss S, **Williams GA** and **Wolfe JD** (2014). "Central serous chorioretinopathy in patients receiving exogenous testosterone therapy." *Retina-the Journal of Retinal and Vitreous Diseases* 34(10): 2128-2132.

[Full-Text](#)

Department of Ophthalmology

Purpose:To report an association between central serous chorioretinopathy (CSCR) and exogenous testosterone therapy.**Methods:**This is a retrospective case series from two institutions. Patients who presented with fluorescein angiography and optical coherence tomography findings consistent with CSCR were included. All patients were concurrently being treated with exogenous testosterone therapy and lacked

other known risk factors for CSCR. Results: Nine patients presented with CSCR after beginning exogenous testosterone therapy. Two patients stopped therapy with resolution of symptoms and subretinal fluid. Conclusion: Exogenous testosterone may be an independent risk factor for the development of CSCR.

Nyland R and **Sawarynski K** (2014). "Purging the binge and purge: An interactive study skills workshop (iCollaborative)." MedEdPortal Resource ID 3804

[Full-Text](#)

Department of Biomedical Sciences (OU)

It is well known by cognitive psychologists that the study habits most often utilized by students are the least effective techniques, such as massed practice (cramming) and highlighting textbooks. We developed an interactive workshop intended to teach first year medical students evidence-based study techniques, such as spaced practice and metacognitive note taking, and set them up for success in an integrated medical school curriculum. We realized students often believe they "know what works best" for themselves, and to impart effective strategies meant we must disprove their current ineffective strategies. The workshop was designed to show students evidence supporting effective study techniques. During the workshop we employed activities designed to keep the students engaged and, more importantly, reveal flaws in common study practices. The workshop was delivered during the first week of a semester-long integrated basic science course that provides a foundation for our integrated curriculum. In addition to presenting the evidence behind effective study techniques, we also realized a practical aspect that needed to be addressed – the limited time available to medical students. Thus, near the end of the workshop we distilled the principles into a few approaches they could immediately put into practice – before lecture, during lecture, and after lecture. For example, when we discussed the minimal value of highlighting and underlining, and presented alternative methods, we also gave the short version: "if you don't have time to read all of the slides, and all of the text before class, start by reading the learning objectives for the lecture and identifying and terms you don't know." By reducing the larger techniques into smaller alternatives it made some of the approaches more palatable to students facing vast quantities of preparatory material.

Obi A, Jung-Park Y, **Bove P**, Cuff R, Kazmers A, Gurm H, Grossman PM and Henke P (2014). "Postoperative transfusion is associated with a dramatic increase in 30-day morbidity and mortality in patients undergoing major vascular surgery." *Journal of Vascular Surgery* 60(4): 1108.

[Full-Text](#)

Department of Surgery

Opolski MP, Hartaigh BO, Gransar H, Schulman-Marcus J, Truong QA, Berman DS, Budoff MJ, Achenbach S, Al-Mallah M, Andreini D, Cademartiri F, Callister TQ, Chang HJ, **Chinnaiyan K**, Chow BJ, Cury R, Delago A, Hadamitzky M, Hausleiter J, Feuchtner G, Kim YJ, Kaufmann PA, Leipsic J, Lin FY, Maffei E, Pontone G, Raff G, Shaw LJ, Villines TC, Dunning A and Min JK (2014). "Prevalence, characteristics, and early treatment strategies of patients with chronic total occlusions undergoing coronary computed tomography angiography." *Circulation* 130(Sup 2): A17557.

[Full-Text](#)

Department of Internal Medicine

Introduction: Data describing the prevalence, characteristics, and management of chronic total occlusions (CTO) in patients undergoing coronary computed tomography angiography (CCTA) have not been reported. Objectives: The purpose of this study was to determine the prevalence, characteristics, and treatment strategies of CTO identified by CCTA. Methods: We identified 23,745 patients who underwent CCTA for suspected coronary artery disease (CAD) from the CONFIRM (COronary CT Angiography EvaluatioN For Clinical Outcomes: An InteRnational Multicenter) registry. Baseline clinical data were collected, and allocation to early coronary revascularization performed within 90 days of CCTA was determined. Multivariable logistic regression reporting odds ratios (OR) with 95% confidence intervals (95%CI) was performed. Results: Patients with CTO were older (64.7 (plus or minus) 10.8 vs 57.2 (plus or minus) 12.6 years, $p < 0.001$) and more often male (74.6% vs 54.1%, $p < 0.001$) compared with patients without CTO. The prevalence of CTO was 1.4% (342/23,745) in all patients and 6.2% in patients with obstructive CAD ((greater-than or equal to)50%

stenosis). The presence of CTO was independently associated with male sex, smoking, hypertension, diabetes, age, and less common atypical angina (Table). Most CTO patients (61%) were treated medically, while 39% underwent coronary revascularization. In patients with severe CAD ((greater-than or equal to)70% stenosis), CTO independently predicted revascularization by CABG (OR 3.06, 95%CI: 1.88-4.98, p<0.001) but not by PCI (p=0.08). Conclusions: CTOs are not uncommon in a contemporary CCTA population and are associated with age, gender, angina status and CAD risk factors. Most individuals with CTO undergoing CCTA are managed medically with higher rates of surgical revascularization in patients with versus without CTO.

Otaki Y, Gransar H, Cheng VY, Dey D, Labounty T, Lin FY, Achenbach S, Al-Mallah M, Budoff MJ, Cademartiri F, Callister TQ, Chang HJ, **Chinnaiyan K**, Chow BJ, Delago A, Hadamitzky M, Hausleiter J, Kaufmann P, Maffei E, Raff G, Shaw LJ, Villines TC, Dunning A, Cury RC, Feuchtner G, Kim YJ, Leipsic J, Berman DS and Min JK (2014). "Gender differences in the prevalence, severity, and composition of coronary artery disease in the young: a study of 1635 individuals undergoing coronary CT angiography from the prospective, multinational CONFIRM registry." [European Heart Journal Cardiovascular Imaging](#). ePub Ahead of Print.

[Full-Text](#)

Department of Internal Medicine

OBJECTIVE: Prior studies examining coronary atherosclerosis in the young have been limited by retrospective analyses in small cohorts. We examined the relationship between cardiovascular risk factors (RFs) and prevalence and severity of coronary atherosclerosis in a large, prospective, multinational registry of consecutive young individuals undergoing coronary computerized tomographic angiography (CCTA). **METHOD AND RESULTS:** Of 27 125 patients undergoing CCTA, 1635 young (<45 years) individuals without known coronary artery disease (CAD) or coronary anomalies were identified. Coronary plaque was assessed for any CAD, obstructive CAD (>=50% stenosis), and presence of calcified plaque (CP) and non-calcified plaque (NCP). Among 1635 subjects (70% men, age 38 +/- 6 years), any CAD, obstructive CAD, CP, and NCP were observed in 19, 4, 5, and 8%, respectively. Compared with women, men demonstrated higher rates of any CAD (21 vs. 12%, P < 0.001), CP (6 vs. 3%, P = 0.01), and NCP (9 vs. 5%, P = 0.008), although no difference was observed for rates of obstructive CAD (5 vs. 4%, P = 0.46). Any CAD, obstructive CAD, and NCP were higher for young individuals with diabetes, hypertension, dyslipidaemia, current smoking, or family history of CAD; while only diabetes and dyslipidaemia were associated with CP. Increasing cardiovascular RFs was associated with a greater prevalence and extent and severity of CAD, with individuals with 0, 1, 2, >=3 RFs manifesting a dose-response increase in any CAD (P < 0.001, for trend), obstructive CAD (P < 0.001, for trend), NCP (P < 0.001, for trend), and CP (P < 0.001, for trend). In multivariable analysis adjusting for sex and cardiovascular RFs, male sex was the strongest predictor for any CAD (odds ratio [OR] = 1.95, 95% confidence interval [CI] = 1.43-2.66, P < 0.001), CP (OR = 1.46, 95% CI = 1.08-1.98, P = 0.01), and NCP (OR = 1.33, 95% CI = 1.06-1.67, P = 0.01); family history of CAD was the strongest predictor for obstructive CAD (OR = 2.71, 95% CI = 1.65-4.45, P < 0.001). **CONCLUSION:** Any and obstructive CAD is present in 1 in 5 and 1 in 20 young individuals, respectively, with family history associated with the greatest risk of obstructive CAD.

Pandya HK, **Faia LJ**, Robinson J and **Drenser KA** (2014). "Macular development in aggressive posterior retinopathy of prematurity." [BioMed Research International](#). ePub Ahead of Print.

[Full-Text](#)

Department of Ophthalmology

Patel RM, Baker-Genaw K, Bar-On M and **Devries JM** (2014). "Promoting scholarship in graduate medical education (iCollaborative)." MedEdPortal Resource ID 3840

[Full-Text](#)

Department of Pediatrics

There are challenges in GME including a large GME Community, changing regulatory and accreditation requirements, implementation of electronic health records, constraints of time and money, and differing health care delivery methods. The Group on Resident Affairs Academic Home and Scholarship Committee is focused on promoting scholarship related to education or research, with basic goals of networking and

collaboration. A facilitated session on Promoting Scholarship was led by 4 DIOs from different types of sponsoring institutions. After facilitators described efforts at their own institutions, the participants focused on Ideas for scholarship of various constituencies in GME, including faculty and program directors, residents, and DIOs. They designed a scholarly activity for that constituency and described how that scholarly activity would be implemented at an institutional level. They addressed potential barriers to successful implementation. The plan is to extend this effort to more GME institutions in the future.

Peters KM, Hasenau D, Killinger KA, **Chancellor MB**, Anthony M and Kaufman J (2014). "Liposomal bladder instillations for IC/BPS: An open-label clinical evaluation." International Urology and Nephrology 46(12): 2291-2295.

[Full-Text](#)

Department of Urology

Purpose: Intravesical instillation of liposomes is a potentially new therapeutic option for subjects with interstitial cystitis/bladder pain syndrome (IC/BPS). The aim of this study was to explore the safety and clinical outcomes of 4 weekly instillations of sphingomyelin liposomes in an open-label cohort of subjects with IC/BPS. Methods: Fourteen symptomatic IC/BPS subjects were treated with intravesical liposomes once a week for 4 weeks. Safety measurements included laboratory specimen collection, vital signs, post-void residual, and assessment of adverse events (AEs). Efficacy measurements included pain visual analog scales (VAS), voiding diaries, global response assessments (GRAs), and O'Neill-Leary-Sant Interstitial Cystitis Symptom and Problem Indices (ICSI and ICPI). Results: No treatment-related AEs were reported at any time over the course of the study. Urgency VAS scores significantly decreased at 4 weeks ($p = 0.0029$) and 8 weeks ($p = 0.0112$) post-treatment. Pain VAS scores significantly decreased at 4 weeks post-treatment ($p = 0.0073$). Combined ICSI and ICPI scores improved significantly at 4 and 8 weeks ($p = 0.002$ for both time points) post-treatment. Responses to GRA showed improvement at 4 weeks post-instillation. No significant decrease in urinary frequency was found. Conclusions: Sphingomyelin liposome instillations were well tolerated in subjects with IC/BPS with no AEs attributed to the test article. Treatment was associated with improvements in pain, urinary urgency, and overall symptom scores. Placebo-controlled clinical trials are needed to assess this potential therapy for IC/BPS.

Rabinowitz M and **McAuley R** (2014). "The effects of ease of processing on the use and perception of strategies." Journal of Cognitive Psychology 26(8): 919-927.

[Request Form](#)

Department of Biomedical Sciences (OU)

Ragheb S and Lisak R (2014). "BAFF expression in the human monocyte cell line THP-1: Differential regulation by interferons, IL-10, and TNF." Journal of Neuroimmunology 275(1-2): 69-70.

[Full-Text](#)

Department of Biomedical Sciences (OU)

Ramirez-Tolosa G, Molina C, Tapia V, Galdames P, Nieto V, **Cortes C** and Ferreira VP (2014). "Evaluation of the role of regulatory proteins factor H and properdin in regulating alternative pathway activation on *Trypanosoma cruzi*." Molecular Immunology 61(2): 270-271.

[Full-Text](#)

Department of Biomedical Sciences (OU)

Reddy VY, Sievert H, Halperin J, Doshi SK, Buchbinder M, Neuzil P, Huber K, Whisenant B, Kar S, Swarup V, Gordon N, Holmes D, Holmes DR, Chinitz L, Douglas P, Gurley J, Sick P, Turi ZG, Husted ST, Asinger RW, Shear W, Lew B, Plucinski A, Rogers E, Mobius-Winkler S, Tucker K, Doshi S, Bahu M, Quesada R, Reddy V, **Almany S**, Garg A, Mishkel G, Ramee S, Maini B, Burstein S, Horton R, Mahoney P, Adler S, Skelding K, Shah M, Yakubov S, Leon A, Block PC, Fail P, Reisman M, Tomassoni G, Bhoopalam V, Anderson W, Pickett R, Low R, Feldman T, Irwin J, Lopez J, Lim S, Razavi M, Wilbur D, Turi Z, Raybuck B, Kalbfleisch S, Mooney M, Gray W, Kunz G, Foster M, Good E, Tuzcu M, Goar FS, Josephson R, Carl Jacobs W, Dave R, Young J and Lasorda D (2014). "Percutaneous left atrial appendage closure vs warfarin for atrial fibrillation a randomized clinical trial." *JAMA - Journal of the American Medical Association* 312(19): 1988-1998.

[Full-Text](#)

Department of Internal Medicine

Importance While effective in preventing stroke in patients with atrial fibrillation (AF), warfarin is limited by a narrow therapeutic profile, a need for lifelong coagulation monitoring, and multiple drug and diet interactions. OBJECTIVE To determine whether a local strategy of mechanical left atrial appendage (LAA) closure was noninferior to warfarin. Design, Setting, and Participants Protect AF was a multicenter, randomized (2:1), unblinded, Bayesian-designed study conducted at 59 hospitals of 707 patients with nonvalvular AF and at least 1 additional stroke risk factor (CHADS₂ score (greater than or equal to) 1). Enrollment occurred between February 2005 and June 2008 and included 4-year follow-up through October 2012. Noninferiority required a posterior probability greater than 97.5% and superiority a probability of 95% or greater; the noninferiority margin was a rate ratio of 2.0 comparing event rates between treatment groups. Interventions Left atrial appendage closure with the device (n = 463) or warfarin (n = 244; target international normalized ratio, 2-3). Main Outcomes and Measures A composite efficacy end point including stroke, systemic embolism, and cardiovascular/unexplained death, analyzed by intention-to-treat. Results At a mean (SD) follow-up of 3.8 (1.7) years (2621 patient-years), there were 39 events among 463 patients (8.4%) in the device group for a primary event rate of 2.3 events per 100 patient-years, compared with 34 events among 244 patients (13.9%) for a primary event rate of 3.8 events per 100 patient-years with warfarin (rate ratio, 0.60; 95% credible interval, 0.41-1.05), meeting prespecified criteria for both noninferiority (posterior probability, <99.9%) and superiority (posterior probability, 96.0%). Patients in the device group demonstrated lower rates of both cardiovascular mortality (1.0 events per 100 patient-years for the device group [17/463 patients, 3.7%] vs 2.4 events per 100 patient-years with warfarin [22/244 patients, 9.0%]; hazard ratio [HR], 0.40; 95% CI, 0.21-0.75; P = .005) and all-cause mortality (3.2 events per 100 patient-years for the device group [57/466 patients, 12.3%] vs 4.8 events per 100 patient-years with warfarin [44/244 patients, 18.0%]; HR, 0.66; 95% CI, 0.45-0.98; P = .04). Conclusions and Relevance After 3.8 years of follow-up among patients with nonvalvular AF at elevated risk for stroke, percutaneous LAA closure met criteria for both noninferiority and superiority, compared with warfarin, for preventing the combined outcome of stroke, systemic embolism, and cardiovascular death, as well as superiority for cardiovascular and all-cause mortality.

Remer EM, Papanicolaou N, Casalino DD, Bishoff JT, Blaufox MD, Coursey CA, Dighe M, Eberhardt SC, Goldfarb S, Harvin HJ, Heilbrun ME, Leyendecker JR, Nikolaidis P, Oto A, Preminger GM, Raman SS, Sheth S, Vikram R and **Weinfeld RM** (2014). "ACR Appropriateness Criteria (R) on renal failure." *American Journal of Medicine* 127(11): 1041.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Imaging plays a role in the management of patients with acute kidney injury or chronic kidney disease. However, clinical circumstances strongly impact the appropriateness of imaging use. In patients with newly detected renal dysfunction, ultrasonography can assess for reversible causes, assess renal size and echogenicity, and thus, establish the chronicity of disease. Urinary obstruction can be detected, but imaging is most useful in high-risk groups or in patients in whom there is a strong clinical suspicion for obstruction. Computed tomography, computed tomography or magnetic resonance arteriography, and percutaneous ultrasound-guided renal biopsy are valuable in other clinical situations. The American College of Radiology Appropriateness Criteria are evidence-based guidelines for specific clinical conditions that are reviewed every 3 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 where evidence is lacking or not definitive, expert opinion may be used to recommend imaging or treatment. (C) 2014 American College of Radiology. All rights reserved.

Reygaert WC (2014). "Antimicrobial resistance patterns of escherichia coli isolated from urinary tract infections in the Midwestern United States." [British Journal of Medicine and Medical Research](#) 6(2): 212-217.

[Full-Text](#)

Department of Biomedical Sciences (OU)

Aims: To determine the antimicrobial resistance of urinary tract infection isolates in a major metropolitan area for the purposes of tracking increases in resistance and to provide information that will help drive improved therapy. **Study Design:** Antimicrobial resistance data on Escherichia coli isolated from urinary tract infections was collected and analyzed. **Place and Duration of Study:** Data was collected from several large healthcare centers in the Detroit, Michigan area. Data collected was from January to July of 2008. **Methodology:** Data on the antimicrobial susceptibility of 960 Escherichia coli isolated from urinary tract infections was collected and analyzed to determine resistance to typical drugs used in urinary tract infection susceptibility testing. **Results:** The percentage of isolates that were resistant to one or more of the drugs tested was 47%. The most common drug resistance was to ampicillin (41%); with 11.6% of the isolates being only resistant to ampicillin. As to total resistance, 22.4% of the isolates were resistant to only one drug class, 14.4% were resistant to two classes, 7.2% to three classes, and 4.4% to more than three classes. Resistance as to antimicrobial effects were: 87.9% were resistant to drugs that interfere with cell wall synthesis, 40.3% were resistant to drugs that inhibit protein synthesis, 38.3% to anti-metabolites, and 38.1% to drugs that inhibit nuclei acid synthesis. **Conclusion:** The data indicate that E. coli isolated from urinary tract infections are manifesting disturbing resistance patterns. Not only is resistance to many drugs increasing, but the bacteria are becoming increasingly multi-drug resistant. This is not only true in this region, but seen worldwide as well.

Ricciardi BF, Fabricant PD, Fields KG, Poultsides L, **Zaltz I** and Sink EL (2014). "What are the demographic and radiographic characteristics of patients with symptomatic extraarticular femoroacetabular impingement?" [Clinical Orthopaedics and Related Research](#). ePub Ahead of Print.

[Full-Text](#)

Department of Orthopedic Surgery

Results: Patients with extraarticular FAI were more likely to be younger (mean (plus or minus) SD, 24 (plus or minus) 7 years versus 30 (plus or minus) 11 years; difference [95% confidence interval {CI}], null7 [null9 to null4]; $p < 0.001$), female (85% versus 49%; odds ratio [95% CI], 6 [3 to 12]; $p < 0.001$), to have undergone prior hip surgery (44% versus 10%; odds ratio [95% CI], 9 (6 to 15); $p < 0.001$), and have lower preoperative outcome scores after adjustment for age, sex, and revision status (mHHS 55 (plus or minus) 15 versus 63 (plus or minus) 15; adjusted difference [95% CI], null4 (null8 to null1); $p = 0.017$; HOS ADL 64 (plus or minus) 19 versus 73 (plus or minus) 18; adjusted difference [95% CI], null7 (null11 to null3); $p = 0.002$) than patients undergoing surgery for intraarticular FAI. Within the extraarticular FAI group, preoperative femoral version on CT was different among patients with anterior versus posterior extraarticular impingement (median [first quartile, third quartile], 8(degrees) [2, 18] versus 21(degrees) [20, 30], respectively; $p = 0.005$) and anterior versus complex extraarticular impingement (median [first quartile, third quartile], 8(degrees) [2, 18] versus 20(degrees) [10, 30], respectively; $p = 0.007$). Preoperative external rotation in extension was increased in patients with anterior versus complex extraarticular FAI (median [first quartile, third quartile], 70(degrees) [55, 75] versus 40(degrees) [20, 60]; $p < 0.001$). **Conclusions:** Extraarticular FAI is an uncommon source of impingement symptoms. We suspect the diagnosis often is missed, because many of these patients had prior hip surgery before the procedure that diagnosed the extraarticular impingement source. This diagnosis seems more common in younger, female patients. Radiographic and physical examination findings correspond to locations of intraoperative extraarticular impingement. Future studies will need to determine whether surgical treatment of extraarticular impingement pathology improves pain and function in this subset of patients. **Level of Evidence:** Level III, therapeutic study. **Background:** Extraarticular femoroacetabular impingement (FAI) can result in symptomatic hip pain, but preoperative demographic, radiographic, and

physical examination findings have not been well characterized. Questions/purposes: The purposes of this study were to (1) define the demographic characteristics of patients with symptomatic extraarticular FAI; and (2) identify relevant radiographic and physical examination findings that are associated with intraoperative locations of extraarticular FAI. Methods: For purposes of this study, we defined extraarticular FAI as abnormal contact between the extraarticular regions of the proximal femur (greater trochanter, lesser trochanter, extracapsular femoral neck) and the ilium or ischium. The diagnosis was suspected preoperatively, but it was confirmed at the time of surgery by direct visualization of extraarticular impingement after surgical hip dislocation. A prospective single-center hip preservation registry was used to retrospectively characterize patients presenting between October 2010 and November 2013 with symptomatic hip pain and intraoperative findings of extraarticular FAI (N = 75 patients, 86 hips). Detailed demographic data were recorded. Radiographs, CT, and MRI scans were reviewed for all patients by two of the authors (BFR, ELS). Outcome instruments including modified Harris hip score (mHHS), Hip Outcome Score (HOS), and International Hip Outcome Tool (iHOT-33) were assessed preoperatively. A comparison group of all patients (N = 1690 patients, 1989 hips) undergoing surgery for intraarticular FAI over the study period were included for demographic comparisons. Cases with extraarticular FAI accounted for 4% (75 of 1765 patients) of our cohort over the study time period.

Ruff S and **Imam K** (2014). "Case report: Hypopituitarism masquerading as failure to thrive in a 75-year-old woman." Journal of the American Geriatrics Society 62(10): 2014-2016.

[Full-Text](#)

Department of Internal Medicine

Sabesan VJ, Ackerman J, Sharma V, **Baker KC, Kurdziel MD** and **Wiater JM** (2014). "Glenohumeral mismatch affects micromotion of cemented glenoid components in total shoulder arthroplasty." Journal of Shoulder and Elbow Surgery. ePub Ahead of Print.

[Full-Text](#)

Department of Orthopedic Surgery
Department of Surgery

BACKGROUND: The "rocking horse" phenomenon is considered the main cause of glenoid component loosening by eccentric loading of the glenoid rim. This study aimed to investigate the influence of increasing glenohumeral implant mismatch on bone-implant interface micromotion in a cemented all-polyethylene pegged glenoid biomechanical model. **METHODS:** Five glenoid sizes, 40 mm, 44 mm, 48 mm, 52 mm, and 56 mm, representing +2 mm, +6 mm, +10 mm, +14 mm, and +18 mm glenohumeral mismatch, respectively, were cyclically loaded according to ASTM Standard F2028-08 at a constant frequency of 2 Hz to a size-dependent humeral head subluxation translation. Additional glenoid components were cyclically loaded to their subluxation translations at a constant humeral head rate of 4.4 mm/s. Component micromotion was characterized as compression, distraction, and superior-inferior translation measured by differential variable reluctance transducers. **RESULTS:** During constant frequency tests, 52-mm and 56-mm glenoids were unable to complete cyclic testing because of catastrophic failure of the glenoid-implant interface and permanent glenoid deformation, probably due to increasing severity of testing parameters. When tested at a constant humeral head speed, 48-mm, 52-mm, and 56-mm glenoids had significantly increased glenoid distraction and glenoid translation at cycle 50,000 compared with cycle 1. Distraction and translation measurements for 52-mm and 56-mm glenoids were significantly greater compared with 40-mm, 44-mm, and 48-mm glenoids at 50,000 cycles. **CONCLUSIONS:** In a biomechanical model, optimal glenohumeral mismatch in cemented pegged glenoid implants is multifactorial and has not been definitively established. However, our data suggest that a radial mismatch of less than +10 mm may decrease the risk of glenoid micromotion.

Sabina R, Uhley V, Lucia V, Pippitt K, Twining S, Main B, Lindsley J, Morton D and Havas N (2014). "Blood glucose laboratory: Collective experiences at three US medical schools (Peer Reviewed)." MedEdPortal Publication No. 9978
[Full-Text](#)

Department of Biomedical Sciences (OU)

This Blood Glucose Laboratory was originally conceived and implemented at the Medical College of Wisconsin over 20 years ago as a learner-centered and patient-centered activity. More recently, the University of Utah School of Medicine (2009) and the Oakland University William Beaumont School of Medicine (2012) have adopted similar exercises. Learner satisfaction has been high at all three institutions. Therefore, rather than doing so separately, the authors decided to collaborate on this submission so that our collective experiences could be captured in a single resource for dissemination to end users who may be interested in adopting a similar activity into their institutional curricula. The overall structure of this half-day laboratory exercise is similar at our three institutions. The central activity involves having learners determine their fasting blood glucose levels, followed by additional determinations at specified times after eating different breakfast meals. Real time (live) display in the form of graphs showing the various aggregate profiles for each breakfast meal is a powerful way to demonstrate the effects of diet on blood glucose levels. Collectively, our breakfast menus are designed to illustrate the effects of a high glycemic index (high in glucose), high fiber, high fat, and no carbohydrates with high fat (based on the Atkins diet). However, each institution has adopted variations on this theme for their specific groups of learners, with somewhat different learning objectives and activities interspersed between the post-prandial blood glucose determinations that help keep learners actively engaged during the entire laboratory session.

Safian RD (2014). "Carotid artery stenting and CABANA: implications for credentialing." [Catheterization and Cardiovascular Interventions](#) 84(6): 1005-1006.

[Full-Text](#)

Department of Internal Medicine

Safian RD (2014). "Magnetic navigation: What's the attraction?" [Catheterization and Cardiovascular Interventions](#) 84(4): 668-669.

[Full-Text](#)

Department of Internal Medicine

Sage RA, Mogrovejo E, **Patel A** and Manickam P (2014). "How does length of stay in the United States affect colorectal cancer incidence among immigrant Asian populations in California? Response comment." [American Journal of Gastroenterology](#) 109(10): 1687-1688.

[Request Form](#)

Department of Internal Medicine

Sangal RB, Blumer JL, Lankford DA, Grinnell TA and Huang H (2014). "Eszopiclone for insomnia associated with attention-deficit/hyperactivity disorder." [Pediatrics](#) 134(4): E1095-E1103.

[Full-Text](#)

Department of Family Medicine

OBJECTIVE: To evaluate efficacy and safety of eszopiclone compared with placebo in children and adolescents with insomnia associated with attention-deficit/hyperactivity disorder (ADHD). METHODS: A 12-week, randomized, double-blind, placebo-controlled trial evaluated efficacy and safety of high-or low-dose eszopiclone (1 or 2 mg in children aged 6-11 years, 2 or 3 mg in children ages 12-17 years), given every evening, in 486 patients with ADHD-related insomnia. The primary efficacy variable was change in latency to persistent sleep from baseline to week 12, based on polysomnography. Key secondary measures were polysomnography-measured wake time after sleep onset, Clinical Global Impression Parent/Caregiver and Child scales, and the Conners' ADHD rating scales. The safety of eszopiclone was further studied over 1 year of open-label treatment in 55 patients who completed the double-blind study, and 249 patients with no previous eszopiclone exposure. RESULTS: Neither low-dose nor high-dose eszopiclone significantly reduced

latency to persistent sleep compared with placebo after 12 weeks of treatment. Secondary outcomes were considered nonsignificant based on the hierarchical statistical analysis plan. The most frequent treatment-emergent adverse events over 12 weeks with eszopiclone were headache, dysgeusia, and dizziness. The study results demonstrated that eszopiclone was well tolerated over 1 year of treatment, with 11.2% of patients discontinuing open-label treatment because of an adverse event. CONCLUSIONS: Eszopiclone (up to 3 mg) failed to reduce latency to persistent sleep on polysomnography after 12 weeks in children aged 6 to 17 years with ADHD-related insomnia. Eszopiclone was well tolerated in the 1-year study.

Shanley CJ, Park YJ, Boros MJ, Gurm HS, Grossman PM, Rubin JR and Henke PK (2014). "Contemporary outcomes for carotid interventions in the state of Michigan." *Journal of Vascular Surgery* 60(4): 1109.

[Full-Text](#)

Department of Surgery

Shi X, **Sims MD**, Hanna MM, **Xie M**, Gulick PG, Zheng YH, Basson MD and **Zhang P** (2014). "Neutropenia during HIV infection: Adverse consequences and remedies." *International Reviews of Immunology* 33(6): 511-536.

[Request Form](#)

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 severe neutropenia becomes critical for improving the survival of HIV-infected patients.

Simon MR, Chervin SM and Brown SC (2014). "Polyclonal antibody therapies for clostridium difficile infection." *Antibodies* 3(4): 272-288.

[Full-Text](#)

Department of Internal Medicine

Clostridium difficile infection has emerged as a growing worldwide health problem. The colitis of Clostridium difficile infection results from the synergistic action of C. difficile secreted toxins A and B upon the colon mucosa. A human monoclonal IgG anti-toxin has demonstrated the ability in combination therapy to reduce mortality in C. difficile challenged hamsters. This antibody is currently in a clinical trial for the treatment of human Clostridium difficile infection. More than one group of investigators has considered using polyclonal bovine colostral antibodies to toxins A and B as an oral passive immunization. A significant proportion of the healthy human population possesses polyclonal antibodies to the Clostridium difficile toxins. We have demonstrated that polyclonal IgA derived from the pooled plasma of healthy donors possesses specificity to toxins A and B and can neutralize these toxins in a cell-based assay. This suggests that secretory IgA prepared from such pooled plasma IgA may be able to be used as an oral treatment for Clostridium difficile infection.

Simon R, McIntyre E, **Khandhar P, Macknis J** and **Fischer AC** (2014). "Pleuropulmonary Blastoma (PPB) in an infant: Is the timing of an elective resection of neonatal lung lesions challenged?" Journal of Pediatric Surgery Case Reports 2(10): 465-467.

[Request Form](#)

Department of Pediatrics

Department of Pathology

Department of Surgery

Congenital Pulmonary Airway Malformations (CPAMs) are abnormalities of lung parenchyma that are often diagnosed upon prenatal imaging as opposed to postnatal symptoms. With a clinical presentation identical to CPAMs, Pleuropulmonary Blastoma (PPB) is a rare pulmonary neoplasm of highly malignant potential. We present a rare case of a female infant with a vague medical history of respiratory distress syndrome (RDS) at birth, presenting with a tension pneumothorax at three months of age, thought initially to be secondary to CPAM, but found to be PPB upon surgical resection and histological analysis. PPB is a rare pulmonary neoplasm of childhood that originates from the primitive interstitium of the lung, resulting in lesions that can be highly malignant. It is classified as type I (cystic), type II (cystic/ solid) or type III (solid), with a progression of disease and worsening prognosis from type I to type III. Due to the cystic nature of CPAM and PPB it is difficult to differentiate on imaging alone; diagnosis must be made based on histological analysis. The highly malignant nature and potential for morbidity and mortality of PPB should make clinicians consider early resection of cystic lung lesions preferentially on an elective basis.

Sirls LT and Rosenblum N (2014). "Transobturator versus retropubic approach for a mid urethral sling." Journal of Urology 192(5): 1326-1328.

[Full-Text](#)

Department of Urology

Skrzynski J, Sahi S and **Kelekar AK** (2014). "Heavy breathing: A case of cement pulmonary embolism." Journal of General Internal Medicine 29(Sup 1): S262.

[Request Form](#)

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.

Smith PP, **Tyagi P**, Kuchel GA, Pore S, Chermansky C, **Chancellor M**, Yoshimura N and Levanovich P (2014). "Advanced therapeutic directions to treat the underactive bladder." International Urology and Nephrology 46(1): 35-44.

[Full-Text](#)

Department of Urology

Muscarinic agonists are the most commonly used agents for treating the underactive bladder (UAB). However, because of the absence of pharmacologic specificity for bladder-only effects and possibly as a result of degenerative and other post-synaptic changes involving detrusor smooth muscle cells, they are simply not effective and side effects are common. If safe and effective therapy for UAB is made available, then most experts agree that the potential market would exceed industry expectations, just as antimuscarinic agents for overactive bladder did in the late 1990s. The pharmaceutical and biotechnology industries that have a pipeline to urology and women's health should consider UAB as a potential target condition. A rational approach to treating the pathology of UAB is presented with a discussion of potential targets that may allow the development of safe and effective agents for the treatment of UAB.

Stefaniak JE and **Lucia VC** (2014). "Physician as Teacher: Promoting Health and Wellness among Elementary School Students." Education for Health: Change in Learning & Practice 27(2): 183-187.

[Full-Text](#)

Department of Biomedical Sciences (OU)

Suminski RR, **Wasserman JA**, Mayfield CA, Freeman E and Brandl R (2014). "Bicycling policy indirectly associated with overweight/obesity." American Journal of Preventive Medicine 47(6): 715-721.

[Full-Text](#)

Department of Biomedical Sciences (OU)

Background Policies to enhance bicycling are correlated with health outcomes. Research has yet to provide an adequate, empirically derived explanation for this finding. Purpose To examine a comprehensive model of a pathway potentially linking bicycle policies to overweight/obesity. Methods Data representing multiple years between 2006 and 2012 from CDC, U.S. Census Bureau, U.S. Department of Transportation, and the Alliance for Biking and Walking were subjected to bivariate and multivariate analyses in 2013. A path model was created to explain the relationship between bicycle policies and overweight/obesity in the 48 largest U.S. cities. Results Zero-order correlations were significant between the number of bicycle policies and the percentage of workers bicycling to work and rates of overweight/obesity. These relationships did not remain statistically significant in the multivariate analysis. However, more bicycle policies were associated with a greater number of bicycle infrastructure components ($p < 0.005$). In turn, bicycling infrastructure components were positively related to the percentage of workers bicycling to work ($p < 0.001$), which was inversely associated with overweight/obesity rates ($p < 0.05$). Conclusions The results of this study suggest that large cities with more policies aimed at promoting bicycling have fewer overweight/obese residents, partially because the policies are related to supportive bicycling infrastructures that promote bicycling to work.

Swor R, Ziaideh J and Jayasankar S (2014). "Comparison of attending-only and resident with attending supervision Press Ganey scores in ED patients." Academic Emergency Medicine 21(Sup 1): 218.

[Full-Text](#)

Department of Emergency Medicine

Thibodeau BJ, Geddes TJ, Fortier LE, Ahmed S, Pruetz BL, Wobb J, **Chen P, Wilson GD** and **Akervall JA** (2014). "Gene expression characterization of HPV positive head and neck cancer to predict response to chemoradiation." Head and Neck Pathology. ePub Ahead of Print.

[Full-Text](#)

Department of Radiation Oncology

Department of Biomedical Sciences (BHS)

Human papillomavirus (HPV) has been shown to have a causal role in the development of head and neck squamous cell carcinoma. While HPV-positive head and neck cancer is associated with a better response to treatment in the majority of patients, there is a subset who does not respond favorably to current therapy. Identification of these patients could prevent unnecessary morbidity and indicate the need for alternative therapeutic options. Tissue samples were obtained from 19 patients with HPV-positive head and neck squamous carcinoma treated with chemoradiation therapy. HPV status was confirmed by polymerase chain reaction analysis through detection of HPV16 E7 in both DNA and RNA. RNA was isolated from tissue samples and subjected to microarray gene expression analysis. In addition to identification of potential genetic biomarkers (including LCE3D, KRTDAP, HMOX1, KRT19, MDK, TSPAN1), differentially expressed genes associated with genomic stability, cell cycle, and DNA damage were detected between responders and non-responders. These results were further validated with publicly available gene expression studies. This pilot study suggests prospective biomarkers that predict response to therapy. The importance of genes involved with genomic stability is highlighted in both development and progression of head and neck squamous cell carcinoma but also recurrence. Potential development of an assay may prove beneficial to clinicians, assisting them to provide alternative care sooner thus lowering morbidity.

Thompson AC, Kremer PMJ, Biswal S, **Rebner M**, Rebner RE, Thomas WR, Edwards SD, Thompson MO and Ikeda DM (2014). "Factors associated with repetitive strain, and strategies to reduce injury among breast-imaging radiologists." Journal of the American College of Radiology 11(11): 1074-1079.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Purpose To investigate the prevalence of repetitive strain injury (RSI) among breast-imaging radiologists, the factors associated with such symptoms, and strategies to reduce injury. Methods In 2012, an anonymous survey regarding RSI and work habits was administered to 2,618 physician members of the Society of Breast Imaging via e-mail. Analysis of 727 (27.8%) de-identified responses was completed using STATA 12.1. Pain levels before and after implementation of digital imaging were compared with the Wilcoxon signed-rank test. The associations between RSI symptoms and work habits were assessed with logistic regression and test for trend. Results In the survey 438 of 727 (60.2%) respondents reported RSI symptoms, and 242 of 727 (33.3%) reported prior diagnosis/treatment. Results showed a statistically significant trend for the odds of RSI symptoms to increase with decreasing age ($P = .0004$) or increasing number of daily hours spent working ($P = .0006$), especially in an awkward position ($P < .0001$). Respondents recalled a significant increase in pain level after implementation of PACS, and a decrease in pain after ergonomic training or initiating use of an ergonomic mouse, adjustable chair, or adjustable table ($P < .001$, all comparisons). Only 17.7% (129 of 727) used an ergonomic mouse and 13.3% (97 of 727) had attended ergonomic training. Those with RSI symptoms or prior diagnosis of a Repetitive Strain Syndrome (RSS) were more likely to desire future ergonomic training compared with those without symptoms or injury (odds ratio 5.36, $P < .001$; odds ratio 2.63, $P = .001$, respectively). Conclusions RSI is highly prevalent among breast-imaging radiologists nationwide and may worsen after implementation of PACS or with longer work hours. Ergonomic training and ergonomic devices may diminish or prevent painful RSI among radiologists.

Tomasello G, Tralongo P, Damiani P, Sinagra E, Di Trapani B, Zeenny MN, **Hussein IH**, Jurjus A and Leone A (2014). "Dismicrobism in inflammatory bowel disease and colorectal cancer: Changes in response of colocytes." World Journal of Gastroenterology 20(48): 18121-18130.

[Full-Text](#)

Department of Biomedical Sciences (OU)

Patients with inflammatory bowel disease (IBD) have an increased risk of 10%-15% developing colorectal

cancer (CRC) that is a common disease of high economic costs in developed countries. The CRC has been increasing in recent years and its mortality rates are very high. Multiple biological and biochemical factors are responsible for the onset and progression of this pathology. Moreover, it appears absolutely necessary to investigate the environmental factors favoring the onset of CRC and the promotion of colonic health. The gut microflora, or microbiota, has an extensive diversity both quantitatively and qualitatively. In utero, the intestine of the mammalian fetus is sterile. At birth, the intestinal microbiota is acquired by ingesting maternal anal or vaginal organisms, ultimately developing into a stable community, with marked variations in microbial composition between individuals. The development of IBD is often associated with qualitative and quantitative disorders of the intestinal microbial flora (dysbiosis). The healthy human gut harbours about 10 different bacterial species distributed in colony forming units which colonize the gastrointestinal tract. The intestinal microbiota plays a fundamental role in health and in the progression of diseases such as IBD and CRC. In healthy subjects, the main control of intestinal bacterial colonization occurs through gastric acidity but other factors such as endoluminal temperature, competition between different bacterial strains, peristalsis and drugs can influence the intestinal microenvironment. The microbiota exerts diverse physiological functions to include: growth inhibition of pathogenic microorganisms, synthesis of compounds useful for the trophism of colonic mucosa, regulation of intestinal lymphoid tissue and synthesis of amino acids. Furthermore, mucus seems to play an important role in protecting the intestinal mucosa and maintaining its integrity. Changes in the microbiota composition are mainly influenced by diet and age, as well as genetic factors. Increasing evidence indicates that dysbiosis favors the production of genotoxins and metabolites associated with carcinogenesis and induces dysregulation of the immune response which promotes and sustains inflammation in IBD leading to carcinogenesis. A disequilibrium in gut microflora composition leads to the specific activation of gut associated lymphoid tissue. The associated chronic inflammatory process associated increases the risk of developing CRC. Ulcerative colitis and Crohn's disease are the two major IBDs characterized by an early onset and extraintestinal manifestations, such as rheumatoid arthritis. The pathogenesis of both diseases is complex and not yet fully known. However, it is widely accepted that an inappropriate immune response to microbial flora can play a pivotal role in IBD pathogenesis.

Tyagi P, Smith PP, Kuchel GA, de Groat WC, Birder LA, Chermansky CJ, Adam RM, Tse V, **Chancellor MB** and Yoshimura N (2014). "Pathophysiology and animal modeling of underactive bladder." International Urology and Nephrology 46(1): 11-21.

[Full-Text](#)

Department of Urology

While the symptomology of underactive bladder (UAB) may imply a primary dysfunction of the detrusor muscle, insights into pathophysiology indicate that both myogenic and neurogenic mechanisms need to be considered. Due to lack of proper animal models, the current understanding of the UAB pathophysiology is limited, and much of what is known about the clinical etiology of the condition has been derived from epidemiological data. We hereby review current state of the art in the understanding of the pathophysiology of and animal models used to study the UAB.

Valente S, DuBeau C, Chancellor D, Okonski J, Vereecke A, **Doo F**, Lajiness M, **Diokno A** and **Chancellor M** (2014). "Epidemiology and demographics of the underactive bladder: A cross-sectional survey." International Urology and Nephrology 46(1): 7-10.

[Full-Text](#)

OUWB Medical Student Author

Department of Urology

The aim of this study was to evaluate the prevalence and awareness of symptoms suggestive of underactive bladder (UAB) in a heterogeneous, non-specific population to garner additional epidemiologic information about UAB. After IRB approval, an 18-item survey was mailed to 5,000 people living in metro Detroit to collect demographic data and questions regarding clinical urinary symptoms and familiarity with UAB. A total of 633 subjects (13; 54 % men, 46 % women) returned the survey. Nearly one quarter (23 %, n = 137) of respondents reported difficulty emptying his/her bladder, yet only 11 % (n = 70) had ever heard of UAB. The

study results indicated that patient-reported bladder emptying symptoms are prevalent, as common in women as men, and significantly associated with comorbidity and poor self-reported health. The results suggest that the burden and impact of UAB might be significant and that a syndromic concept of UAB warrants research to determine the true burden of disease, increase awareness, and broaden efforts to investigate therapeutic directions.

Vekaria S, **Yadavalli S** and **Kirsch A** (2014). "Beyond fractures: Evaluating the hip in the emergency setting." Emergency Radiology 21(5): 438.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

OUIB Medical Student Author

Purpose/Aim: 1. Review some of the soft tissue and osseous causes of acute traumatic and nontraumatic hip pain in an ER setting other than hip fracture. 2. Give examples of key imaging findings of different hip pathologies as well as highlight common pitfalls when evaluating the hip. 3. Discuss what the clinician will want to know in the causes of hip pain. 4. Review relevant anatomy of the hip joint and the soft tissue structures around it. Content Organization: The exhibit will be delivered in a sequential case-based format. In addition to cases related to trauma, this exhibit will also present cases of non-traumatic causes of acute hip pain. Examples of categories include: fractures external to the hip joint, hematoma, infection, muscle and/or tendon abnormalities, inflammatory arthritides and more. Each case will include relevant radiographs, CT, or MRI images, a discussion of the soft tissue and osseous findings, the pathophysiology of the disorder, and a differential for the diagnosis. In each category, we will review what information the clinician is seeking and what findings to report in detail. Summary/Conclusion: This exhibit is a case based comprehensive overview of the different etiologies of acute hip pain, both in a traumatic and non-traumatic setting in the ER. We will not only include relevant images and a pertinent discussion of the findings and pathophysiology, but we will also review the common pitfalls in evaluating the hip in order to improve detection of pathology other than fracture.

Ward ND, Cosner DE, **Lamb CA**, **Li W**, **Macknis JK**, **Rooney MT** and **Zhang PL** (2014). "Top differential diagnosis should be microscopic polyangiitis in ANCA-positive patient with diffuse pulmonary hemorrhage and hemosiderosis." Case Rep Pathol 2014(286030): 1-5.

[Full-Text](#)

Department of Pathology

A rat model of antineutrophil cytoplasmic antibody (ANCA) associated vasculitides reveals crescentic glomerulonephritis as seen in human renal biopsies and diffuse lung hemorrhage that is not well documented in human lung biopsies. A 64-year-old male, with shortness of breath and mild elevation of serum creatinine, was found to have a positive serum test for ANCA, but negative antiglomerular basement membrane antibody. A renal biopsy showed pauci-immune type of crescentic glomerulonephritis and focal arteritis. The prior lung wedge biopsy was retrospectively reviewed to show diffuse hemorrhage and hemosiderosis with focal giant cells. In addition, small arteries revealed subtle neutrophil aggregation, and margination along vascular endothelium, but no definitive vasculitis. The pathology of ANCA associated vasculitides results from activated neutrophils by ANCA and subsequent activation of the alternative complement cascade with endothelial injury, neutrophil aggregation and margination. Our findings, after the correlation between lung biopsy and renal biopsy, imply that the top differential diagnosis in the lung biopsy should be microscopic polyangiitis when diffuse pulmonary hemorrhage and hemosiderosis are present in this ANCA-positive patient.

Weston VC, Meurer WJ, Frederiksen SM, **Fox AK** and Scott PA (2014). "Prevention of emergency physician migratory contamination in a cluster randomized trial to increase tissue plasminogen activator use in stroke (the INSTINCT trial)." American Journal of Emergency Medicine 32(12): 1460-1463.

[Full-Text](#)

OUIB Medical Student Author

Objectives Cluster randomized trials (CRTs) are increasingly used to evaluate quality improvement

interventions aimed at health care providers. In trials testing emergency department (ED) interventions, migration of emergency physicians (EPs) between hospitals is an important concern, as contamination may affect both internal and external validity. We hypothesized that geographically isolating EDs would prevent migratory contamination in a CRT designed to increase ED delivery of tissue plasminogen activator (tPA) in stroke (the INSTINCT trial). Methods INSTINCT was a prospective, cluster randomized, controlled trial. Twenty-four Michigan community hospitals were randomly selected in matched pairs for study. Contamination was defined at the cluster level, with substantial contamination defined a priori as greater than 10% of EPs affected. Nonadherence, total crossover (contamination + nonadherence), migration distance, and characteristics were determined. Results Three hundred seven EPs were identified at all sites. Overall, 7 (2.3%) changed study sites. One moved between control sites, leaving 6 (2.0%) total crossovers. Of these, 2 (0.7%) moved from intervention to control (contamination); and 4 (1.3%) moved from control to intervention (nonadherence). Contamination was observed in 2 of 12 control sites, with 17% and 9% contamination of the total site EP workforce at follow-up, respectively. Average migration distance was 42 miles for all EPs moving in the study and 35 miles for EPs moving from intervention to control sites. Conclusion The mobile nature of EPs should be considered in the design of quality improvement CRTs. Increased reporting of contamination in CRTs is encouraged to clarify thresholds and facilitate CRT design.

Williamson RW, Gerhardstein D, Cardenas J, **Michael DB**, Theodore N and Rosseauk N (2014). "Concussion 101: The current state of concussion education programs." *Neurosurgery* 75: S131-S135.

[Full-Text](#)

Department of Neurosurgery

Concussion is an important cause of morbidity in young student athletes. The prevention, accurate diagnosis, and prompt management of concussions require that players, parents, coaches, and medical personnel are accurately educated on current concussion data and guidelines. All states have laws that mandate concussion education for high school athletes. There is currently no uniform educational program to disseminate information to student athletes regarding concussions. This article highlights a few nationally recognized educational programs that aim to accurately and effectively inform all members of the athletic, academic, and medical communities about the importance and urgency of concussion.

Williford B, Baxi R and **Fisher J** (2014). "Cost effectiveness of robotic supracervical hysterectomy (multi port and single port) as an alternative to traditional laparoscopic hysterectomy." *Journal of Minimally Invasive Gynecology* 21(6): S97.

[Full-Text](#)

Department of Obstetrics and Gynecology

Study Objective: Robotic hysterectomy has been evaluated in terms of cost effectiveness as an alternative to laparoscopic supracervical hysterectomy (LSCH). In this study, we compare the cost of both multi-incision robotic assisted supracervical hysterectomy (RASCH) and single port robotic assisted supracervical hysterectomy (SIRSCH) using the GelPoint(registered trademark) port to traditional LSCH. Design: Retrospective chart review. Setting: Midwestern suburban teaching hospital. Patients: Women undergoing hysterectomy via SIRSCH (n=4), RASCH (n=18), or LSCH (n=38), with or without salpingoophorectomy for benign indications. Intervention: The equipment costs for the 4 SIRSCH procedures was obtained from our billing department and compared against those for LSCH and RASCH done at the same institution over the same study period. Measurements and Main Results: The total direct cost for SIRSCH was \$1929.72 compared with \$2532.47 for LSCH and \$2664.69 for RASCH. There was no significant difference between the direct cost of the LSCH and RASCH groups (p = 0.3432). There was no significant difference in specimen size between LSCH and RASCH, with average uterine weights of 251.65g and 259.16g, respectively (p = 0.4069). The average uterine weight of the SIRSCH group was 91.5g. The average operating time for the groups were, 2.66 hours for LSCH, 3.06 hours for RASCH, and 2.84 hours for SIRSCH. There was no significant difference between operating times for LSCH and RASCH (p = 0.0649). There were no significant differences in BMI and patient age between the groups. There were no significant complications and lengths of stay were less than 24 hours. Conclusion: Our preliminary experience suggests that SIRSCH using the GelPOINT(registered trademark) Advanced Access Platform has lower total operating room costs. This data also demonstrates that there is no significant difference in total direct cost between LSCH and RASCH. The higher cost of the

LSCH can possibly be attributed to the use of disposable bipolar devices, and SIRSCH does not require the use of a morcellator. (Figure presented) .

Wilson GD, D'Angelo K, Pruetz BL, Geddes TJ, Larson DM and **Akervall J** (2014). "The challenge of sustaining a hospital-based biobank and core molecular laboratory: The Beaumont experience." [Biopreservation and Biobanking](#) 12(5): 306-311.

[Request Form](#)

Department of Radiation Oncology

Department of Biomedical Sciences (BHS)

The Beaumont Health System BioBank was established in 2008, not only to leverage the potential to collect biospecimens for translational research, but to undertake such research in a seamless facility that combined high quality biobanking with state-of-the-art laboratory platforms geared towards biospecimen-based research. This report describes the challenge of sustaining a hospital-based biobank with an operating budget exceeding \$1,000,000 in a financial climate that favors short-term fiscal goals rather than long-term scientific ambitions. Some of the key areas that are discussed include grants, philanthropy, accreditation, process improvement and commercialization of samples and services. We conclude that grants are not a feasible avenue, in our case, to support a biobank and that philanthropy and commercialization represent the best options for external funding to support stalling internal support, in order to sustain the operations of the BioBank.

Wilson GD, Thibodeau BJ, Fortier LE, Pruetz BL, Galoforo S, Baschnagel AM, Chunta J, **Oliver Wong CY**, **Yan D**, **Marples B** and Huang J (2014). "Glucose metabolism gene expression patterns and tumor uptake of 18F-fluorodeoxyglucose after radiation treatment." [International Journal of Radiation Oncology Biology Physics](#) 90(3): 620-627.

[Full-Text](#)

Department of Radiation Oncology

Department of Diagnostic Radiology and Molecular Imaging

Purpose: To investigate whether radiation treatment influences the expression of glucose metabolism genes and compromises the potential use of 18F-fluorodeoxyglucose positron emission tomography (FDG-PET) as a tool to monitor the early response of head and neck cancer xenografts to radiation therapy (RT). Methods and Materials: Low passage head and neck squamous cancer cells (UT14) were injected to the flanks of female nu/nu mice to generate xenografts. After tumors reached a size of 500 mm³ they were treated with either sham RT or 15 Gy in 1 fraction. At different time points, days 3, 9, and 16 for controls and days 4, 7, 12, 21, 30, and 40 after irradiation, 2 to 3 mice were assessed with dynamic FDG-PET acquisition over 2 hours. Immediately after the FDG-PET the tumors were harvested for global gene expression analysis and immunohistochemical evaluation of GLUT1 and HK2. Different analytic parameters were used to process the dynamic PET data. Results: Radiation had no effect on key genes involved in FDG uptake and metabolism but did alter other genes in the HIF1(alpha) and glucose transporter-related pathways. In contrast to the lack of effect on gene expression, changes in the protein expression patterns of the key genes GLUT1/SLC2A1 and HK2 were observed after radiation treatment. The changes in GLUT1 protein expression showed some correlation with dynamic FDG-PET parameters, such as the kinetic index. Conclusion: 18F-fluorodeoxyglucose positron emission tomography changes after RT would seem to represent an altered metabolic state and not a direct effect on the key genes regulating FDG uptake and metabolism.

Wobb J, **Chen PY**, Shah C, Moran MS, Shaitelman SF, Vicini FA, Mbah AK, Lyden M and Beitsch PD (2014). "Nomogram for predicting the risk of locoregional recurrence in patients treated with accelerated partial-breast irradiation." [Journal of Clinical Oncology](#) 32(Sup 26): Abstr 59.

[Request Form](#)

Department of Radiation Oncology

Background: There are limited tools to guide clinicians regarding the risk of locoregional recurrence (LRR) in patients wishing to pursue APBI. The purpose of this study was to develop a nomogram taking into account clinicopathologic features to predict LRR in patients treated with APBI for early stage breast cancer. Methods:

A total of 2,000 breasts (1,990 women) were treated with APBI at William Beaumont Hospital (N=551) or on the ASBrS MammoSite Registry Trial (N=1,449). Techniques included multiplanar interstitial catheters (N=98), balloon-based brachytherapy (N=1,689), and 3D conformal radiotherapy (N=213). Clinicopathologic variables were gathered prospectively. A nomogram was formulated utilizing the Cox Proportional Hazards Regression model to predict for LRR. This was validated by generating a bias-corrected index and cross-validated with a C-index. Results: Median follow-up was 5.5 years (0.9 to 18.3). Of the 2,000 cases, 435 were excluded due to missing data. Univariate analysis found that age <50, pre/perimenopausal status, close/positive margins, ER negativity, and high grade were associated with a higher frequency of LRR. These five independent covariates were used to create adjusted estimates, weighting each on a scale of 0 to 100. The total score is identified on a points scale to obtain the probability of an LRR over the study period. The model demonstrated good concordance for predicting LRR with a C-index of 0.641. Conclusions: The formulation of a practical, easy-to-use nomogram for calculating the risk of LRR in patients undergoing APBI will help guide the appropriate selection of patients for off-protocol utilization of APBI.

Wong CYO, Al-Faham Z, Jolepalem P, Wong WW and Thie J (2014). "Time sensitivity-corrected retention index: An enhanced metabolic index from 18F-FDG PET to differentiate between benign and malignant pulmonary nodules." Nuclear Medicine Communications 35(12): 1220-1223.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

The aim of the study was to evaluate pulmonary nodules (PNs) by incorporating time sensitivity (S) factor in the retention index (RI) and compare with the traditional fixed interval method. After obtaining approval from the Human Investigations Committee, 97 PNs from 81 patients (age = 70 (plus or minus) 11) referred for dual-time fluorine-18 fluorodeoxyglucose PET (16.1 (plus or minus) 1.9 mCi) with definite pathological diagnosis or 1-year computed tomography follow-up were retrospectively studied. $S = d\{\ln[SUV]\}/d\{\ln [T]\}$ was obtained by logarithmic regression using scan times, T(0, 1, 2), and standard uptake value (SUV) (0, 1, 2). This time-corrected RI, $RI_s = [(T_2/T_1)S - 1]$ null 100%, was compared with traditional fixed time interval RI, $RI_x = [(SUV_2/SUV_1) - 1]$ null 100%, by means of receiver operating characteristic curve analysis. The mean (plus or minus) SD of T1 and T2 (72.3 (plus or minus) 14.0 and 134.9 (plus or minus) 17.6 min, respectively) skewed markedly from the intended time of PET scans (skewness = 2.076 and 1.356, respectively). There were 27 benign tumors, 37 cases of non-small-cell lung cancer, 15 other types of cancer, and 18 stable lesions by 1-year computed tomography follow-up. There were significant differences between the nonmalignant group (NM, n = 45) and the cancer group (CA, n = 52) in time sensitivity (0.186 (plus or minus) 0.161 vs. 0.483 (plus or minus) 0.180, $P < 0.0005$) and RIs (12.7 (plus or minus) 12.5 vs. 37.4 (plus or minus) 17.5%, $P < 0.0005$). The RI_x showed wider variation than RIs, although the difference between NM and CA was also significant (18.0 (plus or minus) 28.8 vs. 37.8 (plus or minus) 32.0%, $P = 0.002$). The RIs and RI_x were only weakly correlated ($r = 0.257$, $P = 0.011$). Receiver operating characteristic curve analysis performed for the CA or NM groups revealed a significant improvement in the diagnostic accuracy for malignancy by RIs (area under the curve = 0.880 (plus or minus) 0.035, $P < 0.0005$) compared with RI_x (area under the curve = 0.694 (plus or minus) 0.054, $P = 0.001$). Incorporating the time sensitivity factor improves the diagnostic performance of RI for malignant PNs by using additional biologic information from the variation in fluorine-18 fluorodeoxyglucose uptake times and rates.

Wong CYO and Jolepalem P (2014). "PET screening for metastatic colorectal adenocarcinoma [1]." JAMA: Journal of the American Medical Association 312(12): 1255.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Yadav S, Jawad MS, Wobb J, Wilkinson JB, Yadav D, Wallace M, **Barnes MA** and **Grills IS** (2014). "Outcomes of patients with triple-negative breast cancer treated with radiation therapy." *Journal of Clinical Oncology* 32(Sup 26): Abstr 88.

[Request Form](#)

Department of Internal Medicine

Department of Radiation Oncology

Background: This study compares outcomes between different types of loco-regional treatment modalities used in patients with triple negative breast cancers. Methods: 299 patients with triple negative breast cancer diagnosed between April 2004 and August 2011 at a single institution and who were treated with radiation therapy were included in an IRB-approved retrospective review. Electronic charts were reviewed for demographic and pathologic data as well as outcome data including locoregional and distant recurrence. The median follow up period was 3 years. 200 (70%) patients underwent lumpectomy with whole breast irradiation (WBI). 68 (22.7%) patients received mastectomy and radiation while 31(10.4%) patients were treated with lumpectomy with accelerated partial breast irradiation (APBI). Results: Forty-nine patients (16.4%) experienced recurrence (10 local; 6 contralateral; 3 regional; 36 distant). There was a significant ($p < 0.0001$) difference in the proportion of patients that experienced a recurrence in each treatment group: 34% ($n=23$) in mastectomy with radiation group; 12% ($n=23$) in lumpectomy with WBI group; 10% ($n=3$) in lumpectomy with APBI group. On univariate analysis, tumor size, tumor stage, nodal stage, overall stage, total number of positive nodes, total number of nodes removed, and whether or not the patients had an axillary lymph node dissection were significantly associated with recurrence ($p < 0.05$). When these predictor variables, including treatment type, were examined using a stepwise cox proportional hazards regression model for recurrence, the only variables that remained significant were tumor stage ($p = 0.0003$) and the number of positive nodes ($p = 0.0008$). Survival curves were significantly different ($p = 0.016$) between the lumpectomy with WBI group and the mastectomy with radiation group. Over all follow-up times, the probability of survival was smallest for the mastectomy with radiation group. Conclusions: The recurrence pattern for triple negative breast cancers treated with radiation therapy was primarily distant for all treatment modalities. In our patient population, tumor stage and number of positive lymph nodes predicted for recurrence while radiotherapy technique did not.

Yang A, **Arndt DH**, Berg RA, Carpenter JL, Chapman KE, Dlugos DJ, Gallentine WB, Giza CC, Goldstein JL, Hahn CD, Lerner JT, Loddenkemper T, Matsumoto JH, Nash KB, Payne ET, Sanchez Fernandez I, Shults J, Topjian AA, Williams K, Wusthoff CJ and Abend NS (2014). "Development and validation of a seizure prediction model in critically ill children." *Seizure*. ePub Ahead of Print.

[Full-Text](#)

Department of Pediatrics

Purpose: Electrographic seizures are common in encephalopathic critically ill children, but identification requires continuous EEG monitoring (CEEG). Development of a seizure prediction model would enable more efficient use of limited CEEG resources. We aimed to develop and validate a seizure prediction model for use among encephalopathic critically ill children. Method: We developed a seizure prediction model using a retrospectively acquired multi-center database of children with acute encephalopathy without an epilepsy diagnosis, who underwent clinically indicated CEEG. We performed model validation using a separate prospectively acquired single center database. Predictor variables were chosen to be readily available to clinicians prior to the onset of CEEG and included: age, etiology category, clinical seizures prior to CEEG, initial EEG background category, and inter-ictal discharge category. Results: The model has fair to good discrimination ability and overall performance. At the optimal cut-off point in the validation dataset, the model has a sensitivity of 59% and a specificity of 81%. Varied cut-off points could be chosen to optimize sensitivity or specificity depending on available CEEG resources. Conclusion: Despite inherent variability between centers, a model developed using multi-center CEEG data and few readily available variables could guide the use of limited CEEG resources when applied at a single center. Depending on CEEG resources, centers could choose lower cut-off points to maximize identification of all patients with seizures (but with more patients monitored) or higher cut-off points to reduce resource utilization by reducing monitoring of lower risk patients (but with failure to identify some patients with seizures).

Yonekawa Y, Abbey AM, Shah R, **Thomas J** and **Capone A** (2014). "Endoillumination phototoxic maculopathy associated with combined ICG-assisted epiretinal membrane and internal limiting membrane peeling." Clinical Ophthalmology 8: 2501-2506.

[Full-Text](#)

OUWB Medical Student Author

Department of Ophthalmology

Phototoxic maculopathy caused by endoillumination during macular surgery is uncommon. Previously identified risk factors have included intensity of the light source, proximity to the retinal surface, and length of exposure. In the era of indocyanine green (ICG)-assisted internal limiting membrane (ILM) peeling, the use of ICG, and the technique of ILM peeling may both contribute to subsequent phototoxic maculopathy. We present cases of routine chromovitrectomy who developed phototoxic maculopathy in the precise discrete distribution of the ILM rhexes, and discuss potential mechanisms and implications.

Zaidi AU and **Berman B** (2014). "Crossing the thrombotic threshold: Deep vein thrombosis in Henoch-Schonlein purpura." Clinical Pediatrics 53(14): 1396-1398.

[Full-Text](#)

Department of Pediatrics

Zaltz I, Baca G, Kim YJ, Schoenecker P, Trousdale R, Sierra R, Sucato D, Sink E, Beaulé P, Millis MB, Podeszwa D and Clohisy JC (2014). "Complications associated with the periacetabular osteotomy: A prospective multicenter study." Journal of Bone and Joint Surgery - American Volume 96(23): 1967-1974.

[Full-Text](#)

Department of Orthopedic Surgery

Background: The purpose of this prospective multicenter study was to determine and categorize all complications associated with the periacetabular osteotomy performed by experienced surgeons. Methods: We prospectively analyzed perioperative complications in 205 consecutive unilateral periacetabular osteotomies performed at seven institutions by ten surgeons. All perioperative complications were recorded at an average of ten weeks and one year after surgery in standardized fashion using a validated complication grading scheme applied to hip preservation procedures. The mean patient age was 25.4 years. There were 143 female and sixty-two male patients. The most common diagnosis was developmental acetabular dysplasia, and concomitant procedures most commonly included femoral osteochondroplasty (58%) or hip arthroscopy (20%), which could include labral repair or resection. Results: Major complications (grade III or IV) occurred in twelve patients (5.9%). Seven complications were evident at the ten-week visit and five at the one-year visit. Nine of the complications required a second surgical intervention, including repair for acetabular migration or implant adjustment (four patients), incision and drainage for a deep infection (two patients), and heterotopic bone resection, contralateral peroneal nerve decompression, and posterior column fixation (one patient each). Three thromboembolic complications were managed medically. There were no vascular injuries, permanent nerve palsies, intra-articular osteotomies and/or fractures, or acetabular osteonecrosis. The most common grade-I or II complication was asymptomatic heterotopic ossification. Conclusions: For surgeons experienced with the periacetabular osteotomy, it is a safe procedure but is associated with a 5.9% risk of grade-III or IV complications beyond the learning curve. The majority of these complications are resolved without permanent disability.

Zhang J, Wright KD, **Mahoney Rogers AA**, Barrett MM and Shim K (2014). "Compensatory regulation of the size of the inner ear in response to excess induction of otic progenitors by fibroblast growth factor signaling." Developmental Dynamics 243(10): 1317-1327.

[Full-Text](#)

OUWB Medical Student Author

Background: The otic placode comprises the progenitors of the inner ear and the neurons that convey hearing and balance information to the brain. Transplantation studies in birds and amphibians demonstrate that when the otic placode is morphologically visible as a thickened patch of ectoderm, it is first committed

to an otic fate. Fibroblast growth factor (FGF) signaling initiates induction of the otic placode, and levels of FGF signaling are fine-tuned by the Sprouty family of antagonists of receptor tyrosine kinase signaling. Results: Here, we examined the size of the otic placode and cup by combinatorial inactivation of the Sprouty1 and Sprouty2 genes. Interestingly, in a Sprouty gene dosage series, early enlargement of the otic placode was progressively restored to normal. Restoration of otic size was preceded by normal levels of FGF signaling, reduced cell proliferation and reduced cell death. Conclusions: Our study demonstrates that excess otic placode cells, which form in response to increased FGF signaling, are not maintained in mammals. This suggests that growth plasticity exists in the mammalian otic placode and cup, and that FGF signaling may not be sufficient to induce the genetic program that maintains otic fate.